Master file

- 1 -

Circulars file

- 13 -

CIRCULAR NO.SU/B.Com/CBCS & GS/65/2018

It is hereby informed to all concerned that, the syllabi prepared by the Board of Studies & recommended by the Dean, Faulty of Commerce & Management the **Academic Council at its meeting held on 30 June & 02 July 2018 has accepted the syllabus of Choice Based Credits & Grading System for Bachelor of Commerce First Semester** under the Faulty of Commerce & Management as enclosed herewith.

This is effective from the Academic Year 2018-2019 and onwards.

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.No.SU/2018/
Date:- 17-07-2018. | 14552 - 14812

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Deputy Registrar,
Syllabus Section

Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges, Dr. Babasaheb Ambedkar Marathwada University.

2] The Director, University Network & Information Centre, UNIC, with **a request to upload this Circular on University Website.**

Copy to :-

1] The Director, Board of Examinations & Evaluation,
2] The Section Officer, [B.Com.Unit] Examination Branch,
3] The Section officer, [Eligibility Unit],
4] The Programmer [Computer Unit-1] Examinations,
5] The Programmer [Computer Unit-2] Examinations,
6] The In-charge, [E-Suvidha Kendra],
7] The Public Relation Officer,
8] The Record Keeper,

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Curriculum of B.COM. IST YEAR

under Choice Based Credit & Grading System

SEMESTER FIRST

[Effective from the Academic Year 2018-19 & onwards]

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,

AURANGABAD

FACULTY OF COMMERCE

Syllabus - Bachelor of Commerce

Choice Based Credit System (CBCS) - 2018-2019

Semester & Credits	Core Course [04]	Ability Enhancement Compulsory Courses [AECC] [02]	Discipline Specific Elective [DSE] [01]
I Credit 28	1. Financial Accounting – I 2. Business Mathematics & Statistics 3. Business & Industrial Economics 4. Computer Application in Business - I	1. English 2. Second Language	Elective Paper [Any One] 1. Entrepreneurship Development-I 2. Office Management
Total Credits =28	**No. of Credits : 16**	**No. of Credits : 08**	**No. of Credits : 04**

FIRST SEMSTER

Paper Number	Subject/ Title of the Paper	Course	Weekly		Credits		IA	UA	Total Marks	Duration of Theory Exam
			Th	Pr	Th	Pr				
I	Financial Accounting – I	Core Course	4	-	4	-	20	80	100	3 Hrs
II	Business Mathematics & Statistics	Core Course	4	-	4	-	20	80	100	3 Hrs
III	Business & Industrial Economics	Core Course	4	-	4	-	20	80	100	3 Hrs
IV	Computer Application in Business – I	Core Course	2	2	2	2	50	50	100	3 Hrs
V	English	Ability Enhancement Compulsory Courses	4	-	4	-	20	80	100	3 Hrs
VI	Second Language		4	-	4	-	20	80	100	3 Hrs
VII	1.Entrepreneurship Development –I 2.Office Management	Discipline Specific Elective [Any One]	4	-	4	-	20	80	100	3 Hrs
	Total		**26**	**2**	**26 + 2 =28**		**170**	**530**	**700**	**--**

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. First Year (First Semester)
Financial Accounting-I

Theory-80
Practical/Sessional -20

Objectives: The course aims at acquainting the students with the emerging issues in business, Trade and commerce regarding recording, maintaining and presenting the accounting and financial facts.

Unit I: **Book-Keeping and Accountancy: -** **(Theory)**
Meaning, Definitions, Concepts, Objectives, Need, Scope, Classification, and Rules of Accounts, Accounting Cycle, Journal, Ledger, Balancing of Account.

Unit II: **Depreciation: -** **(Numerical)**
Annuity and Sinking fund Method

Unit III: **Final Account of Sole Trader: -** **(Numerical)**
Meaning and Importance, Preparation of Manufacturing Account, Trading Account, Profit and Loss Account and balance sheet, Adjustment.

Unit IV: **Hire purchase System & Installment Method:-**
(Theory on Hire Purchase & Numerical on Installment Method)
Meaning, Calculations of Interest, Accounting for hire purchase transactions by Asset purchase method based on full cash price, Journal Entries, Ledger Accounts and Discloser in Balance sheet for hire and vendor.

Unit V: **Royalty Accounts: -** **(Numerical)**
Royalty, Minimum Rent, Short Workings, Recoupment of Short Working, Lapse of Short Working, Journal Entries and Ledger Accounts in the Books of Landlord and Lessee.

Suggested Readings:

1. Advanced Accounting- M.C.Shukla. & S.P. Grewal (S. Chand & Co. Ltd.New Delhi.)
2. Advanced Accounting- S.M.Shukla. (Sahityabhavan, Agra.)
3. Accountancy- Mahurkar & Deshpande.
4. New Approach to Accountancy-H.R. Kotalwar.
5. Financial Accounting –S.N. Maheshwari & S. K. Maheshwari (Vikas Publication House Pvt.Ltd.)

Journals:

1- The Chartered Accountant- Journals of the Institute of Chartered Accountant of India.
2-The Accounting World- ICFAI Hyderabad.

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
Business Mathematics and Statistics-I

Theory-80
Practical/ Sessional -20

Objectives: The Objective of this paper is to impart knowledge to students in order to improve their Logical Reasoning, Ability and Interpretation, Application of various statistical and Mathematical Tools and Techniques in making logical and scientific decisions in Business Operations.

Unit I: **Introduction to Statistics: -** **(Theory)**
Meaning, Definition, Importance and Limitations of Statistics, Primary and Secondary Data, Methods of collecting primary data, sources of secondary data. Difference between Primary and Secondary data. Ways of collection of data: a) Complete enumeration b) Sample Method, seriation and Tabulation of statistical data.

Unit II: **Measures of Central Tendency: -** **(Numerical)**
Introduction, definition, types of averages Mean, Median, and Mode: Computation of above Measures in Discrete series, continuous series, and cumulative Frequency. Distribution. (Less than and More than). Merits and Demerits of Mean, Median and Mode.

Unit III: **Measures of Dispersion & Skewness: -** **(Numerical)**
Introduction, Definition, Objectives of Measuring Dispersion. Mean Deviation and its coefficient. Standard deviation, its coefficient with its Co- variance.
Skewness -Introduction, Definition, Objectives of Skewness, Measures of Skewness: Karl Pearson's Co-efficient of skewness.

Unit IV: **Determinants: -** **(Numerical)**
Definition, Cramer's Rule Determinant of second order, Determinant of Third Order. Properties of Determinants. Computation of Area of Triangle with the help of determinant. SARRU'S Rule for evaluating the determinant.

Unit V: **Matrices: -** **(Numerical)**
Meaning, Definition and types of Matrices. Operations of Matrices: Addition and subs traction; properties of addition and subtractions.

Suggested Readings:

1) Statistics: S.P. Gupta (Sultan Chand & Sons New Delhi)
2) Fundamental of Statistics: D. N. Elhance (Kitab Mahal Allahbad)
3) Practical Problems in Statistics: Y.R. Mahajan
4) Statistics: Sancheti and Kapoor
5) Elementary Statistical Methods: Dr. S.P. Gupta, Sultan Chand & Sons.
6) Fundamentals of Statistics: D.N. Elhance, Kitab Mahal.
7) Statistics (Theory, Methods & Application): Dr. D.C. Sancheti, V.K. Kapoor, Sultan Chand & sons

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
Business and Industrial Economics

Theory-80
Practical/ Sessional -20

Objectives: This course is meant to acquaint the students with the principles of Business economics as are applicable in business.

Unit I: **Introduction to Business Economics:-**
Meaning, Definition, Nature, Characteristics, Significance and Scope of Business Economics, Objectives of Business Firm.

Unit II: **Theory of Consumer Behaviour:-**
The indifference curve approach, meaning, definition, assumptions and properties of indifference curve, consumers equilibrium.

Unit III: **Elasticity of Demand:-**
Concept, measurement and determinants of elasticity of demand, Price elasticity, income elasticity and cross elasticity, Average Revenue, marginal Revenue, importance of Elasticity of demand, Demand forecasting Methods.

Unit IV: **Market Structures:-**
Market Structures and Business decisions, objectives of a business firm, Perfect Competition: Meaning, concept and features, Monopoly Meaning, concept and features, Securities Exchange Board of India (SEBI), Foreign Exchange Management Act (FEMA)

Unit V: **Factor Pricing:-**
Marginal productivity theory and demand for factors, nature of supply of factor inputs, determination of wage rate under perfect competition and monopoly, interest concept, theories of interest.

Suggested Readings:

1. Ahuja H.L. Business Economics : (S.Chand and Co. New Delhi.)
2. Koustsoyianni : A Modern Micro Economics : (Macmillan New Delhi)
3. D.M.Mithani, G. K.Murthy : Fundamentals of Business Economics, (Himalaya Publishing House Mumbai)
4. R. Kaweri and Others: Managerial Economics. (S.chand and Co.New Delhi.)
5. G.N. Zambre : Business Economics : (Primplapure Publishers Nagpur.)
6. Nellis and Parker : The Essence of Business Economics, (Prentice Hall, New Delhi.)
7. Stigler G. The Theory of Price. (Prentice Hall New Delhi.)
8. V.G. Mankar : Business Economics,(Himalaya Publishing House, Mumbai.)

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
Computer Application in Business-I

Theory - 50
Practical/ Sessional - 50

Objectives: To provide computer skills and knowledge for commerce students and to enhance the Students understand of usefulness of information technology tools for business operations.

Unit I: **Computer Codes and Languages:**
Source Code, Machine/Binary Code, Mnemonic Opcode, Byte/Object Code, BCD, EBCDIC, ASCII, Language Translator-Interpreter & Compiler, High Level, Low Level, Assembly language, Different Number Systems, Binary, Octal, Hexadecimal, Decimal, Conversion from one base to another base.

Unit II: **Word Processing:-**
Introduction to word Processing, Word processing concepts, Use of Templates, Working with word document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Auto text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge: including linking with Database; Printing documents Creating Business Documents using the above facilities.

Unit III: **Preparing Presentations:-**
Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, Media; Design; Transition; Animation; and Slideshow. Creating Business Presentations using above facilities.

Unit IV: **Spreadsheet and its Business Applications:**
Spreadsheet concepts, Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs Generally used Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions.

Unit V: **Creating Business Spreadsheet:**
Creating spreadsheet in the area of: Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression.

Note: The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred in the detailed course above, is not available in that software, to that extent it will be deemed to have been modified.

Suggested Readings:

1. Chetan Srivastav " Information Technology".
2. Fundamentals of C, Dr. Prasad Madan, Dr. Gajanan Chaudhri, Chinmay Publication, Aurangabad.
2. O' Brien J. "Management Information System", Tata McGraw Hills, New Delhi.
3. P.K.Taxali, "PC Software made simple", Tata McGraw Hills, New Delhi.
4. V.Rajaraman, "Fundamentals of Computer", Prentice Hall of India, New Delhi.
5. Sanders D.H. "Computers Today", Tata McGraw Hill.

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
(Elective Paper)
Entrepreneurship Development - I

Theory-80
Practical/Sessional -20

Unit I: **Entrepreneur:**
Concept of Entrepreneur Definition, Characteristics, Functions, Entrepreneurs and Intrapreneur. Role of an Entrepreneur in Economic Development.

Unit II: **Entrepreneurship:**
Concept, Meaning, Definition, Characteristics, Importance of Entrepreneurship, Challenges, Issues & Barriers of Entrepreneurship.

Unit III: **The Dynamic New Trends of Entrepreneurship:**
Startup Accelerators, Student Sandbox and Business Labs, Crowd Funding, Venture Capital, Co-Working Spaces, Boot Camps, Online Entrepreneurship Degree.

Unit IV: **Evolution of Entrepreneurship in 21st Century:**
Essential of 21st Century Entrepreneurship, Importance of Entrepreneurship in 21st Century, Start-up Schemes, Start-up India, Stand up India, Pradhan Mantri Kaushal Vikas Yojana, Skill India.

Unit V **Project Identification:**
Meaning, Definition, Classification, Project Life, Project Formulation & Feasibility, Information Centers in India.

Suggested Readings:

1. Entrepreneurship Development: S.S Khanka, Sultan Chand & Co. Ltd.
2. Fundamentals of Entrepreneurship: G.S. Sudha, Ramesh Book Depot.
3. Entrepreneurship Development: E. Gordon & K. Natarajan, Himalaya Publishing House.
3. Entrepreneurship Development: Colombo Plan Staff College for Technician Education, Manila, TaTa McGraw Hill
4. Small Scale Industries and Entrepreneurship: Vasant Desai, Himalaya Publishing House.
5. Project Planning & Control: N. P. Agarwal & Dr. B. K. Mishra, Indus Valley Publications, New Delhi.

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
(Elective Paper)
Office Management

Theory-80
Practical/Sessional -20

Objective: The purpose of this course is to familiarize the students with the activities in a modern office. Smooth functioning of any organization depends upon the way various activities are organized, facilities provided to the staff working in the office, the working environment and the tools and equipment used in office.

Unit I: **Office and Office Management:-**

Meaning of office- Primary and Administrative Management Functions, Importance of Office, Duties of the Office Manager, Qualities and Essential Qualifications.

Filing and Indexing: Meaning and Importance, essentials of good filing, centralized vs. decentralized filing, system of classification, methods of filing and filing equipment, weeding of old records, meaning and need for indexing, various types of indexing.

Unit II: **Mail and Mailing Procedures:-**

Meaning and Importance of mail, Centralization of mail handling work, its advantages. Mailing through post, couriers, email, appending files with email. Inward and outward mail- receiving, sorting, opening, recording, making distributing folding of letters sent, dispatching, courier services, central receipt and dispatch.

Forms and Stationery: Office Forms- introduction, meaning, importance of forms, advantages of using forms, disadvantages of using forms, type of forms, factors affecting forms design, principles of form design, form control. Stationery- introduction, types of stationery used in offices, importance of managing stationery, selection of stationery, essential requirements for a good system of dealing with stationery, purchasing principles, purchase procedure, standardization of stationery.

Unit III: **Modern Office Equipment:-**

Introduction, Meaning and Importance of Office Automation, Objectives of Office Mechanization, advantages & disadvantages, factors determining office mechanization. Kinds of office machines.

Budget: Budget- Annual, Revised and Estimated. Recurring and non- recurring heads of expenditure. **Audit:** Audit process- Vouching, Verification and Valuation (in brief). Consumables/ Stock register and Asset register. Procedure for disposal of records and assets.

Unit IV: **Banking facilities:** Types of accounts. Passbook and Cheque book. Other forms used in Banks. ATM and money transfer. NEFT/RTGS, Net Banking. BHIM Apps. **Abbreviations/Terms used in Offices**: Explanation of abbreviations/terms used in offices in day-today work.

Suggested Reading:

1. Office Management: R. S. N. Pillai & Bhagvati, S. Chand Publication
2. Office Organisation & Management: M. E. Tukaram Rao
3. Bhatia, R.C. Principles of office Management, Lotus press, New Delhi.
4. Terry, George R: office Management and Control.

PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD
TQ. & DIST. AURANGABAD

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Curriculum of B.COM. IST YEAR

SECOND SEMESTER

under Choice Based Credit & Grading System

[Effective from the Academic Year 2018-19 & onwards]

Semester & Credits	Languages	Core Course [24]	Ability Enhancement Compulsory Courses [AEC] [6]	Discipline Specific Elective [DSE] [6]
I Credit 28	1 English 2. S.L. (MAR/HIN/PALI/ URDU/ARABIC)	1 Financial Accounting – I 2 Business Mathematics & Statistics - I 3 Business and Industrial Economics	1.IT application in Business	**Elective Paper [Any One]** 1. Entrepreneurship Development – I 2. Office Management & Development – I.
II Credit 28	1 English 2. S.L. (MAR/HIN/PALI/ URDU/ARABIC)	1 Financial Accounting – II 2. Business Mathematics & Statistics - II 3. Business Organization & Management	1. Business Communication	**Elective Paper [Any One]** 1. Entrepreneurship Development – II 2. Office Management & Development – II.
III Credit 28	1 English 2. S.L. (MAR/HIN/PALI/ URDU/ARABIC)	1.Company Law –I 2. Corporate Account –I 3. Cost Account – I	1. GST Account – I	**Elective Paper [Any One]** 1.Banking **or** 2. Marketing Management **or** 3.Financial Management **or** 4.Indian Economy
IV Credit 28	1 English 2. S.L. (MAR/HIN/PALI/ URDU/ARABIC)	1.Company Law –II 2. Corporate Account –II 3. Cost Account – II	1. GST Account – II	**Elective Paper [Any One]** 1.Insurance **or** 2.Human Resource Management **or** 3.Import Export Procedure & Practice **or** 4. Business Environment
V Credit 24	----	1.Advance Financial Accounting – I 2. Management Account – I 3. Auditing 4. BRF – I	1. Tally – I	**Elective Paper [Any One]** 1. Supply Chain Management & Logistics **or** 2. Rural Development & Agricultural Businesses **or** 3. Travel & Tourism **or** 4. SME Management
VI Credit 24	-----	1.Advance Financial Accounting – II 2. Management Account – II 3. Direct Tax 4. BRF – II	1. Tally – II	**Elective Paper [Any One]** 1. E-Commerce **or** 2. Capital Market **or** 3. Project Management & Finance **or** 4. Advertising & Salesmanship
Total Credits 160	**No of credits : 32**	**No. of Credits : 80**	**No. of Credits : 24**	**No. of Credits : 24**

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

B.COM SECOND SEMESTER STRUCTURE. (2018-19)

Paper Number	Subject/ Title of the Paper	Course	Weekly		Credits		IA	UA	Total Marks	Duration of Theory Exam
			Th	Pr	Th	Pr				
I	English	Compulsory Language	4	-	4	-	20	80	100	3 Hrs
II	Second Language	Second Language	4	-	4	-	20	80	100	3 Hrs
III	Financial Accounting II	Core Discipline	4	-	4	-	20	80	100	3 Hrs
IV	Business Mathematics & Statistics II	Core Discipline	4	-	4	-	20	80	100	3 Hrs
V	Business Organization and Management	Core Discipline	4	-	4	-	20	80	100	3 Hrs
VI	Business communication	Ability Enhancement Compulsory	4	-	4	-	20	80	100	3 Hrs
VII	1. Entrepreneurship Development – II **or** 2.Office Management – II	Discipline Specific Elective [Any One]	4	-	4	-	20	80	100	3 Hrs
	Total		**28**	**-**	**28**	**-**	**140**	**560**	**700**	- -

B.Com IInd Semester Syllabus (CBCS)

Financial Accounting-II

Theory: 80
Practical: 20

Objective: The purpose of this course is to develop the skill among the students about Preparing an organization's accounts.

Unit-I **Accounting Principles and Accounting Standards (Theory)**
AS-1, AS-2, AS-9, AS-10, AS-17

Unit-II **Final Accounts of Non-trading Concerns (Numerical)**
Meaning of Non-trading concerns, features, Capital and Revenue Receipts and Expenditures, difference between Receipts and Payments Account, Income and Expenditure Account, Preparation of Final Accounts.

Unit-III **Branch Accounts (Numerical)**
Meaning of branch and branch account, objectives of branch account, Classification of branches, Accounting for Dependent Branches-Methods of accounting for branch accounting:
Debtors System-Meaning, cost price method and invoice price method, accounting entries in the books of head office and ledger accounts.
Stock and Debtors System-meaning, accounting entries in the books of head office and ledger accounts

Unit- IV **Departmental Accounts (Numerical)**
Meaning, Objectives, Advantages of Department Accounts, Accounting Procedure- Unitary method and Tabular or Columnar Method, Allocation of Expenses and Incomes, Inter-departmental Transfers, Preparation of Departmental Trading, Profit and Loss Account and Balance Sheet.

Unit-V **Consignment Accounting (Numerical)**
Meaning of Consignment Account, Distinction between consignment and sale, Valuation of inventories, goods invoiced above cost, normal loss, abnormal loss, Accounting entries in the books of the consignor and consignee, Ledger accounts- consignment account, Goods sent on consignment account, inventories on consignment account, inventory reserve account consignee's account, consignor's account.

Suggested Readings:

1. Advanced Accounts- MC Shukla, T.S. Grewal&S.C.Gupta
2. Financial Accounting- V.K. Goyal&RuchiGoyal
3. A New Approach to Accountancy- H.R. Kotalwar
4. Financial Accounting- A. Mukherjee&M. Hanif
5. An Introduction to Accountancy- Dr. S.N. Maheshwari& S.K. Maheshwari
6. Financial Accounting A Simplified Approach-Naseem Ahmed
7. Students Guide to Accounting Standards- D.S. Rawat&DeeptiMaheshwari
8. Financial Accounting- S.N. Patil& Ashok Patil

Practical: 20 Marks : (to be conducted by the department in each college as per convenience.)

1. Test- 05
2. Tutorial- 05
3. Seminar- 10

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B.Com IInd Semester Syllabus (CBCS)

Business Mathematics & Statistics-II

Theory: 80
Practical: 20

Objectives :

1). To provide knowledge and information about Statistical Applications.
2). To create skill and ability among students for using the Statistical Methods, Tools, Techniques by using I.T. devices.

1. Co-relations 15

-Meaning of co-relation, Definition of co-relation, Types of co-relation,- Methods of studying co-relation and probable errors, Co-relation co-efficient.

2. Regression 15

-Meaning of regression, Types of regression, linear regression, Methods of estimating regresston lines.

3. Index Numbers 15

-Meaning of Index number, Types of Index number, Uses of Index number, Methods and constructing of price indices.

4. Probability and Expected Value. 10

-Meaning and Nature of Probability, Definitions of probability, Applications of Probability-Addition & Multiplication, Law of Probability, Conditional probability.

5. Statistical Application with Computer (Only for knowledge & Practical application) 05

-Use of Excel, Knowledge of SPSS and other Statistical and Mathematical Tools and Softwares.

Note : Practicals to be conducted based on curriculum given in semester I and Semester II of Business Mathematics and Statistics by using Computers & other I.T. Devices. Can be included in 20 marks, Internal Work and Assignment.

Books Recommended

1. Elementary Statistical Methods: Dr. S.P. Gupta, Sultan Chand & Sons.
2. Fundamentals of Statistics: D.N. Elhance, et.al, Kitab Mahal.
3. Statistics (Theory, Methods & Application): Dr. D.C. Sancheti, V.K. Kapoor, Sultan Chand & Sons.
4. Fundamental of statistics – Dr. D.N. Elhance
5. Statistical Methods Dr. Sancheti and Kapoor
6. Statistical methods – Dr. SP Gupta
7. Problems in Statistics – Dr. Y.R. Mahajan
8. Essence of Business Mathematics – Dr. R.K. Rajput

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B.Com IInd Semester Syllabus (CBCS)
Business Organisation And Management

Theory: 80
Practical: 20

Objective: The course aims to provide basic knowledge to the students about the organisation and management of a business enterprise.

Contents

Unit 1: Foundation of Indian Business **Lectures: 12**

Manufacturing and Service Sectors; Small and Medium Enterprises; Problems and Government policy. India's experience of liberalization and globalization. Technological innovations and skill development. 'Make in India' Movement. Social responsibility and ethics

Emerging opportunities in business: Franchising, Outsourcing, and E-commerce.

Unit 2: Business Enterprises **Lectures: 12**

Forms of Business Organization: Sole Proprietorship, Joint Hindu Family Firm, Partnership firm, Joint Stock Company, Cooperative society; Limited Liability Partnership; Choice of Form of Organization. Government - Business Interface: Rationale and Forms of Public Enterprises. International Business, Multinational Corporations.

Unit 3: Management and Organization **Lectures: 12**

The Process of Management: Planning; Decision-making; Strategy Formulation.

Organizing: Basic Considerations; Departmentation – Functional, Project, Matrix and Network; Delegation and Decentralization of Authority; Groups and Teams.

Unit 4: Leadership, Motivation and Control **Lectures: 12**

Leadership: Concept and Styles; Trait and Situational Theory of Leadership.

Motivation: Concept and Importance; Maslow Need Hierarchy Theory; Herzberg Two Factors Theory. Control: Concept and Process.

Unit V: Functional Areas of Management **Lectures: 12**

Marketing Management: Marketing Concept; Marketing Mix; Product Life Cycle; Pricing Policies and Practices Financial Management: Concept and Objectives; Sources of Funds – Equity Shares, Debentures, Venture Capital and Lease Finance. Securities Market, Role of SEBI. Human Resource Management: Concept and Functions; Basic Dynamics of Employer – Employee Relations.

Suggested Readings:

1. Kaul, V.K., *Business Organisation and Management*, Pearson Education, New Delhi
2. Chhabra, T.N., *Business Organisation and Management*, Sun India Publications, New Delhi.
3. Gupta CB, *Modern Business Organisation*, Mayur Paperbacks, New Delhi
4. Koontz and Weihrich, *Essentials of Management*, McGraw Hill Education.
5. Basu, C. R., *Business Organization and Management*, McGraw Hill Education.
6. Jim, Barry, John Chandler, Heather Clark; *Organisation and Management*, Cengage Learning.
7. B.P. Singh and A.K.Singh, *Essentials of Management*, Excel Books
8. Buskirk, R.H., et al; *Concepts of Business: An Introduction to Business System*, Dryden Press, New York.
9. Burton Gene and Manab Thakur; Management Today: Principles and Practice; Tata McGraw Hill, New Delhi.
10. Griffin, *Management Principles and Application*, Cengage Learning

(Note: Latest Editions of the above books may be used.)

Practicals of 20 Marks (to be conducted by college as per their convenience and resources.)

B.Com IInd Semester Syllabus (CBCS)

Business Communication (IInd sem)

Unit 1 :

Nature of Communication: Process of communication, Types of Communication (Verbal & Non verbal) Importance of Communication, Different form of communication Barriers to communication causes, Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organisational Barriers.

Unit 2 :

Business Correspondence : Letter Writing, Presentation, Inviting quotations, Sending quotations, Placing orders, Inviting tenders, Sales letters, claim and adjustment letters and social correspondence, Memorandum, Inter-office memo, Notice, Agenda, Job application letter, preparing the Resume.

Unit 3 :

Report Writing : Business Reports Types of Characteristics, Importance, Elements of structure, Process of writing, Order of writing the final draft, check lists for reports.

Unit 4 :

Oral Presentation : Importance, Characteristics, Presentation Plan, PPT, Visual aids, Sales Presentation, Training presentation, Non-verbal aspects of communication.

Unit 5 : Modern forms of communicating fax, e-mail, video conference etc.

Suggested Readings:

1. Bovee, and Thill, *Business Communication Today, Pearson Education*
2. Lesikar, R.V. &Flatley, M.E. Kathryn Rentz; *Business Communication Making Connections in*
Digital World, 11th ed., McGraw Hill Education.
3. Shirley Taylor, *Communication for Business, Pearson Education*
4. Locker and Kaczmarek, *Business Communication: Building Critical Skills, TMH*
5. Leena Sen, *Communication Skills*, PHI Learning

Note: Latest edition of text books may be used

Practical to be conducted (Contents for 20 marks)

1 Printout to be submitted

2 Preparing format of letter, Business letter

3 Preparation of Meeting Report

4 Bold Copying Therasys, Synonymous, Formatting

5 PPT Presentation

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B.Com II Semester Syllabus (CBCS)

Entrepreneurship Development-II

Theory: 80
Practical: 20

Objectives :

1). To provide knowledge and information about Entrepreneurship Development.
2). To provide knowledge and create ability for setting up an enterprise within given Environment.

1.	**Entrepreneurship** -Evolution of the concept -Characteristics -Growth in India -Role of Entrepreneurship in Economic Development	05
2.	**Emerging Trends in Entrepreneurship Development.** -Women Entrepreneurship: Concept, Functions, Problems, Growth. -Rural Entrepreneurship: Meaning, Nature, Need & Importance, Problems -Traditional Pattern of Entrepreneurship in India	10
3.	**Entrepreneurship Development Programme** -Need for EDP -Objectives of EDP -Contents of EDP -Phases of EDP -Evaluation of EDP	15
4.	**Project Identification & Resource Management** -Meaning of Project -Project Identification -Project Selection -Resources of (Finance, Material, Market, Man power, Power, Land & Building) -Preparation of Project	15
5.	**Project Preparation** -Introduction about Project -Background about Project (Product/Service) -Brief information about Product, Marketing, Resources generation etc. -Requirements of Project: Required Resources, Budget, Plant, Machinery & Other related things (Based on fixed and working capital approach) -Processing, Duration required and expected outcome -Marketing, Services etc. (Project selection or Project Preparation should be based on such a project which is currently working in your environment and known to the students, Support factual information, data and documents.	15

Note : Practicals to be conducted based on curriculum given in semester I and Semester II of Entrepreneurship Development. Practical may include preparation of tender, Preparation of quotations, Comparative Statement, Purchase order, Insurance Proposals, Bank Proposal for loan, credit, overdraft, Report on interview of successful entrepreneur in local area.

Suggested Reading:

1 Entrepreneurship Development, S.S.Khanka, Sultan Chand & Co.Ltd.
2 Fundamentals of Entrepreneurship, G.S.Sudha, Ramesh Books Depot.
3 Entrepreneurship Development : E.Gordan & K.Natarajan,Himalaya Publishing House.
4 Entrepreneurship Development, Colombo Plan Staff College for Technician Edn.Manila, TaTa McGraw Hill.
5 Small Scale Industries & Entrepreneurship, Vasant Desai, Himalaya Publishing House.
6 Project Planning & Control:N.P.Agarwal & Dr.B.K.Mishra, Indus Valley Publication, New Delhi.

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B.Com IInd Semester Syllabus (CBCS)

Office Management-II

Theory: 80
Practical: 20

Objectives :

1). To provide knowledge and information about Office Management Practices.
2). To create skill and ability to operate office activities effectively(By using automation systems).

1.	**Modern Office and its Functions** -Introduction : Office -Meaning of Office -Work and activities of Office -Office functions and its Importance -Changing nature of Office activities -Current scenario and Practice	05
2.	**Office Systems and Procedures** -The concept of system, Meaning, Nature and definition -System analysis, Nature, Practice and Stages -Meaning of flow of work, Role of Manager in system and Procedural work	10
3.	**Office Services** -Meaning and Nature of office services, -Centralized Vs Decentralized Office Services, -Departmental work or categorization of work in office (Modern services and practices to be expected)	15
4.	**Record Management and Reporting** -Meaning and Nature of record, Record managing Practices, Filing, Indexing, Manual preparation, Record retentions, Safety Security and Disbursement Reporting: Meaning of reporting, Report Preparation, Report writing, Contents writing and Report submission/Presentation.	15
5.	**EDP Environment for Effective Office Management** -Need and requirement of EDP Environment, Availability of EDP based modern tools, techniques, devices, hardware, software and Human wares. -Knowledge about Computer, Hardware, Software and its application in day to day office work. -Knowledge about File creation, Folder Creation, Uploading, Downloading, Attachment, Merging, Conversion etc.	15

Note : Practicals to be conducted based on curriculum given in semester I and Semester II of Office Management.

Practicals :

-Preparation of Applications.
-Letter -Formal, Informal, Notice Preparation
-Meeting Agenda
-Meeting Minutes
-Report preparation.
-Preparation of tender, Preparation of quotations,-Comparative Statement, Purchase order, Insurance Proposals, Bank Proposal for loan, credit, Overdraft.
-Report on interview of successful entrepreneur in local area.
-Preparation of different format related to concerned office, Business, Industries
-Preparation of different types of vouchers.
-Formal letters to Government Tax authorities, etc.
-Intimation letters
-Inward & Outward Procedure.
-File mechanism –uploading, downloading, attachment etc.

Suggested Reading:

1. Bhatia, R.C.Principles of Office Management,Lotus Press, New Delhi.
2. Leffingwell and Robbinson: Text book of Office Management,Tata McGraw-Hill
3. Terry, George R: Office Management and Control.
4. Ghosh, Evam Aggarwal: Karyalaya Praband, Sultan Chand & Sons.
5. Duggal, B: Office Management and Commercial Correspondence, Kitab Mahal
6. R.K.Chopra & Ankita Chopra : Office Management, Himalaya Publications.
7. Chetan Srivastav " Information Technology",
8. Brien J. " Management Information System", Tata McGraw Hills, New Delhi
9. P.K.Taxali" PC Software made simple", Tata McGraw Hills, New Delhi
10. V.Rajaraman " Fundamentals of Computer", Prentice Hall of India, New Delhi
11. Sanders D.H. " Computers Today", Tata McGraw Hill
12. Denies Sheila S. " Microsoft Office Professional for Windows 95", BPB Publications
13. Amitai Etzioni : Modern Organization.
14. Betty J. : Development in Office Management
15. Brown L. : Effective Business Report Writing
16. Bunker L. : Fundamental of Office Methods and Form Desing.
17. Carl Heyel : Handbook of Office Administration
18. Gaum, Graves and Hoffman : Report Writing
19. Levis H.S. : Office Work and Automation
20. Terry George R.:Office Automation; Office System and Procedures

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PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD
TQ. & DIST. AURANGABAD

Master file

Circular file

DR. BABASAHEB AMBEDK[redacted]ATHWADA UNIVERSITY

CIRCULAR NO.SU/Commerce & Management/ III Sem./50/2019

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Commerce & Management, the Hon'ble Vice-Chancellor in his emergency powers under Section-12(7) of the Maharashtra Public Universities Act, 2016 has accepted the syllabi of **B.Com., BBA & BCA III Sem.** under Choice Based Credit and Grading System on behalf of the Academic Council to be applied from the Academic Year 2019-2020 and onwards. The said syllabi are uploaded on bamu.ac.in at University website.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO. SU/ COMMERCE/2018-19
25445-844
Date:- 31-05-2019.

Deputy Registrar,
Syllabus Section.

Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges, Dr. Babasaheb Ambedkar Marathwada University.

2] The Director, University Network & Information Centre, UNIC, with **a request to upload this Circular along with the said syllabi on University Website.**

Copy to :-

1] The Director, Board of Examination & Evaluation,
2] The Section Officer, [B.Com. Unit] Examination Branch,
3] The Programmer [Computer Unit-1] Examinations,
4] The Programmer [Computer Unit-2] Examinations,
5] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambekar Marathwada University.
6] The Public Relation Officer,
7] The Record Keeper.

Master file

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Curriculum of

Bachelor of Commerce

B.COM. IIND YEAR

THIRD SEMESTER

under Choice Based Credit & Grading System

[Effective from the Academic Year 2019-20 & onwards]

17/6/19 17/6/19 17/6/19

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Faculty of Commerce & Management

B.Com. Third Semester Structure (2019 – 20)

Paper Number	Subject/ Title of the Paper	Course	Weekly		Credits		IA	UA	Total Marks	Duration of Theory Exam
			Th	Pr	Th	Pr				
I	English	Compulsory Language	4	-	4	-	20	80	100	3 Hrs
II	Second Language	Second Language	4	-	4	-	20	80	100	3 Hrs
III	Corporate Account – I	Core Discipline	4	-	4	-	20	80	100	3 Hrs
IV	Cost Account – I	Core Discipline	4	-	4	-	20	80	100	3 Hrs
V	I.T. Application in Business – I	Core Discipline	2	2	2	2	50	50	100	2 Hrs
VI	GST Account – I	Ability Enhancement Compulsory	4	-	4	--	20	80	100	3 Hrs
VII	1. Banking **or** 2. Marketing Management or 3. Financial Management or 4. Indian Economy	Discipline Specific Elective [Any One]	4	-	4	-	20	80	100	3 Hrs
	Total		**26**	-	**26**	-	**140**	**560**	**700**	--

Master file

B.Com III rd Semester Syllabus (CBCS)
Corporate Accounting –I

Theory = 80
Sessional = 20

		No. of Lectures
Unit-I :	**Issue and forfeiture of shares, Re-issue of forfeited shares** Meaning of shares, Issue of shares-at par, at premium, at discount **(Theory),** Collection of share money Collection at lump sum **(Theory)** Collection in Installment Issue of share in consideration of assets etc. Procedure of Issue of shares, Prospectus, Application, Allotment, Pro-rata Allotment of shares, Forfeiture of shares, Reissue of shares, Profit on Re-issue, Journal Entries for Issue of shares, Balance sheet **(Numerical Problems)**	15
Unit-II :	**Redemption of Debentures** Types of Debentures, Methods of Redemption- Redemption in Installment, Redemption in lamp sum, Redemption by conversion, Redemption by purchase in open market, Sinking Fund. – **(Theory)** Finance for Redemption out of profit, out of fresh Issue Redemption in lump sum Issue at "Par" Redeemable at "Par" Issue at "Discount" Redeemable at "Par" Issue at "Premium" Redeemable at "Par"**(Numerical Problems)** Issue at "Par" Redeemable at "Premium" Issue at "Discount" Redeemable at "premium" Sinking fund method **(Numerical)**	10
Unit-III:	**Redemption of Preference shares** Types of Preference shares **(Theory)** Redemption out of fresh Issue of shares Redemption out of profits Journal Entries for Redemption and Balance sheet after Redemption: **(Numerical)**	10
Unit-IV:	**Final Accounts of Joint stock company.** Statement Form **(Numerical)**	15
Unit-V:	**Profit Prior to Incorporation (Theory and Numerical)**	10

Reference Books

1. Maheshwari S.N. : Corporate Accounting
2. Shukla M.C.& Grewal T.S. : Advanced Accounts
3. Mahurkar & Deshpande : Accountancy – I
4. Kolalwar H.R. : New Approach to Accountancy
5. Jain & Narang : Advanced Accountancy

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Master file

Cost Accounting – I

Theory – 80 Marks
Sessional – 20 Marks

		No. of Lectures
Unit – I	**Cost Accounting :** Meaning, Definition, Limitation, of financial Accounting, Development of Cost Accounting, Function, Objectives, Advantages, Disadvantages and limitations of cost accounting. Difference between Financial and Cost Accounting. **(Theory)**	**(10)**
Unit – II	**Elements of Cost :** Concept of Cost, Cost Units, Cost Centers, Cost Objects, Cost Drivers, Types of Cost, Classification of Cost – By Nature or Elements, By Function, By Variability, or Behaviour, By Controllability, By Normality, By Cost for Managerial Decision Making. **(Theory)**	**(08)**
Unit – III	**Material :** Concept, Objectives, Need, Essentials of Material Control, Purchase procedures, Function of purchase, department classification, and coding of material, fixation of levels of material, Economic Order Quantity, Material Handling Costs, Bin Cards, Stores Routines, Issue of Material, Issue Procedures, Methods of Pricing, Material Issue FIFO, LIFO, Simple Average, Weighted Average Method. **(Theory & Numerical)**	**(14)**
Unit – IV	**Labour :** Meaning, Definition, Recent Trends in Time Booking, Labour Control, Methods of Wage Payment, Time and Piece Rate, Incentives Scheme – Taylor's Differential Piece Rate System, Halsey Plan, Rowan Plan **(Theory & Numerical)**	**(14)**
Unit – V	**Overheads :** Definition, Direct and Indirect Costs, Importance of Overheads, Allocation, Apportionment and Absorption of Overhead, Methods of Distribution, Primary – Secondary distribution, repeated method, Machine Hour Rate, Under and Over absorption of overheads **(Numerical)**	**(14)**

Sessional Work : 20 Marks

1. One Test : 05 Marks
2. One Tutorial : 05 Marks
3. Students to collect proforma of Bin Card, Store Ledger, Time Card, Purchase Requisition, & Purchase Order. (fill them) : 10 Marks

Reference Books :

1. Practical Costing : Khanna, Pande and Ahuja
2. Cost Accounting : Bhatia HSM
3. Principles & Practices of Cost Accounting : N. K. Prasad
4. Cost Accounting (Methods & Problems) : B. K. Bhar

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13/6/17 17/6/2019

Master file

I.T. Application in Business – I

Theory = 50
Practical U/A = 50

		No. of Lectures
Unit – I	**C-LANGUAGE :** Introduction: Types of Languages – History of C language – Basic Structure – Creating – Compiling - Linking and Executing the C Program - Pre-processors in "C", Token- Constants- Keywords & Identifiers– Variables- Data types- declaration and assignment of variables – defining symbolic constants	**(10)**
Unit – II	**OPERATORS, EXPRESSIONS AND DECISION MAKING :** Introduction to Operator, Type of Operator, Arithmetic, Relational and Logical Operators, Assignment, Increment and Decrement of Operators – Conditional, bitwise and Special Operator, arithmetic expression and its evaluation – hierarchy of arithmetic operations – evaluations.	**(08)**
Unit – III	**CONTROL BRANCHING AND DECISION-MAKING IN C** - Decision Making in C, Introduction, if Statement, if-else Statement, Nested if Statement, if else if Ladder, switch case, GOTO statement.	**(14)**
Unit – IV	**LOOP** - Loop Introduction in C, while loop, do while Loop, for Loop with variations, Nested Loops, Loop interruption statement - break and continue.	**(14)**
Unit – V	**ARRAYS AND STRINGS:** - Arrays : Introduction - Defining an array - Initializing an array - One dimensional array – Two dimensional array - Dynamic array. Strings: Introduction - Declaring and initializing string variables - Reading and Writing strings - String handling functions.	**(14)**

Practical's U/A : 50 Marks

1. One Test : 10 Marks
2. Oral : 20 Marks
3. Practical's Files at least minimum : 20 Marks
   (10 Programs in the file)

Reference Books :

1. Programming in ANSCI C: Balaguruswamy, McGraw Hill.
2. Programming in C: Ashok Kamthane, Pearson.
3. The C Programming Language: B.W.Kernighan & D.M.Ritchie, PHI.
4. Let Us C: Y. Kanetkar, BPB.
5. Fundamental of C : Dr Prasad Madan, Dr. Gajanan Chaudhari, Miss Ujjwala Wagh, Chinmay Prakashan, Aurangabad

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17/6/19 17/6/19

Master file

GST ACCOUNT - I

Theory – 80 Marks
Sessional – 20 Marks

		No. of Lectures
Unit – I	**Introduction, Overview and Evolution of GST:** 1.1 Indirect tax structure in India; Difference between Direct & Indirect Taxes; 1.2 Introduction to Goods and Service Tax (GST) - Key Concepts 1.3 Important definitions, Meaning of terms used in GST, GST Council 1.4 Taxes under GST, Cess	10
Unit – II	**Registration under GST:** 2.1 Threshold for Registration 2.2 Regular Tax Payer; Composition Tax Payer; Casual Taxable Person; Non-Resident Taxable Person 2.3 Persons not liable for registration. 2.4 Compulsory registration in certain cases. 2.5 Procedure for registration. 2.6 Unique Identification Number 2.7 Registration Number Format	10
Unit – III	**Supply under GST and Valuation of Supply:** 3.1 Supply, Place of Supply, Intrastate & Interstate Supply. 3.2 Levy and Collection of IGST, CGST, SGST/UTGST 3.3 Time and Valuation of Supply	10
Unit – IV	**Input Tax Credit and Tax Payments under GST:** 4.1 Input tax credit process 4.2 Negative List for Input tax credit 4.3 Input Tax Credit Utilization and Input Tax Credit Reversal 5.5 Payment of Tax, Interest and Penalties.	10
Unit – V	**Documents, Accounts & Records, Returns under GST:** 5.1 Tax Invoice, Credit & Debit Notes. 5.2 Accounts and other records to be maintained. 5.3 Types of GST returns, particulars to be furnished, their due dates, late filing, late fee. 5.4 Annual Return and Audit under GST.	10
Unit – VI	**Others:** 6.1 Overview of Schedule Entries and Tariffs under GST 6.2 E-Way Bill Procedure. 6.3 Accounting Entries (Journal entries, Ledger Posting) of GST Transactions. ***Note : Practical's should be taken as per the requirement of the Units. College can take decision on their own.***	10 60

Reference Books :

1. Indirect Taxes : V. S. Datey – Taxman Publication
2. M Vat Subramanian Snow White Publication
3. Systematic Approach to Taxation – Dr. Girish Ahuja & Dr. Ravi Gupta

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Theory – 80 Marks
Sessional – 20 Marks

		No. of Lectures
Unit – I	**AN OVERVIEW of BANKING INDUSTRY :** Definition of Banks. Evolution of Banking system in India. Banking reforms from 1991-2000. Bank crises in India. Critical evaluation of Banking Industry in India.	**12**
Unit – II	**COMMERCIAL BANKING :** Meaning and Definition of commercial Bank, Functions of Commercial Bank, Services offered by Commercial Bank. Retail Banking- Meaning, Features, Significance of Retail Banking and overview of its Products. Corporate Banking – Meaning, Features, significance of Corporate Banking and Overview of Its products. Nationalization, Privatization of Banks, Merger of Banks.	**14**
Unit – III	**RESERVE BANK of INDIA :** Objectives, Organization, Functions, Instruments of Credit control. Monetary policy of Reserve Bank of India and Role in Economic Development of the Country.	**10**
Unit – IV	**MODERN BANKING IN INDIA :** Meaning and importance of E Banking, Electronic payment System. Teller Machines- Branch Teller Machines (BTM) and Automated Teller Machines (ATM) Tele Banking, Internet Banking, Debit and Credit cards, Real Time Gross Settlement (RTGS) and National Electronic Funds Transfer System (NEFT), Electronic payment System.	**14**
Unit – V	**FINANCIAL INCLUSION :** Need and Extent, Features and Procedures of Pradhan Mantri Jan Dhan Yojana and Pradhan Mantri Mudra Yojana, Features, Procedures and Significance of Stand Up India Scheme for Green Field.	**10**

Practical - 20 Marks
(to be Conducted by the Department in each College as per Convenience)

Reference Books :

1. Basu A.K. Fundamentals of Banking – Theory and Practice, A Mukherjee and co; Kolkata.
2. Shekhar and shekhar; Theory and Practice, Vikas Publiashing house New Delhi.
3. Sayers R.S. Modern Banking; Oxford University Press.
4. Reserve Bank of India; Functions and working of Reserve Bank of India Publications.
5. Vasant Desai; Banks and Institutional Management, Himalaya Publishing house Mumbai.
6. Kaptan S.S. and choubey N.S., E Indian Banking Era, Sarup and Sons, New Delhi.
7. Uppal and Jha Online Banking in India, Amol Publication Pvt. Ltd; New Delhi.

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17/6/19 17/6/19 17/6/19

Theory – 80 Marks
Sessional – 20 Marks

		No. of Lectures
Unit – 1	**Introduction to Marketing :** Definition, nature, scope and importance of marketing, traditional and modern concept of marketing, classification of markets, functions of marketing, Evolution of marketing.	**12**
Unit – II	**Strategic and Ethical Marketing :** Marketing strategy - definition & features, steps in strategic marketing planning process, SWOT analysis. Meaning and definition, scope, ethics in marketing, challenges facing marketers	**12**
Unit – III	**Marketing Mix and Channels of Distribution :** meaning and importance of marketing mix, elements of marketing mix – product mix, price mix, place and promotion mix. study of channels of distribution-and various, channels of distribution—factors to be considered in the selection of channels of distribution.	**12**
Unit – IV	**Marketing Management and Marketing Environment :** definition need & importance of marketing management, functions of marketing management, marketing environment - meaning of marketing environment, nature & scope of environment, micro & macro environment, emerging marketing opportunities in India, international marketing environment	**12**
Unit – V	**Agriculture Marketing :** Meaning, definition and scope, difference between agricultural product marketing and manufactured product marketing, factors affecting demand of agro products, importance of agriculture marketing	**12**

Practical - 20 Marks
(to be Conducted by the Department in each College as per Convenience)

Reference Books –

1) Marketing Management - Philip Kotler
2) Marketing Management - Theodore Levitt
3) Marketing Management - S. A. Sherlekar
4) Marketing Management - E. N. Sontakki
5) Fundamentals of Marketing – Willam Stauton
6) Marketing : Planning, Implementation & Control - V. S. Ramaswami& S. Namakumari

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17/6/19 17/6 17/6/2019

Theory – 80 Marks
Sessional – 20 Marks

		No. of Lectures
Unit – I	**INTRODUCTION :** Meaning of Business Finance, Definition, Nature and Scope of Financial Management, Importance & Objectives of Financial Management, Finance Function – Approaches & Aims, Function of Finance Manager.	**12**
Unit – II	**COST OF CAPITAL AND CAPITAL STRUCTURE :** Meaning, Concept, Significance of Cost of Capital,, Determination of Cost of Capital – Equity, Preference & Debentures, Retained earnings, Capitalization. Meaning of Capital Structure, Patterns of Capital Structure, Importance, Factors determining Capital Structure, Optimal Capital Structure, Theories of Capital Structure (Net Income, Net Operating Income, MM Hypothesis, Traditional Approach)	**12**
Unit – III	**LEVERAGES :** Meaning of leverage, Types of leverages-Financial, Operating and Combined leverage, Significance and limitations of Financial leverage, Distinction between Financial and Operating leverage.	**12**
Unit – IV	**WORKING CAPITAL MANAGEMENT :** Concept of Working Capital Management, Significance of working capital, Excess v/s Inadequate Working Capital, Factor determining working capital Needs, Operating Cycle, Working Capital Management – Cash, Inventory, & Receivable Management, Estimation of Working Capital requirement.	**12**
Unit – V	**DIVIDEND POLICY & DECISION MAKING :** Introduction, Significance, Factors of Determinants of Dividend Policy, Forms of Dividends, Types of Dividend Policies.	**12**

Sessional - 20 Marks
(to be Conducted by the Department in each College as per Convenience)

Reference Books :

1. Khan, M.Y & Jain, P.K.: Financial Management; Tata McGraw Hill, New Delhi,
2. Pandey, I. M.: Financial Management; Vikas Publishing House, New Delhi,
3. Chandra, Prasana: Financial Management; Tata McGraw Hill, New Delhi,
4. Brealey and Meyers: Principles of Corporate Finance: Tata McGraw Hill, New Delhi,
5. Vanhorne, James C: Financial Management and Policy; Prentice Hall of India, New Delhi,

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17/6/19

Theory – 80 Marks
Sessional – 20 Marks

		No. of Lectures
Unit – 1	**Introduction to Indian Economy :** Concept and Characteristics of Indian Economy, Types of Economies, Importance of Agriculture, Industry and Service Sector in Indian Economy. Need and Impact of Economic Reforms in India since 1991. Characteristics of India's Population, Present status of India in HDI rank, Need and Significance of Infrastructure, Impact of Demonetization & GST on Indian Economy.	12
Unit – II	**National Income :** Meaning and features of National Income, Concepts and Methods of measurement, Difficulties and Trends in National Income, Green GDP, India's place in world economy.	12
Unit – III	**Poverty and Unemployment :** ***Poverty:*** Concept and meaning, Poverty line, Absolute and Relative Poverty, Causes, Effects and Measurement of poverty, measures to eradicate Poverty. ***Unemployment:*** Concept, Types, Causes, Effects and government measures to reduce unemployment, Skill Development Schemes in India, Make in India.	12
Unit – IV	**Planning in India :** Meaning, Characteristics and Objectives of planning, Targets and Achievements of Five Year Plans.,12th Five Year Plan: Objectives, Achievements & Evaluation, NITI Aayog Nature Objectives and Functions.	12
Unit – V	**Budget :** Meaning, Features and Types of Budget, Structure of Budget- Revenue and Capital Budget, Concepts of Deficit, ~~Gender Budget~~, FRBM Act 2003 with amendments, Recent Trends in Budget.	12

Practical - 20 Marks
(to be Conducted by the Department in each College as per Convenience)

Reference Books –

1) Indian Economy: Datt, Ruddar & K.P.M. Sundhram, S. Chand and Company, New Delhi.
2) Indian Economy: Misra S.K. & Puri V.K. (Edition, 2018) Himalaya Publication House, Mumbai.
3) Indian Economy: Ramesh Singh, (Edition, 2018) McGraw Hill Education (India) Private Ltd, Chennai.
4) General Studies Indian Economy: (Latest Edition) Pratiyogita Darpan, Agra
5) भारतीय अर्थव्यवस्था: देसाई आणि भालेराव, (आवृती २०१७) , निराली प्रकाशन, पुणे.

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17/6/19 17/6/19 17/6/19

Master file

Circular file

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.SU/Commerce & Management/B.Com./06/2020

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Commerce & Management, the Hon'ble Vice-Chancellor in his emergency powers under section-12(7) of the Maharashtra Public Universities Act, 2016 has accepted the revised syllabi following subjects of B.Com. Degree, under Choice Based Credit and Grading System on behalf of the Academic Council to be applied from the Academic Year 2020-2021 and onwards.

1	I Sem.	Entreprenurship Decelopment (Elective Paper)
2	II Sem.	Entreprenurship Decelopment -II
3	III Sem.	Goods and Services tax Account (GST)-I
4	V Sem.	Business Regulatory Framework-I
5	V Sem.	Advance Financial Accounting-I

The said syllabi are also available on University website www.bamu.ac.in.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO. SU/COMMERCE/2020-21/17166-79
Date:- 18-09-2020.

Deputy Registrar,
Academic Section.
Syllabus unit.

Copy forwarded with compliments to :-

1] **The Principals, affiliated concerned Colleges, Dr. Babasaheb Ambedkar Marathwada University.**
2] The Director, University Network & Information Centre, UNIC, with a **request to upload this Circular along with the said syllabi on University Website.**

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2] **The Section Officer, [B.Com. Unit] Examination Branch,**
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5] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambekar Marathwada University.
6] The Public Relation Officer,
7] The Record Keeper.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Curriculum of

Bachelor of Commerce

B.COM. IIIRD YEAR

FIFTH SEMESTER

under Choice Based Credit & Grading System

[Effective from the Academic Year 2020-21 & onwards]

Master file

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.com Fifth Semester Structure (2020 – 2021)

Faculty of Commerce & Management

Paper Number	Subject / Title of the Paper	Course	Weekly		Credits		IA	UA	Total Marks	Duration of Theory Exam
			Th	Pr	Th	Pr				
I	Advanced Financial Accounting – I	Core Discipline	4	-	4	-	20	80	100	3 Hrs
II	Management Accounting – I	Core Discipline	4	-	4	-	20	80	100	3 Hrs
III	Auditing	Core Discipline	4	-	4	-	20	80	100	3 Hrs
IV	Business Regulatory Framework	Core Discipline	4	-	4	-	20	80	100	3 Hrs
V	Computerized Accounting – I	Ability Enhancement	2 -	- 2	2 -	- 2	--	50 50	100	2 Hrs
VI	1. Supply Chain Management & Logistics **or** 2. Rural Development & Agricultural Business **or** 3. Travel & Tourism **or** 4. MSME Management	Discipline Specific Elective [Any One]	4	-	4	-	20	80	100	3 Hrs
		Total	**22**	**02**	**22**	**02**	**100**	**500**	**600**	--

07/07/2020 07/07/2020

Prof. W.K. Sonwade (Dean, Chairman BOS) | Prof. Syed Rahmuddin (Chairman BOS) | Prof. Satyaprem Bhumre (Chairman BOS) | Dr. K.J. Salve (Chairman BOS)

Master file

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.com Fifth Semester Structure (2020 – 2021)

Faculty of Commerce & Management

Paper Number	Subject / Title of the Paper	Course	Weekly		Credits		IA	UA	Total Marks	Duration of Theory Exam
			Th	Pr	Th	Pr				
I	Advanced Financial Accounting – I	Core Discipline	4	-	4	-	20	80	100	3 Hrs
II	Management Accounting – I	Core Discipline	4	-	4	-	20	80	100	3 Hrs
III	Auditing	Core Discipline	4	-	4	-	20	80	100	3 Hrs
IV	Business Regulatory Framework	Core Discipline	4	-	4	-	20	80	100	3 Hrs
V	Computerized Accounting	Ability Enhancement	2	2	2	2	50	50	100	2 Hrs
VI	1. Supply Chain Management & Logistics **or** 2. Rural Development & Agricultural Business **or** 3. Travel & Tourism **or** 4. MSME Management	Discipline Specific Elective [Any One]	4	-	4	-	20	80	100	3 Hrs
	Total			-		-				--

07/07/2020 07/07/2020

Prof. V. K. Sarwade (Dean & Chairman) | Prof. Syed Afzaluddin (Chairman BOS) | Prof. Satyaprem Ghumre (Chairman BOS) | Dr Kishor Salve (Chairman BOS)

Master file

B.Com Vth Semester Syllabus (CBCS)
Advance Financial Accounting – I

Total Marks : 100
Theory: 80
IA / Sessional: 20

Objectives : After studying this subject students will be able to understand how to prepare Final Accounts of Banking and Insurance Companies and record the accounting transactions and events related to investment and departmental affairs

		No. of Lectures
Unit-I :	**Single Entry System : (Theory and Numeric)** Meaning – Features – Merits and Demerits – Difference between Single Entry System and Double Entry System - Ascertainment of profits Net Worth System and Conversion in Double Entry System.	08
Unit-II :	**Final Accounts of Banking Company : (Numeric)** Introduction of Banking Company, • Legal Provisions; Non Performing Assets (NPA) • Reserve Fund- Acceptances, Endorsements and other obligations - Bills for collection, Rebate on bills discounted and Provision for Bad and Doubtful debts. • Preparation of Final Accounts as per Schedule Stated, Form - A and Form- B (Vertical Form only) **OR** Horizontal Form T 'Form'	15
Unit-III:	**Final Account of Insurance Company (Numeric)** • Introduction, Meaning, Types of Insurance. Books maintained by General Insurance Companies, Revenue Accounts, Profit & Loss Accounts, Profit & Loss Appropriation Accounts and General Balance Sheet. • Claims- Re-Insurance transactions, Re-Insurance Premium transactions, Re-insurance Ceded and legal Provisions. • Preparation of Revenue Account, Profit & Loss Accounts, P&L Appropriation Accounts and Balance Sheet. (Fire and Marine Insurance Only)	15
Unit-IV:	**Investment Accounts : (Numeric)** • Introduction, Meaning & Definition of Investment, Types of investments. • Cum-Interest and Cum-Dividend Transactions of Purchases and sales. • Ex- Interest and Ex-Dividend Transactions of Purchases and Sales. • Entries for Interest Received, Brokerage, Commission on Purchases & Sales Transactions. • Valuation of Closing investment by FIFO Method and Market Price Method	15
Unit-V:	**Emerging Technological Trends in Accounting: (Theory)** • Cloud Accounting system : Meaning, Objectives, and Benefits • Forensic Accounting: Concept, Definition and Need. • Artificial Intelligence in Accounting and Auditing : Meaning, Use in Accounting, Role of Accountant using Artificial Intelligence.	07

Reference Books

1. Advanced Accounts - Shukla and Grewal. S. Chand & Co. Ltd., New Delhi
2. Advanced Accounts - Jain and Narang, Kalyani Publishers
3. A New Approach to Accountancy - Prof. H. R. Kotalwar, Discovery Publishers, Latur.
4. Advanced accountancy – R L Gupta and Radhaswamy, Sultan Chand and Sons, New Delhi.
5. Studies in Advanced Accountancy – Dr. S. N. Maheshwari, Sultan Chand and Sons, New Delhi.
6. Advanced Financial Accounting – Dr. P.T. Bhosale, Dr. Jitendra Ahirrao, Dr. Shivaji Madan, Chinmay Prakashan

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25/08/2022

Prof W.K. Sarwade (Dean) | Prof Syed Azharuddin (BOS chairman) | Prof Satyaprem Ghumre (BOS chairman) | Prof Kishor Salve (BOS chairman)

Master file

B.Com VIth Semester Syllabus (CBCS)

Management Accounting – I

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives: Management Accounting is an essential tool that enhances a manager's ability. This course is an introduction to the use of accounting information by managers for decision making, performance evaluation and control. The course objective is to increase understanding of the students about the concepts and techniques of management accounting. These issues will be addressed in the background of fast changing global market scenario.

		No. of Lectures
Unit I	**Introduction to Management Accounting:** Meaning, Definition, Features, Scope, Importance, and Functions of Management Account. Differences between Management Account, Financial Accounting and Cost Accounting. Advantages and Limitations of Management Account. ***(Theory only)***	**10**
Unit II	**Analysis and Interpretation of Financial Statements:** Meaning, Definition, Objectives, Scope of Financial Statements. Financial Statement Analysis, Tools of Financial Statement Analysis - Comparative Financial Statement, Common size Financial Statement, Trend Analysis. ***(Theory only)***	**08**
Unit III	**Ratio Analysis:** Meaning, Advantages, Limitations, and Classifications of Ratios. Gross Profit Ratio, Net Profit Ratio, Return on Capital Employed Ratio, Inventory Turnover Ratio, Debtors & Credit Turnover Ratio, Current Ratio, Liquid Ratio, Proprietary Ratio. ***(Numeric Only)***	**14**
Unit IV	**Fund Flow Statement:** Meaning, Uses, Limitations, Sources and uses of funds. Funds from operations, Statement showing changes in Working Capital, Funds Flow Statement *(Only in statement form)*, and Preparation of necessary ledger accounts. ***(Numeric Only)***	**14**
Unit V	**Cash Flow Statement:** Meaning, Uses, Limitations, Cash Flow Statement as per revised Accounting Standard – 3 in Statement Form, Preparation of necessary ledger accounts. ***(Numeric Only)***	**14**
	Sessional Work : 20 Marks 1. Test/ Tutorials = 10 Marks 2. Analysis of Financial Statements (Any 5 Statement from Newspapers)= 10 Marks	

Reference Books :

- Dr. S.N.Maheshwari – Management Accounting-Everest Publishing Home, New Delhi.-
- Dr. Rao A.P - Management Accounting - Everest Publications.
- Khan & Jain - Management Accounting Tata McGraw-Hill Education
- Dr. Jitendra Ahirrao - Management Accounting – Kailas Publications Aurangabad.
- Dr. V.R. Nagori & Dr. Sanjay Agrawal - Management Accounting – Chinmay Publications Aurangabad.

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07/07/2020 07/07/2020

Master file

B.Com V[th] Semester Syllabus (CBCS)
Auditing

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives: This course aims at imparting knowledge about the principles and methods of auditing and its applications.

		No. of Lectures
Unit 1	**Introduction**: Meaning and objectives of Auditing, Importance of Auditing, Types of Auditing, Principles of auditing, Advantages & Limitations of Auditing, Auditing Vs Accounting, Auditing Vs Investigation.	**10**
Unit II	**Audit Planning and Control Procedures** : Audit Programme, Meaning, Factors affecting audit, Sources of obtaining information, Discussion with client, Advantages and disadvantages of Audit programme, Instructions before commencing of audit, Audit Note Book, Working papers and Evidences.	**12**
Unit III	**Vouching and Verification** : Vouching- Meaning, Need and Importance of Vouching, Vouching of cash and credit transaction, Verification of assets and liabilities, Valuation of assets and liabilities, Audit Report- Elements of Audit report, Types of Audit Report- qualified and clean report.	**12**
Unit IV	**Company Auditor**: Eligibility and appointment of Auditor, Qualifications, Disqualifications, Rotation and Removal of Company Auditor, Powers and Duties of Company Auditor, Liabilities and Remuneration of Company Auditor	**14**
Unit V	**Recent Trends in Auditing**: Nature and Significance of Cost Audit, Tax Audit, Management Audit and Investigation, Changing role of Auditors in Computerized Accounting System, Forensic Audit, and Conceptual Understanding of Standard Auditing Practices.	**12**
	***Note:** Practical's should be taken as per the requirement of the Units. College can take decision on their own.*	

Reference Books:

1. Tandon B.N.: A Hand Book of Practical Auditing, S.Chand and Company, New Delhi
2. Ravindra Kumar: Auditing: Principles and Practice, Virendra Sharma, PHI learning Pvt. Ltd.New Delhi.
3. Sanjib Kumar Basu: Auditing and Assurance for CA IPCC, Pearson education, New Delhi.
4. N.K.Jha, CA Purva Jain:Auditing: Principles and Practice, Himalaya publishing Pvt. Ltd. Mumbai.

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07/07/2020 07/07/2020

Master file

B.Com Vth Semester Syllabus (CBCS)
Business Regulatory Framework – I

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives: To acquaint students with the basic Concepts, Terms, Provisions and Application of Business Laws.

		No. of Lectures
Unit I	**The Indian Contract Act 1872:** Meaning -Nature of Contract–Elements of valid contract- proposal - Acceptance-Free Consent - Consideration – Agreement declared as void- performance of Contract – Discharge of contract- Remedies for Breach of Contract.	12
Unit II	**Special Contract :- A)** Contract of Bailment and Pledge - Meaning, Duties and Rights of Bailor and Bailee. B) Contract of Agency - Definition- Creation - Termination - Rights and Duties of Agent and Principal.	12
Unit III	**Sale of Goods Act 1930 :-** Meaning - Formation of contract of sale - Sale and Agreement to Sell - Condition and Warranties - Transfer of Property in Goods - Performance of Contract of sale - Unpaid Seller.	12
Unit IV	**Consumer Protection Act 2019:** Definition of Consumerism, Consumer Movement in India, Legislative Measures for Consumer Protection in India, Consumer Protection Regulation 2020. District Consumer Disputes Redressal Commission (DCDRC), State Consumer Disputes Redressal Commission (SCDRC),National Consumer Disputes Redressal Commission (NCDRC). Consumer Protection (E-commerce) Rules 2020.	12
Unit V	**The Right to Information Act 2005 (with Amendment)** Nature – Scope– Right to information- Procedure of getting information – Public Authorities-Central information Commission- Constitution, Powers and Functions-State Information Commission-Constitution, Powers and Functions- Appeal & Penalties.	12
	Practical's: College can decide on their own regarding sessional work.	

Reference Books:

1. Corporate Law - Bharat Law House Pvt. Ltd. New Delhi.
2. Desai T. R. Indian Contract Act, S. C. Sarkar and sons Pvt. Ltd.-
3. Singh Avtar - The Principles of Mercantile Law. Estem book company, Lukhnow.
4. Kuchal M. C. - Business Law, Vikas Publishing House, New Delhi.
5. Kapoor N. D. - Business Law, Sultan Chand and Sons., New Delhi.
6. Chandha P. R. - Business Law, Galgotia, New Delhi.
7. Gulshan S. S. - Mercantile Law, Excel Books - New Delhi.
8. Bhulchandani S. - Business Law, Himalaya Publishing House.
9. Business Law and Corporate Laws by Tulsian - Tata Mcgraw Hill Publishing.

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25/08/2020

(Prof W. K. Sarwade) (Prof Syed Azeemuddin) (Prof S. Ghumre) (Prof K. G. Solve)

Master file

B.Com 4th Semester Syllabus (CBCS)
Computerized Accounting with GST – I

Total Marks	**100**
Theory	**50**
Practical	**50**

Objectives :

1. To benefit the students to work with well-known accounting software e.g. Tally ERP.9
2. To enable students to Process and record the business transactions and manage the accounts information using Software.
3. To equip students "know-how" of GST Functionality using e.g. Tally Software.
4. To train students with required skill for greater employability.

		No. of Lectures
Unit – I	**Introduction to Computerized Accounting :** Computerized Accounting- Need & Significance, Evolution from Manual to Computerized Accounting System, Benefits of Computerized Accounting. (e.g.Tally.ERP9), Evolution of Accounting Software , Different Versions of tally, Silent Features , Technological Advantages of Computerized Accounting.	**04**
Unit – II	**Fundamentals of Computerized Accounting (e.g.** Tally.ERP9.0) : Start-up & Quit, Screen Components, Setting up a new company, Select, Alter & Delete a company, **Maintaining Accounting Masters** – Groups, Ledgers , **Maintaining Inventory Masters**- Stock Group, Stock Item, Units of Measure, Stock Categories ,Godown ,**F11** Features , **F12** Configurations	**06**
Unit – III	**Vouchers : Accounting Vouchers** - Contra, Payment, Receipt, Journal, Purchase, Sales, Debit Note and Credit Note, **Inventory Vouchers**- Purchase Order, Sales Orders, Receipt Note& Delivery Note, Stock Journals , Rejection In, Rejection Out	**08**
Unit – IV	**Reports : Accounting Reports :** Trial Balance, Profit & Loss A/c, Balance Sheet, Day book, Cash / Bank Book, Ledger Report, Group Summary, Voucher Report , **Inventory Reports**- Stock Summary, Stock Item Summary, Stock Group Summary, Stock Category Report, Godown Report, Inventory Voucher Report, understanding report-wise F12 configurations	**04**
Unit – V	**GST Functionality :** Activating GST in Tally ,**Setting Up GST** -Company Level, Ledger Level or Inventory Level ,**Creating GST Masters**- C-GST, S-GST, I-GST, **Recording GST Transaction** –Purchase, Sales ,Printing GST Tax Invoice, GST Returns, Payment of GST	**08**
	List of Practical's :	
1	Company Creation, Alteration and Deletion in Computerized Accounting (e.g. Tally. ERP 9.0)	
2	Backup & Restore of Company	
3	Create, Display, Alter and Delete Accounting Groups	
4	Create, Display, Alter and Delete Ledger	
5	Recording Bank Transactions using Contra voucher	
6	Recording Payment voucher	
7	Recording Receipt voucher	
8	Recording Cash Purchase transaction (Accounts Only)	
9	Recording Credit Purchase transaction (Accounts Only)	

10	Recording Cash Sales transaction (Accounts Only)	
11	Recording Credit Sales transaction (Accounts Only)	
12	Recording Journal voucher for Asset Purchase	
13	Recording Journal voucher for Consumable Purchase	
14	Recording Purchase Order and Receipt Note	
15	Recording Sales Order and Delivery Note	
16	Creating GST Ledgers (S-GST , C-GST and I-GST)	
17	Recording GST Purchase & Sales Invoice (with single rate only)	
18	Display Accounting Reports (Trial Balance, P& L A/c, Balance Sheet, Cash/Bank Book etc.)	
19	Display Inventory Reports in Tally (Stock Register, Order reports etc.)	
20	GST Reports	
	Practical's U/A : 50 Marks 1. One Test : 10 Marks 2. Oral : 20 Marks 3. Practical's Files at least minimum 20 Practical's : 20 Marks	

Reference Books :

1. Financial Accounting on Computers using Tally , Namrata Agarwal,
2. Tally.ERP 9 Made Simple Basic Financial Accounting,Ashok K Nadhani
3. Tally ERP 9, Shraddha Singh and NavneetMehra
4. Tally 9, Vishnu Priya.
5. A Complete Self Learning Manual on Tally.ERP 9, Ajay O. Maheshwari.
6. Information Technology and Tally, Arvind Deshpande

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07/07/2020

B.Com Vth Semester Syllabus (CBCS)
Supply Chain Management & Logistics (Elective)

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives:

1) To provide basic input of Supply Chain Management & Logistic Practices.
2) To create awareness and Entrepreneurial Simulation for Career Building.

		No. of Lectures
Unit 1	**Supply Chain Management:** Introduction, Definition of the Supply Chain Management. Functions and Contribution of Supply Chain Management. Concept of Value Chain and creative Value. Supply Chain effectiveness and Relationship with venders, Suppliers Relationship Management (SRM)	**12**
Unit II	**Concept of Logistics :** Introduction, Objectives, Types of Logistics, Concept of Logistics Management. Evaluation of Logistics. Roll of Logistics in Economy. Difference between Logistics and Supply Chain Management. Advantages of Logistics. Logistics Mix.	**12**
Unit III	**Customer Services :** Key Elements of Logistics. Introduction, objectives, Concept of Customer Services. Different types of Customer Services. Value Added Logistics Service. Customer relationship Management and Supply Chain Management.	**12**
Unit IV	**Logistics Outsourcing:** Introduction, concept of Logistics Outsourcing. Benefit of Logistics Outsourcing. Issues in Logistics Outsourcing. Third party logistics, Fourth Party Logistics. Selection of Logistics Services Providers. Logistics Service Contracts.	**12**
Unit V	**Components of Supply Chain & Logistics:** Inventory Management and its role in the Supply chain management. Material handling & its role in supply chain management. Material Storage System. Warehousing. Transportation. Logistics information system & its application in logistics & supply chain management. E-commerce and logistics. SCM Challenges in Post Covid-19 Era.	**12**
	Practical - 20 Marks To be Conducted by the Department in each College as per Convenience.	

Reference Books –

1. Logistics & Supply Chain Management: Martin Christopher, Published by Pearson UK
2. Text Book of Logistics and Supply Chain Management.
3. Essentials of Supply Chain Management: Michal H.Hugos Published by John Wiley & Son inc Hoboken New Jersey.
4. Purchase and Material Management. P. Gopal Krishna published by Tata McGrawhill Publishing co.ltd, New Delhi.

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B.Com Vth Semester Syllabus (CBCS)
Rural Development and Agricultural Business (Elective)

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives: This course aims at developing the understanding of students regarding the basic theoretical concepts of rural development and agribusiness for future entrepreneurial venture.

		No. of Lectures
Unit I	**Introduction to Rural Development :** Meaning and Definition of Rural Development Scope of Rural Development, Significance of Rural Development in Indian Context. Causes of Rural Backwardness. Determinants of Rural Development in India.	**12**
Unit II	**Rural Poverty and Rural Unemployment :** Meaning and Definition of Poverty, Causes of Rural Poverty, Remedies of Eradication of Rural Poverty, Meaning and Definition of Unemployment, Types of Unemployment in Rural India, Food Program during COVID-19 Pandemic.	**12**
Unit III	**Rural Development Programmes in India :** Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Gram Sadak Yojana (PMGSY), Pradhan Mantri Aawas Yojana (Gramin), Deendayal Antayodaya Yojana - National Rural Livelihood Mission (DAY-NLRM), Model Village Concept - Saansad Aadarsh Gram Yojana (SAGY). Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), Training of Rural Youth for Self Employment (TRYSEM).	**12**
Unit IV	**Agribusiness :** Meaning of Agribusiness, Importance of Agribusiness, Scope for Agribusiness in India, Major Challenges in Development of Agribusiness Sector in India Impact of globalization on Agribusiness Sector in India	**12**
Unit V	**Agricultural Marketing** : Meaning of Agricultural Marketing, Scope of Agricultural, Marketing, Importance of Agricultural Marketing, Difference between Marketing of Agricultural Goods and Manufactured Goods, Problems of Agricultural Marketing and Measures to Solve Them.	**12**
	Sessional - 20 Marks To be Conducted by the Department in each College as per Convenience.	

Reference Books :

i. Katar Singh (1986). Rural Development, Principles, Polices and Management, Sage Publication, New Delhi.
ii. Vasant Desai (2012). Rural Development in India, Himalaya Publishing House, Mumbai.
iii. Lalitha (2004). Rural Development in India: Emerging Issues and Trends, Dominant Publishers, Delhi.
iv. Vinayak Reddy and Yadagira Charyulu (2009), Rural Development in India: Policies and Initiatives, New Century Publications, New Delhi.
v. G. L Meena, S. S Burark, D. C Pant, Rajesh Sharma (2017). Agribusiness Management: Theory and Practices.

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07/07/2022 07/07/2022

B.Com Vth Semester Syllabus (CBCS)
Travel & Tourism (Elective)

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives: To Familiarize the Students with basic concepts and the impact of Tourism.

		No. of Lectures
Unit I	**Introduction to Tourism :** Definition- Nature- Importance- and Types of Tourism. Characteristics of Tourism; Domestic and International Tourism; Origin and growth of tourism; Famous Travelers, War Tourism, Development of tourism in India, Tourist Information offices.	12
Unit II	**Components of Tourism:** Major and Minor Components of Tourism: Attraction- different types; Accommodation- different types; Accessibility- different types; Amenities; Activities; Ancillary components; Types of Travel: Leisure, Cultural Tourism, VFR, Corporate, Incentive, Wildlife, Adventure, Pilgrimage, Education, Ecotourism, Study and analysis, International – Domestic – Regional Tours , Natural Tourism Resources and Manmade Tourism Resources	12
Unit III	**Transport System Development** – Surface Transport, Water Transport, Air Transport, Emergence of Jet, High Speed Trains, Luxury Coaches, Car Rental, and Tourism Train – Mass Tourism.	12
Unit IV	**Consumer Behavior:** Tourism Motivation, Tourist Behavior, Motivating Masses to Undertake Tourism Activities, Destination Exploration, Promoting Tourism from Grass Root Level at Schools, Modern Tourism and Motivation.	12
Unit V	**Role and Impact of Tourism :** Tourism in India – role of tourism in growth and development of Indian economy, current scenario: Economic Impact of Tourism, Tourism Multiplier Concept, Environmental Impact of Tourism, Environment Impact Assessment, Socio- Cultural Impact of Tourism, Need for Innovative Tourism Products in Post COVID-19 Era.	12
	Practical - 20 Marks To be Conducted by the Department in each College as per Convenience	

Reference Books –

1. Bhatia, A.K. (2002), *Tourism Development, Principles and practices,* New Delhi, Sterling
2. Publishers (P) ltd.
3. Charles R Goeldner, JR Brent Ritchie: (2003) *Tourism Principles, Practice and Philosophies,*
4. John Wiley & Sons, Inc, Hoboken, New Jersey.
5. Chris cooper, john Fletcher, alanfyall; *Tourism principles and practice* (1998) Pearson
6. Education limited, Edinburg gate, Harlow, England
7. Gill, S.P.(2002), *Dynamics of Tourism,* New Delhi, Anmol Publications.

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07/07/2020 07/07/2020

B.Com Vth Semester Syllabus (CBCS)
MSME Management (Elective)

Total Marks	**100**
Theory	**80**
Sessional	**20**

Objectives:

- To acquaint the students about Role, Setup, Working & Assistance through Micro, Small and Medium Enterprises in India.
- To equip the students with necessary management skills for effective management of MSMEs.

		No. of Lectures
Unit 1	**MSME ENVIRONMENT IN INDIA :** Definition of MSMEs, Characteristics, Importance, Contribution in economic development of India, Growth of MSMEs in India, Challenges faced by MSMEs in India	**12**
Unit II	**Setting up of MSMEs :** Business Idea generation, Selection of idea, Feasibility analysis, Project Report, Acquisition of resources, Registration of MSME (Udyog Aadhar Number), Turn-Key business- Concept, features, advantages, disadvantages, Franchise Business- Concept, features, advantages, disadvantages, MSME Clusters: Concept, importance, benefits.	**12**
Unit III	**Financial Management of MSMEs :** Financial Management: Meaning, nature, importance, Fixed & Working capital, Sources of finance : Term Loans- Bank Overdraft- Cash-Credit- Microfinance, Venture Capital: Concept, Features, Types, Limitations	**12**
Unit IV	**Marketing & HR Management in MSMEs :** Concept of Marketing management, Market segmentation, Marketing Mix, Rural marketing, Services marketing, Digital marketing: Concept & Nature. HRM: Concept of HR Management, need of HRM in MSMEs, Functions of HRM	**12**
Unit V	**Institutional Assistance for MSMEs:** Introduction, Need, Central level: NIESBUD, SIDBI, SIDO, KVIC, EDII, State Level: MSME-DI, MSFC, DIC, MIDC, Regional Level: MAGIC, Bajaj Incubation Centre, CMIA, MASSIA, Atmanirbhar Bharat and Assistance to MSME's .	**12**
	(20 marks) **1. Project/ Seminar on any one unit: 10 marks** **2. Test /Tutorials 10 marks**	

Reference Books –

1. Business, Entrepreneurship and Management- V.S.P.Rao, Vikas Publishing, 2014
2. Entrepreneurship & Small Business Management- M.B.Shukla, Kitab Mahal Publications
3. Entrepreneurship Development: S.S.Khanka, S.Chand Publications
4. Entrepreneurship Management: Vasant Desai, Himalaya Publications, 2011
5. Entrepreneurship & New Venture Creation, A.V.Sahay et.al , Excel Books, 2008
6. Entrepreneurship development & Small Business, Poornima, Pearson India

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PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD
TQ. & DIST. AURANGABAD

PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD

8-30th May, 2015 AC after Circulars from Circular No.147 & onwards - 1 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Arts/B.A.III Yr. Syll./1/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Arts the Academic Council at its meeting held on 30-05-2015 has accepted the **Revised Syllabi under the Faculty of Arts as under** :-

Sr. No.	Name of the Subject	Semester
[1]	Marathi	V & VI
[2]	Hindi	V & VI
[3]	English	V & VI
[4]	Urdu & Arabic	V & VI
[5]	Pali and Buddhism	V & VI
[6]	Sanskrit	V & VI
[7]	Islamic Studies	V & VI

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/COMM./
2015/2605-3004
Date:- 15-06-2015.

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Director,
Board of College and
University Development.

Copy forwarded with compliments to:-

1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter, Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.A. Unit],
4] The Programmer [Computer Unit-1] Examinations,
5] The Programmer [Computer Unit-2] Examinations,
6] The Record Keeper.

8*/-150615/-

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD

SYLLABUS

OF

OPTIONAL ENGLISH COURSE (SUBSIDIARY AND MAIN)

FOR

B.A. THIRD YEAR

SEMESTER FIVE AND SIX

(EFFECTIVE FROM JUNE 2015 AND ONWARDS)

OUTLINE OF B.A. THIRD YEAR OPTIONAL ENGLISH COURSE

SEMESTER FIVE

Paper No.	Paper Title	Paper Code	Paper Type
IX	Twentieth Century English Literature	OPE-5	Subsidiary
X	Introduction to Literary Criticism and Terms	OPE-6	Subsidiary
XI(A) XI(B)	American Literature *OR* Indian Writing in English	OPE-7	Main
XII	Project Work on History of English Literature (from Renascence Age to the Age of T.S. Eliot)	OPE-8	Main

SEMESTER SIX

Paper No.	Paper Title	Paper Code	Paper Type
XIII	Twentieth Century English Literature	OPE-5	Subsidiary
XIV	Introduction to Literary Criticism and Terms	OPE-6	Subsidiary
XV(A) XV(B)	American Literature *OR* Indian Writing in English	OPE-7	Main
XVI	Project Work on History of English Literature (from Renascence Age to the Age of T.S. Eliot)	OPE-8	Main

Ltd.New Delhi:2011.

SUGGESTED COMPLIMENTARY READING:

Longman and Andrew. *An Introduction to Literary Criticism.* Doaba Book House. Delhi: ---.

Chakrabarti, Piyas. *Anthem Dictionary of Literary Terms and Theory.* Anthem Press. Delhi: 2006.

Peck, John and Coyle Martin. *Literary Terms and Criticism.* Third Edition. Palgrave. China: 2002.

PAPER NO. XI(A): AMERICAN LITERATURE (MAIN)

UNIT ONE: POETRY

TEXT: EMILY DICKINSON'S POEMS:

i) ***THERE CAME A WIND LIKE A BUGLE***

ii) ***APPARENTLY WITH NO SURPRISE***

iii) ***THEY SAY THAT "TIME ASSUAGES"***

iv) ***"HOPE" IS THE THING WITH FEATHERS***

v) ***THE HEART ASKS PLEASURE FIRST***

UNIT TWO: DRAMA

TEXT: EUGENE O'NEILL'S PLAY: ***THE HAIRY APE*** (1921)

UNIT THREE: FICTION

TEXT: MARK TWAINS'S FITION: ***THE ADVENTURES OF HUCKLEBERRY FINN*** (1884)

PRESCRIBED TEXT BOOKS:

Oliver, Egbert S.Edt.*American Literature: 1890-1965: An Anthology.* Eurasia Publication House (Pvt.) Ltd. New Delhi: 1994.

O'Neill, Eugene. *The Hairy Ape: A Comedy of Ancient and Modern Life.* B.I. Publications Ltd. Bombay: 1990.

Twain, Mark. *The Adventures of Huckleberry Finn.* USB Publisher' Distributors Ltd. New Delhi: 1992.

SUGGESTED CRITICAL READING:

Cunliffe, Marcus. *The Literature of the United States.*4 Edition. Penguin Books. Englan:1991.

Gray, Richard. *A History of American Literature.* Blackwell Publishing. USA: 2004.

Gupta, Monika. *The Plays of Eugene O'Neill: A Critical Study.* Atlantic Publishers and Distributors. New Delhi:2001.

Agrawal, R.K. *The Poetry of Emily Dickinson: Major Themes and Paradoxical Vision.* Radha Publication. New Delhi: 1993.

Kar, P.C, Edt. *Mark Twain: An Anthology.* Pencraft International. Delhi: 1992.

Mohan, T.M.J. Indra. "O'Neill's *The Hairy Ape* as a Reflection of Contemporary Society". *Studies in Literature in English.* Vol.X. Mohit K. Ray, Edt. Atlantic Publishers and Distributors. New Delhi: 2005.

Patil, Mallikarjun. "*The Hairy Ape*: A Critique of American Capitlism". *Studies in Literature in English.* Vol.XV. Mohit K. Ray, Edt. Atlantic Publishers and Distributors. New Delhi: 2009.

Rao, S. Prakash. "Mark Twain: *The Adventure of Huckleberry Finn*". *Current Perspective on American Literature.* Atlantic Publishers and Distributors. New Delhi: 1995.

Patil, Mallikarjun. *Studies in American Literature.* Atlantic Publishers and Distributors. New Delhi: 2009. (for *Huck Finn, The Hairy Ape*)

OR

PAPER NO.XI (B): INDIAN WRITING IN ENGLISH (MAIN)

UNIT ONE: POETRY

TEXT: NISSIM EZEKIEL'S POEMS:

i)**VERY INDIAN POEM IN INDIAN ENGLISH**

ii) **NIGHT OF THE SCORPION**

UNIT TWO: DRAMA:

TEXT: VIJA TENDULKAR'S PLAY: ***SILENCE! THE COURT IS IN SESSION*** (1978)

UNIT THREE: FICTION

TEXT: RAJA RAO'S FICTION: ***KANTHPURA*** (1938)

PRESCRIBED TEXT BOOKS:

Peeradina, Saleem, Edt. *Contemporary Indian Poetry in English: An Assessment and Selection.* Macmillan India Ltd. New Delhi: 2008.

Tendulkar, Vijay. *Silence! The Court is in Session.*Trns. by Priya Adharkar. OUP. Calcutta: 1978.

Rao, Raja. *Kanthapura.*Orient Paperbacks.Delhi: 1971.

SUGGESTED CRITICAL READING:

Sing, K.K. *Indian English Poetry After Independence.* Book Enclave. Jaipur: 2012.

Gopal, N.R. and Sachar, Suman. *Indian English Poetry and Fiction: A Critical Evaluation.*Atlantic Publishers and Distributors. Delhi: 2000.

Dwivedi, Suresh C, Edt. *Perspective on Nissim Ezekiel.* Kitab Mahal. New Delhi: 1989.

Raghu, A. *The Poetry of Nissim Ezekiel.* Atlantic Publishers and Distributors. Delhi: 2002.

Narayan, Shyamala A. *Raja Rao: Man and His Work.* Sterling Publishers Pvt. Ltd. New Delhi: 1988.

Dayal, P. *Raja Rao: A Study of His Novels.* Atlantic Publishers and Distributors. New Delhi: 1991.

Dey, Esha. *The Novels of Raja Rao: The Theme of Quest.* Prestige. New Delhi: 1972.

PAPER NO.XII: PROJECT WORK ON HISTORY OF ENGLISH LITERATURE (**MAIN**) (from Renascence Age to the Age of T.S. Eliot)

The Project Work is to be done by the students themselves seeking guidance from the head or, the concerned teacher to complete it. It shall be **written** by the students on the papers provided by the

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Syllabus of

B.A. III YEAR

Sociology

Semester–V & VI

[Effective from 2015-16 & onwards]

24/4/2015
chairman - BOS - Sociology

BA TY

S-30th May, 2015 AC after Circulars from Circular No.1 & onwards - 3 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Social Sci./B.A.III Yr. Syll./3/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Social Sciences the Academic Council at its meeting held on 30-05-2015 has accepted the **revised syllabi as mentioned against their names under the Faculty of Social Sciences as under** :-

Sr. No.	Name of the Subject	Semester
[1]	History	V & VI
[2]	Economics	V & VI
[3]	Psychology	V & VI
[4]	Geography	V & VI
[5]	Sociology	V & VI
[6]	Home Science	V & VI
[7]	Political Science	V & VI
[8]	Public Administration	V & VI
[9]	Social Work	V & VI
[10]	Philosophy	V & VI
[11]	Military Science	V & VI
[12]	Library & Information Science	I to VI Progressively
[13]	B.A. Travel and Tourism Management [Optional]	I to VI Progressively
[14]	Thoughts of Mahatma Phule & Dr. Ambedkar	V & VI effective from 2016-2017 & onwards

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SOCIAL SCI./
2015/3310-709

Date:- 16-06-2015.

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Director,
Board of College and
University Development.

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B.A. Third Year -Sociology

Semester V

Paper IX - Sociological Traditions
Paper X - Introduction to Research Methodology
Paper XI - Social Problems in India

OR

Urban Sociology

Paper XII Practical

Paper X - Introduction to Research Methodology

Objectives

- This course is designed to introduce Research Methodology to undergraduate students for better understanding of application of social sciences in general and Sociology in particular.
- To provide and equip the students with the procedures, tools and techniques of social research

Course Outline

1. **Basic Concepts in Research Methodology**
   (a) Meaning of Research
   (b) Scope and importance of Social Research
   (c) Theory, Facts, Objectivity

2. **Types of Research**
   (a) Pure and applied research
   (b) Qualitative and Quantitative Research
   (c) Descriptive Research and Exploratory Research

3. **Scientific Research Process**
   (a) Formulation of Problem
   (b) Hypothesis
   (c) Sampling and Data Collection
   (d) Data analysis and Statement

Books Recommended:

1. Goode and Hatt (1952) Methods in Social Research, McGraw Hill Book company, New York
2. P.V. Young and Calvin F. Schmid (1982) scientific social survey and research prentice hall of India Private Ltd. New.
3. Bryman Alan (1988) Quality an quantity in Social Research. London Unwin Hyman Pub
4. Jayram N (1989) Sociology: Methods and Theory, Madras Macmillan
5. Kothari C R (1989) Research Methodology, Methods and Techniques, Banglore Wilev Eastern
6. Chawla and Sodhi (2013) Reserch Methodology Concepts and Cases' Vikas Publishing House New Delhi
7. Nicholas Walliiman 'Your Reserch Project Designing and Planning Your Work' Sage Publications
8. Bridget Somekh and Cathy Lewin (2012) 'Theory and Methods in Social Research' Sage Publications

OR

Paper XI Urban Sociology

Objectives

- Urban Sociology is important branch of Sociology which indulge in Urban features, studies and urban theories this course is designed to provide information to student about urban sociology and to furnish the basic elements of the subject and to draw attention of the students towards increasing urbanization

Course Outline:

1. Introduction

(a) Nature and Scope of urban Sociology
(b) Importance of Urban Sociology
(c) Concepts- Urban Locality, Urbanization, suburb, Metro Cities, Heterogeneity

2. Process of Urban Development

(a) Urban Revolution
(b) Medieval City
(c) Industrial Urban Development

3. Urban Sociological Theories

(a) Theory Concentric Zone- Burges
(b) Mechanical and Organic Solidarity- Durkheim
(c) Metropolis and Mental life – George Simmel
(d) Robert Louise wirth – 'Urbanism -As a way of life'

Books Recommended:

1. Rao M.S.A. (1975) Urban Sociology in India, Orient Long men New Delhi
2. N Jaypalan (2002) Urban Sociology, Atlantic Publishers and Distributors n New Delhi
3. Giriraj Gupta(1983) Urban India. Vikas Publishing House, New Delhi
4. Ravinder Singh (2003) Urbanization in Indian ; Sociological contributions, Sage Publications New Delhi

Elective :- XV

Sociology BATY 2015

Paper XV - Social Disorganization in Contemporary India

- Objective: With rapid industrialization and modernization Indian society is witnessing drastic changes, with this transformation Indian society also witnessing few negative changes in social institutions. The course is designed to elaborate on such changes and to know causes and impact of social disorganization.

Course Outline

1. **Problem of Disorganization**
   (a) Concept and nature Social Disorganization
   (b) Causes of social disorganization; [population heterogeneity , Lack of Mobility, cynicism, underdevelopment, changing values and culture]
2. **Violence and social disorder**
   (a) Violence against women
   (b) Terrorism in India
   (c) Problem of Naxalism in India
3. **Regionalism**
   (a) Regionalism (concept) , Factors of Regionalism (Geographical, Historical, Social and Political)
   (b) Regionalism in India (causes and consequences)
   (c) Analysis of regional imbalance: special reference to Marathwada and Vidharbha

Books Recommended

1. Sarkar Sumit, Modern India 1885-1947, Mac Millan India Limited
2. Vasant Desai (1991) Fundamentals of Rural Development , Himalaya Publishing House, Bombay
3. Indian Rural Economics : S. P. Jain, Vikas Publication
4. All current and relevant material including the official information of Govt of India and Govt of Maharashtra
5. Current Statistics reports of Government.

Paper XIII – Sociological Theories

Objectives:

- This course is designed to understand basic theoretical approaches and develop their sociological thinking while knowing theoretical contribution of prominent sociologists of their time.

Course Outline:

1. **Functionalism**
   - (a) Talcott Parsons- Theory of Social Action, Pre-requisites of Social System
   - (b) Robert Merton- Role Set, Reference Group
2. **Conflict Theory**
   - (a) Lewis Coser- Functions of Social Conflict, Violence
   - (d) Ralf Dahrendorf- Class conflict in industrial society, Power and Authority
3. **Symbolic Interaction**
   - (c) C.S. Cooley – Looking Glass Self, Primary Group
   - (d) G.H. Mead- Self, Self Consciousness, Functions of self

Books Recommended:

1. Tim Delaney (2008)- contemporary social theory- Investigation and application Pearson Education , New Del hi
2. Craib Ian (1992) Modern social theory: from parsons to Habermas , Harvester Press , London
3. Turner John (1995) The Structure of Sociological theory, Rawat Publication, Jaipur
4. Fletcher Ronald (1994) The Making of Sociology , Rawat Publication, jaipur
5. Ashley ' Classical Statement' , Pearson Education , New Delhi

B.A. III Year (Semester V & VI)

Paper No.:------ Project work

For All Students offering Main subject (With and without Practical)

Project Report 80 marks, presentation 20 marks Total- 100

Project evaluation will be done by external and internal examiners at the end of VIth semester Examination. Evaluation of project work and presentation examination will be done in the presence of external examiner appointed by university authority.

32 (5) committee of concerned subjects will appoint the external examiners for evaluation and presentation of project work. Schedule of project work of examination will be in the month of Feb. (at the end of VIth semester).

Rs. 10/- per candidate per examiner will be the remuneration along with T.A. D.A./ Local conveyance Allowance will be paid by University.

Passing criteria will be 40 marks out of 100.

Project work outline

1. The concern subject teacher should provide outline of the project work to the students.
2. The concern subject teacher should allot the topic of project work separately to each student.
3. Outline of the project work is as follows
   - i. Title of the project
   - ii. Introduction
   - iii. Objectives
   - iv. Importance of the topic
   - v. Analysis and discussion
   - vi. Conclusion
   - vii. References
4. Written work of Project should be around ~~40 to 50~~ 40 to 50 pages in own hand written along with certification by concerned Lecturer and head of the department.
5. University should provide blank project work book to the colleges.
6. Workload of Project work should be 4 hours per week.

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PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD
TQ. & DIST. AURANGABAD

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Social Sci./B.A.III Yr. Syll./3/2015

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Sr. No.	Name of the Subject	Semester
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[2]	Economics	V & VI
[3]	Psychology	V & VI
[4]	Geography	V & VI
[5]	Sociology	V & VI
[6]	Home Science	V & VI
[7]	Political Science	V & VI
[8]	Public Administration	V & VI
[9]	Social Work	V & VI
[10]	Philosophy	V & VI
[11]	Military Science	V & VI
[12]	Library & Information Science	I to VI Progressively
[13]	B.A. Travel and Tourism Management [Optional]	I to VI Progressively
[14]	Thoughts of Mahatma Phule & Dr. Ambedkar	V & VI effective from 2016-2017 & onwards

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SOCIAL SCI./
2015/3310-709

Date:- 16-06-2015.

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Director,
Board of College and
University Development.

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Copy forwarded with compliments to:-

1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.A. Unit],
4] The Programmer [Computer Unit-1] Examinations,
5] The Programmer [Computer Unit-2] Examinations,
6] The Record Keeper.

-:**:-

S*/-160615/-

Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Revised Syllabus of

Economics

B.A - Third Year

SEMESTER – V and VI

[Progressively Effect from 2015-16 & onwards]

Dr. Dileep Arjune
B.O.S. Chairman in
Economics

Revised Structure of Syllabus and Papers

for

ECONOMICS

Syllabus of B.A. Third Year

Semester System

A] 50 marks for each paper.

B] Semester-Wise examination will be of 120 minutes for each paper.

Paper No.	Title of the Paper	Credit Allotted	Periods	Marks
	Semester – Fifth			
Eco -109	International Economics (Compulsory)	04	60	50
Eco -110	Agricultural Economics (Compulsory)	04	60	50
Eco – 111	History of Economic Thought (Optional)	04	60	50
	OR			
Eco -111(A)	Mathematical Economics	04	60	50
	OR			
Eco- 111(B)	Labour Economics	04	60	50
Eco – 112	Project Works (Annually)	04	60	--

Paper No.	Title of the Paper	Credit Allotted	Periods	Marks
	Semester – Sixth			
Eco – 113	Research Methodology	04	60	50
	OR			
Eco-113 (A)	Regional Economics			
Eco – 114	Industrial Economics	04	60	50
	OR			
Eco- 114 (A)	Foreign Trade and International Institutions	04	60	50
Eco – 115	Indian Economic Thinker	04	60	50
	OR			
Eco – 115 (A)	Economic Thoughts of Dr. B.R. Ambedkar and Mahatma Phule	04	60	50
	OR			
Eco- 115(B)	Econometrics	04	60	50
	OR			
Eco- 115 (C)	Economy of Maharashtra			
Eco – 116	Project Work (Annual Assessment)	04	60	100

Note:

1] One period of 50 minutes.
2] 15 periods = 01 credit
3] 04 credits = 60 periods
4] Each paper is comprised of 04 credits.

[Dr. Arjune Dilip]
Chairman
Board of Studies in Economics
Dr. Babasaheb Ambedkar
Marathwada University, Aurangabad

B.A. Third Year

(Economics)

SEMESTER – V

ECO – 109 International Economics (Compulsory)

Objectives:

This paper provided the students a through understanding and deep knowledge about the basic principles that tend to govern the free flow of trade in goods and services at the global level. The contents of this paper, spread over various units, lay stress both on theory and applied nature of the subject that have registered rapid changes during the last decade.

Unit I : Importance of Trade and Trade Theories:

Importance of the study of international economics, Inter-regional and international trade, Theories of absolute advantage, Comparative advantage and opportunity cost, Heckscher-Ohlin theory of trade – its main features, assumptions and limitations

Unit II : Gains from Trade:

Gains from trade- Their measurement and distribution, Trade as an engine of economic growth, concepts of terms of trade and their importance in the theory of trade

Unit III : Tariffs and Quotas:

Types of tariffs and quotas, their impact in partial equilibrium analysis, Free trade and policy of tariff in relation to economic growth with special reference to India

Unit IV : Balance of Payment:

Concept and components of balance of payments, Equilibrium and disequilibria in balance of payment, consequences of disequilibrium in balance of payments, Various measures to correct deficit in the balance of payments, Relative merits, Demerits and limitations of devaluation

BASIC READING LIST:

- Kenan, P.B. (1994), The International Economy, Cambridge University Press, London.
- Kindleberger, C.P. (19730, International Economics, R.D. Irwin, Home Wood.
- Krugman, P.R. and M. Obstgeld (1994), International Economics: Theory and Policy, GJenview, Foresman.
- Salvatore D.L. (1997), International Economics, Prentice Hall, Upper Saddle River, N.J.
- Sodersten, B.O. (1991), International Economics, Macmillan Press Ltd., London.

ADDITIONAL READING LIST:

- Aggrawal, M.R. (1979), Regional Economics Co-operation in South Asia, S. Chand and Co. , New Delhi.
- Bhagwati, J. (Ed.) (1981), International Trade Selected Readings, Cambridge University Press, Mass.
- Crockett, A. (19820, International Money: Issue and Analysis ELBS and Nelson, London.
- Greenway, D. (19830, International Trade Policy, Macmillan Publishers Ltd., London.
- Heller, H.R. (1968), International Monetary Economics, Prentice Hall, India.
- Joshi, V. and I.M.D. Little (1998), India's Economic Reforms, 1999-2001, Oxford University Press.
- Nayyar, D. (19760, India's Exports and Export Policies in the 1960's, Cambridge University Press, Cambridge.

- Panchmukhi, V.R. (19780, Trade Policies of India: A Quantitative Analysis, Concept Publishing Company, New Delhi.

ECO – 110 Agricultural Economics (Compulsory)

Objectives:

The objective of this paper is to provide a detailed treatment of issues in agricultural economics to those intending to specialize in the area. Its objective is to familiarize students with policy issues that are relevant to Indian agricultural economics and enable them to analyze the issues, using basic micro-economic concepts.

Unit: I Development of Agriculture:

Role and importance of agriculture in economic development; Linkages between the agriculture sector and the non-agriculture sector, Agricultural resources in India, Land utilizations and cropping pattern, Trends in agricultural growth and agricultural productivity, concept of contract farming.

Unit: II Technology in Agriculture:

Technology in Agriculture- traditional techniques and practices, HYV seeds- fertilizers – water technology (Green revolution), sustainable agriculture, Dry land farming, Size of holdings in India and Maharashtra.

Unit: III State and Agriculture:

Agricultural Price Policy, Nature of demand and supply of agricultural product, price instability, Objectives of Agricultural Price Policy, food security in India and public distribution system, Agricultural subsidy.

Unit: IV Fifty Years of Indian Agriculture:

An overview of agricultural development, Under employment and unemployment in the rural economy, Globalization of Indian economy and its effects on Indian agriculture.

BASIC READING LIST:

- Bilgrami S.A.R. (2000), An Introduction to Agricultural Economics, (2nd Edition), Himalaya Publishing House, Mumbai.
- Sadhu A. N. and J. Singh (2000), Agricultural Problems in India, (3rd Edition), Himalaya Publishing House, Mumbai.
- Sundaram I.S. (1999), Rural Development, (3rd Edition), Himalaya Publishing House, Mumbai.
- Takle S.R. and Bhise V.B. (2007), Behaviour of Market Prices of Agricultural Commodities, Serial Publications, New Delhi.

ADDITIONAL READING LIST:

- Government of India, Economic Survey, (Annual), New Delhi.
- Government of India, Ninth Five Year Plan (1997-2000), Vol. I & II, Planning Commission, New Delhi.
- Reserve Bank of India, Hand Book of Statistics of Indian Economy (Annual).
- Sony R.N. (2000), Leading Issues in Agriculture, Arihant Press, Jalandhar.

ECO – 111 History of Economic Thought (Optional)

Objectives:

This paper deals with basic ideas of classical, new classical and marginalist economist. The object of this paper is to understand students the basic economic ideas of various economic thinkers of the world.

Unit: I Early Period:

Mercantilism: Main characteristics; Thomas Mun – Physiocracy; natural order; primacy of agriculture, social classes, tableau economique, taxation.

Unit: II Classical Period:

Adam Smith- division of labour, theory of value, Capital accumulation, distribution, views on trade, Economic progress; David Ricardo- value, theory of rent, distribution, ideas on economic development and international trade; Tomas R. Malthus- Theory of Population; Karl Marks- dynamics of social change, theory of value, surplus value, profit and crisis of capitalism, Economic ideas of J. B. Say.

Unit: III Marginalists:

Marshal as a great synthesizer; role of time in price determination, economic methods, ideas on consumer's surplus, elasticities, prime and supplementary costs, representative firm, external and internal economies, quasi-rent, organization as a factor of production, nature of profits.

Unit: IV Keynesian Ideas:

The aggregate economy, Liquidity preference Theory and Liquidity trap; Marginal efficiency of capital and marginal efficiency of investment, wage rigidities under employment equilibrium, role of fiscal Policy; deficit spending and public works, multiplier principle.

BASIC READING LIST:

- Blackhouse, R. (1985), A History of Modern Economic Analysis, Basil Balackwell – Oxford.
- Gide C. and G. Rist (1956), A History of Economic Doctrines, (2nd Edition), George Harrop & Co., London.

- Grey, A. and A.E. Thomson (19800, The Development of Economic Doctrine, (2nd Edition), Longman Group, London.
- Rolle, E. (1973), A History of Economic Thought, Faber, London.
- Seshadri, G.B. (1997), Economic Doctrines, B.R. Publishing Corporations, Delhi.
- Blaug, (1997), Economic Theory in Retrospect; A History of Economic Thought From Adam Smith to J.M. Keynes, (5th Edition), Cambridge University Press, Cambridge.
- Dasgupta, A.K. (1985), Epochs of Economic Theory, Oxford University Press, New Delhi.

OR

ECO – 111 (A) Mathematical Economics (Optional)

Objectives:

This paper is designed to equip students to understand the economic concepts and theories which use mathematical tools and techniques to refine the verbal logic. The use of calculus ahs permitted formulation of economic problems in multivariable mode and yield valuable insight about optimizing human behavior.

Unit: I Quantitative Methods:

Elementary ideas of differential calculus, Matrix- types of matrix, algebra of matrix; and determinants, solution of simultaneous equations- Cramer's rule, Maxima and Minima in a single variable; distance between two points, straight line equations.

Unit: II Consumer's Theory:

Utility function- Total utility and Marginal utility, budget line, constrained optimization, consumer's equilibrium, Elasticity of demand.

Unit: III Theory of Production:

Cost and revenue functions, Relation between total, average and marginal cost and revenue.

Unit: IV Market Structure:

Equilibrium of the firm under perfect competition, Monopoly, price discrimination, Market equilibrium; Demand and Supply function.

BASIC READING LIST:

- Allen, R.G.D. (1974), Mathematical Analysis for Economists Macmillan Press, London.
- Chiang, A.C. (1986), Fundamental Methods of Mathematical Economics, (3rd Edition), McGraw Hill, New Delhi.
- Colell, A. Mas,et. at. (19910, Microeconomic Theory, Harvard University Press, Cambridge, Mass.
- Hands D.W. (1991), Introductory Mathematic Economics, D. C. Health.
- Henderson, J. and R.E. Quandt (1980), Microeconomic Theory: A Mathematical Approach, McGraw Hill, New Delhi.
- Handy, S.T. (1997), Operational Research, Prentice- Hall of India, New Delhi.
- Mukherji, B. and B. Pandit (1982), Mathematical Methods of Economic Analysis, Allied Publishers, New Delhi.

OR

ECO – 111 (B) Labour Economics (Optional)

Objectives:

Labour is the main input of any industry. This paper provides a deep knowledge regarding recent labour policies in India. The main object of this paper is to provide detailed information to students

about labour market, employment, wage determination and industrial dispute.

Unit: I Labour Market:

Nature and characteristics of labour market in developing economies like India; Demand for labour and supply of labour, Government labour policies after 1991.

Unit: II Employment:

Definition- Relationship between employment and development, Unemployment – Concept, causes and measures to reduce unemployment, rural and urban unemployment, educated unemployment, Employment Policy in Eleventh Plan period.

Unit: III Wage Determination:

Subsistence wage fund, marginal and modern theories of wages, collective bargaining and wage determination, concept of fair wages, living wage and minimum wage, wage and inflation.

Unit: IV State and Labour:

Important labour legislations in India, Industrial Disputes and Labour Union, Government's role in settlement of industrial disputes, problems of rural labour (Unorganized Sector - labour) in Maharashtra.

BASIC READING LIST:

- Lester R.A. (1964), Economics of Labour, 2e, MacMillan, New York.
- Das, N. (1960), Unemployment, Full employment and India, Asia Publishing House, Mumbai.
- Dunlop, J.T. ed. (1957), Theory of Wage Determination, MacMillan, Landon.

- Ramaswamy, E.A. and U. Ramaswamy (1978), Industrial Relation in India, MacMillan, Delhi.
- Kannapon, S. (1983), Employment Problems and Urban Labour Markets in Developing Countries, University of Michigan, Ann Arbor.
- Despande L.K. and J. C. Sandesara, (Eds,), (19900, Wage Policy and Wages Determination in India, Bombay University Press, Mumbai.
- Punekar, S.D. (1978), Labour Welfare, Trade Unionism and Industrial Relations, Himalaya Publishing House, Mumbai.

ECO – 112 Project Work (Annually)

Objectives: This course will inform students about the project writings skill as per the study of research methodology techniques. It's also deals with the deep study of specific topic.

Note: Teacher should work as per the following guidelines:

1. The concern subject teacher should provide outline of the project work to the students.
2. The concern subject teacher should allot the topic of project work separately to each student.
3. The concern teacher should be guidance to the students regarding How to prepare project work in regular period activity in this semester. Project evaluation will be done by external and internal examiners at the end of VIth semester Examination.

3. Outline of the Project Work is as follows:
   - i) Title of the Project
   - ii) Introduction
   - iv) Importance of the topic
   - iii) Objectives
   - v) Research Methodology
   - vi) Analysis and Discussion
   - vii) Conclusion
   - viii) References
4. Written work of Project should be around 40 to 50 pages in own hand written along with certificate by concerned teacher and Head of the Department.
5. Workload of Project Work should be **04** periods per week.

B.A.T.Y. SEMESTER - VI

ECO – 113 Research Methodology

Objectives:

The main objective of this paper is to provide information about social sciences research to the students of economics. This paper deals with importance of social research, research design, data collection and presentation of data.

Unit: I Introduction:

Meaning, nature, scope and objectives of social science research, Theory, concepts, hypothesis, stages of scientific research, Motivating factors of social research.

Unit: II Research Design:

Meaning and need of research design; Types of research design (only introduction)– descriptive, exploratory, diagnostic and experimental.

Unit: III Data Collection:

Facts- features; Primary data collection methods- Direct observation, questionnaire, schedule, interview; Secondary data collection methods- Personal documents, Public documents and Limitations.

Unit: IV Data Presentation and Analysis:

One– dimensional diagrams; Two– dimensional diagrams; Graphs of time series; Graphs of frequency distribution.

BASIC READING LIST:

- Kothari, C.R. (1988), Research Methodology Method and Techniques, Wiley Eastern Limited, New Delhi.
- Ghose, B.N. (1982), Scientific Methods and Social Research, Sterling Publishers Pvt. Ltd., New Delhi.
- Goode William J. and Hatt, Paul (1952), Methods in Social Research, McGraw Hill, New York.
- Gopal, M.H. (1964), An Introduction to Research Procedure in Social Sciences, Asia Publishing House, Mumbai.

- Hans Raj (1979), Theory and Practice in Social Research , Surjeet Publications, New Delhi.
- Sadhu, A.N. and Singh Amerjet (1980), Research Methology in Social Sciences, Himalaya Publishing House, Mumbai.
- Tandon, B.C. (1979), Research Methodology in Social Science, Chaitanya Publishing House, Allahabad.
- Aggarwal, B.M. (2010), Business Mathematics and Statistics, Ane Book Pvt. Ltd., New Delhi.
- Gupta, S.C. (1993), Fundamentals of Applied Statistics, S. Chand & Sons, New Delhi.

OR

ECO – 113 (A) Regional Economics

Objectives:

The intervene effectively and meaningfully, to pull up economically and socially the less developed regions, it is necessary to understand the dynamics of regional development. This paper begins with an elucidation of the terms and concepts, Students are given a broad overview of the techniques of regional analysis. The paper also contains a section on the regional aspects of the Indian economy including the Indian experience in regional policy formulation and implementation.

Unit: I Concepts:

Why Regional Economics?, What is a region?, Different types of regions; Regional Income; Problems of estimation; Indicators of regional development.

Unit: II Regional Policy:

People prosperity versus place prosperity; Formulation of interregional objectives; Consistency between national and regional objectives; Alternate regional policy measures; Historical evidence

Unit III Inter-regional Differentials in India's Development:

Agriculture, Industry, Physical Infrastructure, Social Sector.

Unit IV Regional Policy in India:

The pre- 1970 era identification of backward regions; Concerted policy measures, Liberalization and regional policy.

BASIC READING LIST:

- Chand M. and Puri, V.K. (1983), Regional Planning in India, Allied and Publishers, New Delhi.
- Hoover E. M. (1974), An Introduction to Regional Economics, Alfred A. Knopf, New York.
- Isard W. (19600, Methods of Regional Analysis, MIT Press, Cambridge. Mass.
- Nair, K.R.G. (1982), Regional Experience in a Developing Economy, Wiley-Eastern, New Delhi.
- Richardson H. W. (1969), Regional Economics, weidenfield and Nicolson, London.
- Brahmananda P. R. and Panchmukhi (Eds.), (2001), Development Experience in the Indian Economy; Inter-State Perspectives, Bookwell, Delhi.

ADDITIONAL READING LIST:

- Beckman M. (1968), Location Theory, Random House, London.
- Bhalla G.S. and Alagh Y.K. (1979), Performances of Indian Agriculture: A District-Wise Study, Sterling, New Delhi.
- Dholakia R.H. (1985), Regional Disparity in Economic Growth in India, Himalaya Publishing House, Mumbai.
- Friedman J. and W. Alonso (Eds), (1975), Regional Policy Readings in Theory and Application, MIT Press, Cambridge, Mass.
- Glasson J. (1975), An Introduction to Regional Planning: Concept, Theory and Practice, Hutchison. London.
- Rao H. (1984), Regional Disparities and Development in India, Ashish Publishing House, New Delhi.
- Williamson J. G. (1985), Regional Inequality and the Process of National Development, Economic Development and Cultural Change, Vol. 13, No. 4, Part II, July.

ECO – 114 Industrial Economics

Objectives:

In the contemporary world with globalization and liberalization more and more attention is being given to industry. This paper intends to provide knowledge to the students on the basic issues such as concepts and organization of a firm, productivity, efficiency, capacity utilization and debates involved in the industrial development of India.

Unit I: Introduction:

Need, importance and role of industries in economic and social development, Industry and agriculture sector linkages, Industrial classification.

Unit II: Industrial Organization and Ownership Structure:

Public, Private, Joint and Co-operative sectors, private corporate sector, MNCS and their role.

Unit III: Location and Dispersion:

Location of industries - Theories of location, diversification, integration and merger of industrial units, Dispersion and problem of regional imbalance.

Unit IV: Composition of Industrial Sector:

Structure of large - scale industries in India. Sugar, Cotton, Iron and Steel, Agro Processing Industries, Cottage and Village Industries and Rural industrialization.

BASIC READING LIST:

- Barthwal,R.R.(1992),Industrial Economics: An Introductory Text Book, Wiley Eastern Ltd. New Delhi.
- Cherunilam, F. (1994),Industrial Economics: Indian Perspective, (3rd Edition), Himalaya Publishing House, Mumbai.
- Desai, B. (1999), Industrial Economy in India, (3rd Edition), Himalaya Publishing House, Mumbai.

- Kuchhal, S.C. (1980), Industrial Economics, Himalaya Publishing House, Mumbai.

ADDITIONAL READING LIST:

- Ahluwalia I.J. (1995), Industrial Growth in India, Oxford University Press, New Delhi.
- Brahmananda, P.R. and V.R. Panchamukhi (Eds) (1987), The Development Process of the Indian Economy,_ Himalaya Publishing House, Mumbai.
- Clarkson, K.W. and R Miller (1985) , Industrial Organization : Theory, evidence and Public policy, McGraw Hill, Kogakusha, Tokyo.
- Devine, P. J. et. al. (1978), An Introduction to Industrial economics, (3rd edition), George Allen and Unwin, London.
- Government of India, Economic Survey (Annual), New Delhi.
- Government of India, Ninth Five Year Plan (1997 - 2000), Vol. I & II, Planning Commission, New Delhi.
- Mamoria and Mamoria (2000), Dynamics of Industrial relation in India, (15th Edition), Himalaya Publishing House, Mumbai.
- Naidu, K.M. (1999), Industrialization and Regional Development in India, Reliance publishing House, New Delhi.
- Reserve Bank of India; Report on Currency and Finance (Annual), Mumbai.

OR

ECO – 114 (A) Foreign Trade and International Institutions

Objectives:

The paper provides a deep understanding about the broad principles and theories, which tend to govern the free, flow of trade in goods, services and capital. Besides, preparing the students about the relevance and limitations of these principles, the contents of the paper spread over different units, lay stress on the theory and nature of the subject which, in turn, will greatly help them to examine the impact of the trade policies followed both at the national and international levels.

Unit-I: Foreign Trade in India:

Recent change in the composition and direction of foreign trade; causes and effects of persistent deficit in the balance of

payments; measures adopted by the government to correct the deficit. Need for and rational of trade reforms in India. Recent export and import policies of India, role of multinational corporations in India.

Unit-II: International Economic Institution:

Limitations of devaluation, functions of IMF, World Bank and GATT/WTO, Reform of the international monetary system and Indian regional trade agreement- SAARC, ASEAN, and BRICS.

Unit-III: New Trade Policy, Features and Evaluations:

Provisions and implications- Priority for exports; Market-orientation of trade, Self-balancing mechanism; critical evaluation-different from of old policies; outward – looking strategy; Beneficial elements; several limitations and limits.

Unit-IV: Rupee, Exchange Rate and Convertibility:

Falling Exchange Rate-Meaning and magnitude; main objectives; Consequences and evaluation- convertibility of Rupee-meaning and the system; important benefits; condition of success.

BASIC READING LIST:

- Aggrawal M. R. (1979), Regional Economic Co-operation in South as iq, S. Chand and Co. New Delhi.
- Bhagwati, J. (Ed.) (1981), International Trade Selected Readings, Cambridge University press, Mass.
- Crockett, A. (1982), International Money: Issue and Analysis ELBS and Nelson, London.
- Greenway, D. (1983), International Trade Policy, Macmillan Publishers Ltd. London.
- Heller, H. R. (1968), International Monetary conomics,Prentice Hall, India.
- Joshi, V. and I. M. D. Little, (1998), India's Economic Reforms, 1999-2001, Oxfprd University press.
- Nayyar, D. (1976), India's Exports and Export Policies in the 1960's, Combridge University press, Combridge.
- Panchmukhi, V. R. (1978), Trade policies of India: A quantitative Analysis, Concept publishing company, New Delhi.

- Agrawal A. N. (2010) Indian Economy: Problem of Development and planning, New Age International Publishers, New Delhi.

ECO-115: Indian Economic Thinkers

Objectives:

This paper is essential for a student who aspires for advanced training in economics in India. The evolution of economic idea in each instance was as much a response to immediate economic problems and policy issues as much as it was a self-conscicus attempt to refine earlier analysis by correcting mistakes and filling in the gaps in analysis.

Unit- I: Economic Thought of Koutilya:

Economic policies, concept of welfare state, principle of taxation.

Unit- II: Economic Ideas of Nauroji, Ranade and Datt:

Economic ideas of Dadabhai Nauroji – contribution to economic policies, Drain Theory, M.G. Ranade- Economic policies, political economic policies. R.C. Dutt- Economic ideas. Manvendra Roy- Economic ideas and concept of new humanism.

Unit- II: Economic Ideas of Mahatma Gandhi: Economic ideas of Mahatama Gandhi– Sarvodaya, Village Swaraj, Swadeshi. Dr. B.R.Ambedkar- State socialism, Problems of Rupee, Public finance. Mahatma Phule's views on agriculture, reasons of farmer's poverty. D.R. Gadgil- Economic planning & co-operation, Y.B. Chavan: Thoughts of agriculture, industries & socialism.

Unit- IV: Economic Thoughts of Amartya Sen:

Economic welfare, Social Choice.

BASIC READING LIST:

- Kautilya, (1992), The Arthashastra Edited Rearranged Translated and Introduced by L.N. Rangrajan, Penguin Books, New Dehli.
- Dr. Babasaheb Ambedkar Writings and Speeches: Vol.6complied by Vasant Moon, Education Dept., Govt. of Maharashtra.
- Gandhi, M.K. (1947), India of My Dreams, Navajivan Publishing House, Ahmedabad.
- Koot, G.M. (1988), English Historical Econmics : 1850-1926, Cambridge University Press, Cambridge.
- Rao, M.N. (1964), Memoris, Allied Publishing house, Bombay.
- Prinicples of Economics: KPM Sundharam, M.C.Vaish.
- Selected Writings and Speeches of Dr. Gadgil on Planning and political Problems. Ed. By. Subha Brahme.
- Mahatma Fule: Ed. By Y.D. Fadke.
- Manvendra Ray Ed. By V.B. Karnik.
- Naoraji, D. (1962), Poverty and Un – British Rule in India, Law Price Publications, Delhi.
- Singh, Y.D. (Ed). (1965), Economic History if India, 1857-1965, Allied Publishers Private Limited, Bombay.
- Dutt, R.C. (1950), The Economic History of India underEarly British Rule, Low Price Publications, Delhi.

ECO – 115 (A) Economic Thoughts of Dr. B.R. Ambedkar and Mahatma Phule

Objectives:

This main objective of this paper is to provide Information of basic economic thoughts of Dr. Ambedkar and Mahatma Phule.

Unit - I Basic Economic Ideas of Ambedkar:

a) Currency and taxation

b) State socialism

c) Caste and economic development

Unit - II Dr. Ambedkar's Views on Development:

a) Agriculture, land reform and water policy
b) Nationalization of Industry
c) Economic Planning, Population

Unit – III Economic Thoughts of Mahatma Phule:

a) Phule's View on Brahmanism
b) Religious Exploitation
c) Social change theory and development

Unit – IV Agricultural Thought of Mahatma Phule:

a) Jal Niti (Water Policy)
b) Views on Moneylenders
c) Poverty of Farmers

BASIC READING LIST:

- Narendra Jadhav (1992), Dr. Ambedkar: Economic Thought and Philosophy, Popular Prakashan Pvt. Ltd., Mumbai.
- Sadhana Thakur (2013), Socio-Economic Thoughts of B. R. Ambedkar, Daya Publishing House, New Delhi.
- Nagar V.D. and Nagar K.P. (1992), Economic Thought and Policy of Dr. Ambedkar, Segment Book, The University of Michigan.
- Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 18 Part-I,II, Dr. Babasaheb Ambedkar Charita Sadhana Prakashan Samiti, Higher & Tech. Edu., Govt. of Maharashtra, Mumbai.
- Kasare M.L. (1996), Economic Philosophy of Dr. B.R. Ambedkar, B. I. Publication Ltd. New Delhi.
- Chanchreek K.L., Saroj Prasad, Devi Singh Ashok (2013), Economic Thoughts of Dr. B.R. Ambedkar (in two Vol.), Shree Publisher,
- महात्मा फुले समग्र वाङ्मय (1991), संपादक : य. दि. फडके, महाराष्ट्र राज्य साहित्य व संस्कृती मंडळ, मुंबई.
- धनंजय कीर (1998), महात्मा जोतीराव फुले, पॉप्युलर प्रकाशन, मुंबई (चौथी आवृत्ती)
- Bakshi S.R. and Lipi Mahajan (2000), Jyotirao Phooley. IN Encyclopedic History of Indian Culture and Religion: Vol. 5: Social Reformers. Deep & Deep Publication, Delhi
- Satyashodhak Samaj Report – Pune.

- Kamble Uttam ( ), (in Marathi medium), Water Policy of Mahatma Phule, Saket Prakashan, Mumbai.

OR

ECO-115(B) Econometrics

Objectives:

In order to understand economic problems clearly, the knowledge of econometrics is very essential. The students in this direction are expected to have an elementary knowledge of basic concept in the econometrics. Further in the field of econometrics, Economics and Econometrics, Econometrics Models and Regression Analysis should be clearly understood by the students. This paper is meant to train the student in this direction.

Unit I: Introduction:

Meaning and nature of econometrics; Types of econometrics; Economics and econometrics, Econometrics and Statistics, Econometrics and mathematics, Importance and Limitations of econometrics

Unit II: Basic Concepts in Econometrics:

Econometrics models; Features of models, Characteristics of a good model, Model and structure; Types of variable, Types of equations; Steps in an econometrics.

Unit III: Two Variable Regression Analysis:

Population regression function; Linearity in variables and parameters; stochastic specification of PRF; Significance of stochastic disturbance term; The simple regression function.

Unit IV: Two Variable Regression Problems:

The method of ordinary least squares ;The classical linear regression model-Assumptions ;Standard errors; Properties of least squares estimators-Gauss –Markov Theorem.

BASIC READING LIST:

- Gujarati D.N.(1988) Basic Econometrics, McGraw –Hill Book Company ,New York.
- Koutsoyiannis A. (2008) Theory of Econometrics , Palgrave, New York ,2nd edition.
- Henri Theil (1979) Principal of Econometrics , John Wiley and Sons,Inc,Londan.
- Jonston J (1960) Econometric Methods.
- Henderson and Quandt ( ) Microeconomics Theory – A Mathematical Approach , Mc Grow – Hill Book Company ,New York.
- Agrawal H.S.(1976) Introduction to Econometrics , Lakshimi- Narayan Publication Agra.
- B.C; Kapoor Kranti (2005) Fundamentals of Econometrics, Himalaya Publishing House, Nagpur.
- Kalirajan K.P.(1995) Applied Econometrics Oxford & IBH Publishing Co.Pvt Ltd,New Delhi.

OR

ECO-115(C) ECONOMY OF MAHARASHTRA

Objectives:

The students should know the basic features of the economy of Maharashtra. The students should also be able to understand the problems related to agriculture, industries, cooperative sector and infrastructure in the Maharashtra state.

Unit-I: Features of the economy of Maharashtra:

Structure and size of population - Nature and causes of Unemployment and Poverty in Maharashtra - Policy measures to overcome the problems of unemployment and poverty.

Unit-II: The problems of agriculture in Maharashtra

Productivity of agriculture - Causes of low productivity – Use of land – Land reforms – Ceiling on land holdings – Subdivision and fragmentation - Causes and remedies -Problems in the drought prone areas – remedies to overcome the problems – Policy measures of the State Government – Watershed development Programme – Irrigation in Maharashtra.

Unit-III: Cooperative movement in Maharashtra:

Progress of cooperative movement - Cooperative Societies Marketing - Cooperative Processing Units - Evaluation of cooperative Movement in Maharashtra.

Unit-IV: Infrastructure and Industrial Development in Maharashtra:

Need for Infrastructure development - Rail Transport – Road Transport – Water Transport - Structure of Industries in Maharashtra -Imbalance in the Industrial development - Factors responsible for Industrialization - Advantage Maharashtra – Recent Industrial Policy.

References:

- Economy of Maharashtra – (Ed). Bhalchandra Mungekar.
- Economic Survey of Maharashtra, Directorate of Economics and Statistics, Government of Maharashtra.
- प्रा.दत्ताजीराव साळूंके व प्रा. ज.रा. पवार, महाराष्ट्राची कृषि अर्थव्यवस्था
- कामत गो. स.- सहकार : तत्व, यवहार आणि व्यवस्थापन
- महाराष्ट्रातील सहकारी चळवळ एक दृष्टिक्षेप -1995 सहकार आयुक्त व निबंधक, सहकारी संस्था , महाराष्ट्र राज्य पुणे.

ECO- 116 Project Work (Annual Assessment)

Objectives: This course will inform students about the project writings skill as per the study of research methodology techniques. It's also deals with the deep study of specific topic.

Note:

1. The evaluation of completed project works and presentation examination will be done in the presence of external examiner appointed by University Authority. Scheme of marking will be done as per the following manner.

   A) Project Report : 80 marks

   B) Presentation : 20 marks

2. Schedule of project work of examination will be in the month of February (at the end of VIth semester).

3. Passing criteria will be 40 marks out of 100 marks.

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ster file Commerce Elective

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
(Elective Paper)
Entrepreneurship Development - I

Theory-80
Practical/Sessional -20

Unit I: **Entrepreneur:**
Concept of Entrepreneur Definition, Characteristics, Functions, Entrepreneurs and Intrapreneur. Role of an Entrepreneur in Economic Development.

Unit II: **Entrepreneurship:**
Concept, Meaning, Definition, Characteristics, Importance of Entrepreneurship, Challenges, Issues & Barriers of Entrepreneurship.

Unit III: **The Dynamic New Trends of Entrepreneurship:**
Startup Accelerators, Student Sandbox and Business Labs, Crowd Funding, Venture Capital, Co-Working Spaces, Boot Camps, Online Entrepreneurship Degree.

Unit IV: **Evolution of Entrepreneurship in 21st Century:**
Essential of 21st Century Entrepreneurship, Importance of Entrepreneurship in 21st Century. Start-up Schemes. Start-up India, Stand up India, Pradhan Mantri Kaushal Vikas Yojana. Skill India.

Unit V **Project Identification:**
Meaning, Definition, Classification, Project Life, Project Formulation & Feasibility, Information Centers in India.

Suggested Readings:

1. Entrepreneurship Development: S.S Khanka, Sultan Chand & Co. Ltd.
2. Fundamentals of Entrepreneurship: G.S. Sudha, Ramesh Book Depot.
3. Entrepreneurship Development: E. Gordon & K. Natarajan, Himalaya Publishing House.
3. Entrepreneurship Development: Colombo Plan Staff College for Technician Education, Manila, TaTa McGraw Hill
4. Small Scale Industries and Entrepreneurship: Vasant Desai, Himalaya Publishing House.
5. Project Planning & Control: N. P. Agarwal & Dr. B. K. Mishra, Indus Valley Publications, New Delhi.

CBCS Pattern Syllabus w.e.f. June 2018 Onwards
Faculty of Commerce
B.Com. F.Y. (First Semester)
(Elective Paper)
Office Management

Theory-80
Practical/Sessional -20

Objective: The purpose of this course is to familiarize the students with the activities in a modern office. Smooth functioning of any organization depends upon the way various activities are organized, facilities provided to the staff working in the office, the working environment and the tools and equipment used in office.

Unit I: **Office and Office Management:-**

Meaning of office- Primary and Administrative Management Functions, Importance of Office, Duties of the Office Manager, Qualities and Essential Qualifications.

Filing and Indexing: Meaning and Importance, essentials of good filing, centralized vs. decentralized filing, system of classification, methods of filing and filing equipment, weeding of old records, meaning and need for indexing, various types of indexing.

Unit II: **Mail and Mailing Procedures:-**

Meaning and Importance of mail, Centralization of mail handling work, its advantages. Mailing through post, couriers, email, appending files with email. Inward and outward mail- receiving, sorting, opening, recording, making distributing folding of letters sent, dispatching, courier services, central receipt and dispatch.

Forms and Stationery: Office Forms- introduction, meaning, importance of forms, advantages of using forms, disadvantages of using forms, type of forms, factors affecting forms design, principles of form design, form control. Stationery- introduction, types of stationery used in offices, importance of managing stationery, selection of stationery, essential' requirements for a good system of dealing with stationery, purchasing principles, purchase procedure, standardization of stationery.

Unit III: **Modern Office Equipment:-**

Introduction, Meaning and Importance of Office Automation, Objectives of Office Mechanization, advantages & disadvantages, factors determining office mechanization. Kinds of office machines.

Budget: Budget- Annual, Revised and Estimated. Recurring and non- recurring heads of expenditure, **Audit:** Audit process- Vouching, Verification and Valuation (in brief). Consumables/ Stock register and Asset register. Procedure for disposal of records and assets.

Unit IV: **Banking facilities:** Types of accounts. Passbook and Cheque book. Other forms used in Banks. ATM and money transfer. NEFT/RTGS, Net Banking, BHIM Apps. **Abbreviations/Terms used in Offices:** Explanation of abbreviations/terms used in offices in day-today work.

Suggested Reading:

1. Office Management: R. S. N. Pillai & Bhagvati, S. Chand Publication
2. Office Organisation & Management: M. E. Tukaram Rao
3. Bhatia, R.C. Principles of office Management, Lotus press, New Delhi.
4. Terry, George R: office Management and Control.

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& SCIENCE COLLEGE, KARMAD
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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

B. Sc. I, II & III Year Botany Curriculum

(SEMESTER PATTERN)

Course Structure

Class	Paper No	Title of Paper	Credits	Lectures	Marks
B. Sc. I		**SEMESTER - I**			
	I	Diversity of Cryptogams - I	3	45	50
	II	Morphology of Angiosperms	3	45	50
	III	Practical based on Paper - I	1.5	45	50
	IV	Practical based on Paper - II	1.5	45	50
		SEMESTER – II			
	V	Diversity of Cryptogams - II	3	45	50
	VI	Histology, Anatomy and Embryology	3	45	50
	VII	Practical based on Paper - V	1.5	45	50
	VIII	Practical based on Paper - VI	1.5	45	50
B. Sc. II		**SEMESTER – III**			
	IX	Taxonomy of Angiosperms	3	45	50
	X	Plant Ecology	3	45	50
	XI	Practical based on Paper - IX	1.5	45	50
	XII	Practical based on Paper - X	1.5	45	50
		SEMESTER – IV			
	XIII	Gymnosperms and Utilization of plants	3	45	50
	XIV	Plant Physiology	3	45	50
	XV	Practical based on Paper - XIII	1.5	45	50
	XVI	Practical based on Paper - XIV	1.5	45	50
B. Sc. III		**SEMESTER – V**			
	XVII	Cell Biology and Molecular Biology	3	45	50
	XVIII (A)	Diversity of Angiosperms - I OR	3	45	50
	XVIII (B)	Plant Breeding and Seed Technology OR			
	XVIII (C)	Plant Pathology OR			
	XVIII(D)	Biotechnology			
	XIX	Practical based on Paper - XVII	1.5	45	50
	XX	Practical based on Paper - XVIII	1.5	45	50
		SEMESTER – VI			
	XXI	Genetics and Biotechnology	3	45	50
	XXII (A)	Diversity of Angiosperms - II OR	3	45	50
	XXII (B)	Economic Botany OR			
	XXII (C)	Microbiology and Disease Management OR			
	XXII (D)	Bioinformatics			
	XXIII	Practical based on Paper - XXI	1.5	45	50
	XXIV	Practical based on Paper - XXII	1.5	45	50

Note: For theory paper: 1credit = 15 periods/lectures,
For Practical paper 1credit = 30 periods/lectures

Elective

B.Sc. III Year (Theory)
Semester – V
Paper XVIII(A)
(Diversity of Angiosperms-I) (45 L)

Unit: 1 **Credit-1**

1. Biodiversity (03)

Definition, concept, origin and evolution

2. Types of biodiversity: (05)

Species, genetic, ecological, cropland and agricultural diversity; biodiversity in India; endemism and hot spots; threatened species, threats to biodiversity

3. Conservation of biodiversity: (07)

Major causes for loss of biodiversity, listing of threatened biodiversity; threatened categories – extinct, endangered, vulnerable, rare and indeterminate. Conservation measures: – ex-situ, and in-situ; biodiversity conservation in India.

Unit -2 **Credit -2**

Phytotaxonomy: (08)

Classification of Angiosperms with special reference to Linnaeus, A. P. de Candole, Bentham and Hooker.

Study of diversity following families with reference to the system of classification of Bentham and Hooker (22)

1. Magnoliaceae
2. Nymphaeaceae
3. Papveraceae .
4. Brassicaceae
5. Capparidaceae .
6. Rutaceae
7. Rhamnaceae
8. Combretaceae
9. Lythraceae
10. Cucurbitaceae
11. Apiaceae

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Elective

B. Sc. III Year (Theory) (45L)
Semester -V
Paper: XVIII (B)
(Plant Breeding and Seed Technology)

Credits-2

Unit -1

Plant Breeding :

1. Introduction, history, aims and objectives (02)
2. Domestication, plant introduction and acclimatization (02)
3. Hybridization – history, hybridization procedure. (03)
4. Selection methods -mass selection, pureline selection and clonal selection (04)
5. Hybridization in self pollinating plants (03)
6. Hybridization in cross pollinating plants (03)
7. Heterosis and hybrid vigour (02)
8. Mutation in crop improvement (02)
9. Hybridization programme in Jowar and Cotton (06)
10. Experimental designs and biometrical techniques in plant breeding - Randomized block design, Latin square design, Analysis of variance, Assessment of variability, Simple measures of variability (03)

Credit-1

Unit -2

Seed Technology :

1. Seed technology -history, aims and objectives (01)
2. Morphology and anatomy of seed (monocot and dicot seed , endospermic and non endospermic seed) (02)
3. Stages of seed multiplication - (04)
   a. nucleus seed
   b. breeders seed
   c. foundation seed
   d. certified seed
   e. registered seed
   f. truthful seed
4. Seed certification process (02)
5. Stagewise multiplication of foundation and certified seed in Jowar and Cotton (02)
6. Seed processing – drying, cleaning, dressing, bagging, tagging, storage and marketing (02)
7. New techniques in seed technology (02)

Elective

B.Sc. III Year (Theory)
Semester –V
Paper XVIII (C)
(Plant Pathology)

45L

Credit-1

Unit-1

Fundamentals of plant pathology:

1. Plant pathology – history, scope, losses due to pathogens, importance and need to study plant pathology (02)
2. Classification of plant diseases on the basis of symptoms and causal organisms – animate and inanimate (03)
3. Plant pathological institutes – IARI (Indian Agricultural Research Institute), ICRISAT(International Crop Research Institute for Semi Arid Tropics) (02)
4. Seed pathology – concept and importance of seed pathology, seed borne pathogens, methods to study seed borne pathogens (03)
5. Study of air borne pathogens: methods and applications (03)
6. Field and laboratory diagnosis of plant disease - Koch's postulates (02)

Credit-2

Unit-2

Plant diseases:

Study of the following diseases with respect to symptoms, causal organism, disease cycle and disease management:

1) Cereals:	a. Black stem rust of wheat b. Grain smut of jowar c. Ergot of bajra	(05)
2) Pulses:	a. Wilt of pigeon pea b. Yellow vein mosaic of bean	(04)
3) Vegetables:	a. Late blight of potato b. Little leaf of brinjal c. Black rot of onion (*Aspergillus*)	(05) (04)
4) Oil seeds:	a. Tikka disease of groundnut b. Damping off of mustard	
5) Cash crops:	a. Grassy shoot of sugarcane b. Downy mildew of grapes c. Angular leaf spot of cotton d. Citrus canker	(06)
6) Ornamentals:	a. Powdery mildew of rose	(02)
7) Weeds:	a. Rust of Euphorbia	(02)
8) Trees:	a. *Cercospora* on *Albizzia* fruits	(02)

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Elective

B. Sc. III Year (Theory)
Semester- V
Paper XVIII (D)
(Biotechnology)

45L
Credits -2

Unit- 1

Biotechnology:

1. **Introduction:** a. Definition, scope and multidisciplinary nature (05)
   b. Biotechnology in India
2. **DNA structure, replication and recombination:** (05)
   a. Structure of DNA
   b. Replication of DNA, Role of DNA polymerase
   c. Denaturation and renaturation of DNA
   d. Recombination
3. **Recombinant DNA technology:** (15)
   a. Introduction, principles and procedure
   b. Enzymes involved in recombinant DNA technology
   c. Vectors
   d. Southern and Northern blotting technique
   e. Techniques in gene mapping
   f. DNA fingerprinting
   g. PCR
   h. DNA sequencing
   i. Genomics and DNA libraries
4. **Genetic engineering:** (05)
   a. Introduction to transgenic plants
   b. Vectors for gene deliveries
   c. Marker and reporter genes
   d. Role of agriculture in crop biotechnology
   e. Achievements in plant biotechnology

Unit- 2 **Credit- 1**

1. **Plant tissue culture:** (10)
   a. Principles of tissue culture
   b. Terminology in tissue culture
   c. Cellular differentiation and totipotency
   d. Organogenesis and embryogenesis
   e. Protoplast isolation and culture
   f. Meristem culture
   g. Anther culture
   h. Applications of tissue culture
2. **Research projects:** (05)
   a. Human genome project
   b. Plant genome project
   c. DBT Ministry Of Science and Technology.

B.Sc.III Botany (Practical)
Semester -V
Paper XIX
(Cell Biology & Molecular Biology)

45 L.
Credit – 1.5

Unit-1

1. Study of the cell structure from onion leaf or *Tradescantia* leaf
2. Preparation of cytological (AA, FAA etc.) fixatives and stains (acetocarmine, aceto-orcein).
3. Study of electron micrographs of viruses, bacteria and cyanobacteria
4. Study of electron micrographs of eukaryotic cell and different cell organelles
5. Preparation of slides for the study of mitosis (root tips of onion)
6. Preparation of slides for the study of meiosis (*Rhoeo, Aloe* or onion flower buds)
7. Preparation of idiogram from the given micrograph of karyotype
8. Observation of giant chromosomes in *Chironomous* larvae
9. Preparation of wool models of mitosis, meiosis, cell structure, Chromosome, DNA and RNA.

*****

Elective

B.Sc. III Year (Practical)
Semester – V
Paper XX (A)
(Diversity of Angiosperms-I)

45 L

Unit: 1 **Credits-1.5**

1. Study of herbarium
2. Study of analytical characters
3. Preparation of indented and bracketed keys
4. Study of following families:
    1. Magnoliaceae
    2. Nymphaeceae
    3. Papaveraceae
    4. Brassicaceae
    5. Capparidaceae
    6. Rutaceae,
    7. Rhamnaceae
    8. Combretaceae
    9. Lythraceae
    10. Cucurbitaceae
    11. Apiaceae,
5. Mounting of pollen grains (acetolysis method)

Note for paper No. XIX and XX

Students should undertake excursion to ecologically different areas for plant study and submission of at least 20 wild plants at the time of practical examination.

******

Elective

B. Sc. III Year (Practical)
Semester -V
Paper: XX(B)
(Plant Breeding and Seed Technology)

45 L
Credits-1.5

Unit -1

Plant breeding:

1. Study of floral biology of jowar and cotton
2. Demonstration of male sterility in jowar
3. Artificial emasculation and pollination in jowar and cotton
4. Demonstration of hybridization techniques in jowar and cotton
5. Designing of field experiments
6. Visit to plant breeding centre

Seed technology:

1. Study of morphology and anatomy of monocot, dicot, endosprmic and nonendospermic seeds
2. Study of seed germination – observation of normal and abnormal seedlings, germination percentage
3. Blotter test
4. Method of breaking seed dormancy
5. Study of various seed processes – drying, cleaning, dressing, bagging, tapping and marketing
6. Preparation of seed certification tag
7. Viability test (Tetrazolium test)
8. Visit to various seed farms and research centres

****

Elective

B.Sc. III Year (Practical)
Semester –V
Paper XX (C)
(Plant Pathology)

45L

Unit-1 **Credits-1.5**

1.Study of Koch's postulates – isolation, inoculation and disease development

2.Study of the following diseases with respect to symptoms, causal organism, disease cycle and disease management

1) **Cereals:**
   a. Black stem rust of wheat
   b. Grain smut of jowar
   c. Ergot of bajra
2) **Pulses:**
   a. Wilt of pigeon pea
   b. Yellow vein mosaic of bean
3) **Vegetables:**
   a. Late blight of potato
   b. Little leaf of brinjal
   c. Black rot of onion (*Aspergillus*)
4) **Oil seeds:**
   a. Tikka disease of groundnut
   b. Damping off of mustard
5) **Cash crops:**
   a. Grassy shoot of sugarcane
   b. Downy mildew of grapes
   c. Angular leaf spot of cotton
   d. Citrus canker
6) **Ornamentals:**
   Powdery mildew of rose
7) **Weeds:**
   Rust of Euphorbia
8) **Trees:**
   Cercospora on *Albizzia* fruits

*****

Elective

B. Sc. III Year (Practical)
Semester- V
Paper XX (D)
(Biotechnology)

45L

Unit- 1 **Credits -1.5**

1. Principle and working of instruments in biotechnology laboratory - Autoclave / Pressure Cooker, Centrifuge, Hot plate, Water bath, Laminar Air flow, Oven, Microscope, pH Meter, Refrigerator, Magnetic Stirrer, Shaker, Agarose Gel Electrophoresis, Green House etc.
2. Sterilization of glasswares
3. Preparation of sterile media, nutrient broth, PDA, M.S. medium, B5 medium, White medium
4. Isolation of bacteria and fungi from air
5. Demonstration of meristem culture
6. Demonstration of anther culture
7. Separation of amino acids by gel electrophoresis

****

B.Sc.III (Theory)
Semester -VI
Paper XXI
(Genetics and Biotechnology)

45 L
Credit : 1

Unit : 1 (04)

1. Mendelism:

i. Introduction -G.J. Mendel

ii. Mendelian principles –Law of Dominance , law of segregation, law of independent assortment, back cross and test cross

(07)

2. Interaction of genes:

i. Allelic interaction: incomplete dominance, co dominance, lethal genes and blood group inheritance

ii. Non allelic and non epistatic -comb shapes in fowls

iii. Non allelic and epistatic:

a) Complementary genes or duplicate recessive epistasis (9:7)
b) Supplementary genes or recessive epistasis (9:3:4)
c) Dominant epistatic genes or dominant epistasis (12:3:1)
d) Duplicate genes or duplicate dominant epistasis (15:1)

(04)

3. Sex determination:

i. Chromosomal theory of sex determination

ii. Mechanism of sex determination in man (xx -xy), Drosophila (xx and xy), birds (zz-zw), grasshopper (xx-xo) and genic balance theory in Drosophila

iii. Sex determination in plants – *Melandrium*

Credit : 1

Unit : 2 (07)

1. Sex linked inheritance:

X, XY and Y linked inheritance:

i) Colourblindness and hemophilia in man
ii) Holandric genes
iii) White eye colour in Drosophila,
iv) Gynandromorphs,

(08)

2. Structure and function of gene:

i. Fine structure of gene (Seymour Benzer)

ii. One gene one enzyme hypothesis

iii. Genes and related diseases – phenylketonuria, and alkaptonuria

iv. Detection of genetic diseases –amniocentesis Genetic counseling

Credit : 1

Unit: 3 (15)

Biotechnology:

1. Concept of genetic engineering and recombinant DNA technology
2. Restriction endonucleases, their properties and uses
3. Cloning vectors -plasmids and phage vectors
4. Techniques of genetic engineering -isolation of desired gene, gene cloning, transfer of gene into plants
5. Applications of genetic engineering

*****

Elective

B.Sc. III Year (Theory)
Semester – VI
Paper XXII (A)
(Diversity of Angiosperms-II)

45 L

Credit-1

Unit: 1

Plant identification: keys, herbaria and botanical gardens (04)
Origin of angiosperms: origin and evolution, Bennettitalean, Ranalian and Caytonial theory (05)
Binomial nomenclature: Principles and rules (03)
Modern trends in taxonomy: Cytotaxonomy, chemotaxonomy, and numerical taxonomy (03)

Credits-2

Unit: 2

1.Phytotaxonomy: (10)

Study of Engler & Plantle ,Hutchinson,Takthajan system of classification (20)

2.Study of diversity of families:

a. Asclepiadaceae
b. Scrophulariaceae
c. Oleaceae
d. Convolvulaceae
e. Verbenaceae
f. Amaranthaceae
g. Euphorbiaceae
h. Orchidaceae
i. Liliaceae
j Commelinaceae

****

Elective

B. Sc. III Year (Theory)
Semester- VI
Paper: XXII (B)
(Economic Botany)

45L

Unit -1 **Credit-1**

Origin, morphology, production, cultivation practices, harvesting and uses of crop plants.

a) **Cereals:** Maize, Pearl millet and Rice
b) **Pulses:** Bengal gram, Black gram and Pigeon pea
c) **Oil seed crops:** Soybean, Mustard and Castor

Unit -2. **Credit-1**

a) **Fibre crops:** Jute, Sunhemp and Cotton
b) **Horticultural crops:** Banana, Orange and Mango
c) **Ornamentals:** Rose, Orchids and *Chrysanthemum*

Unit -3. **Credit-1**

a) **Beverages:** Tea and Coffee
b) **Forage crops:** Cowpea, Jowar and Lucerne
c) **Vegetable crops:** Brinjal, Potato, Tomato and Onion
d) **Condiments and Spices:** Cardamom, Black pepper and Chillies

*****

Elective

B.Sc. III Year (Theory)
Semester –VI
Paper XXII (C)
(Microbiology and Disease Management)

45L

Unit-1 Credit-1

1. Microbiology

Microorganisms in biological world, their classification and features of different groups (03)

2. Microbial techniques:

a. Microscopy – simple, compound and electron microscope

b. Micrometry – Principle, working and uses

c. Staining – common stains used in pathology,their preparation and significance, (cotton blue and Gram's Stain)

d. Sterilization of glasswares and media (06)

3. Culture media for isolating plant pathogen

Industrial application of microorganisms - organic acids, alcohol,milk products, antibiotics and biopesticides (06)

Unit-2 **Credit-2**

Disease management:

1. Preventive methods: field sanitation, use of clean planting material, crop rotation, trap crops, time of sowing, planting distance and tillage (02)

2. Control methods –

a. Seed treatment: concept, objective, traditional and modern methods of seed treatment (02)

b. Soil sterilization: concept, objectives and methods (02)

c. Fungicides: Definition, classification and ideal characteristics of fungicides, study of fungicides with respect to active ingredients, formulations, methods of application, mode of action and uses (08)

i. Sulphur fungicides – Inorganic – Wettable sulphur, Organic – Thirum

ii. Copper fungicides

iii. Mercuric chloride – Agrosan – GN

iv. Heterocyclic nitrogenous compounds – Captan

v. Benzene compounds – Dexon

vi. Antibiotics – Streptomycin and Aureofungin

vii. Systemic – Bavistin and Vitavax

d. Pesticides:Nicotin,Neem and pyrethrum (01)

e. Rhodenticides – Zinc phosphoid (01)

f. Nematicides- Nemagon, Propoxar (01)

g Weedicides- 2,4-D (01)

h. Biological control- definition, need, examples and role (02)

Plant quarantine (01)

3. Control measures and environment: pollution due to chemicals, residual effects, toxicity, safe measures, colour code, antidote, symptoms of

poisoning, precautions in using pesticides (03)

4. Pesticide application equipments: principle and working of pneumatic air pump knapsack sprayer, mist blower and duster. Types of nozzles (03)
5. Plant clinic: Concept, objective and need (01)
6. Recent techniques in plant pathology: Genetically modified organisms (GMO's), B.T.Cotton, Pheromones (02)

******

B. Sc. III Year (Theory)
Semester- VI
Paper XXII (D)
(Bioinformatics) 45L

Unit- 1 **Credit -1**

1. Introduction to bioinformatics and its applications (03)
2. Sampling, sample size, sampling techniques (03)
3. Data collection and presentation: (05)
   a. Types of data
   b. Methods of data collection
   c. Data presentation - line chart, bar chart, histogram, polygon, ogive curve, pie diagram
4. **Measures of central tendency:** (04)
   a. Mean
   b. Median
   c. Mode ,

Unit – 2 **Credit-1**

Measures of variability: (05)
   a. Mean deviation,
   b. Standard deviation
   c. Coefficient of variation
   d. Standard error
2. Probability, chi-square test, t – test (05)
3. Introduction to computer basics- general characters, types of computer (03)
4. Hardware-input and output devices, CPU, storage devices (02)

Unit – 3 **Credit-1**

1. Software – MSDOS, Windows, Linux, concept of files and folders and directories, (08)
   Application software - Word processor, Spread sheet, Presentation, MS-access, html document
2. Networking technology - LAN, WAN, Arpanet, Internet, Web browsing and servers – Netscape navigator, Internet explorer, search engines like yahoo, google etc.Introduction to MEDLINE, CCOD and PUBMED for biological information, Introduction to bioinformatics software - bioperl biojava bioxml (07)

B.Sc. III (Practical)
Semester -VI
Paper XXIII
(Genetics and Biotechnology)

(45 L)
Credits : 1.5

1. Quiz
2. Working out laws of inheritance by using seed mixtures
3. Problems based on gene interaction
4. Problems based on sex linked inheritance

Elective

B.Sc. III Year (Practical)
Semester – VI
Paper XXIV (A)
(Diversity of Angiosperms-II)

(45 L)
Credits-1.5

1 . Study of following families:

1. Oleaceae
2. Asclepiadaceae
3. Convolvulaceae
4. Scrophulariaceae
5. Verbenaceae
6. Amaranthaceae
7. Euphorbiaceae
8. Orchidaceae
9. Liliaceae
10. Commelinaceae

2. Mounting of pollen grains (acetolysis method) and measurement of pollen size.
3. Study of different types of stomata and epidermal structures (Trichome)
4. Identification of plants up to species by using flora (Flora of Bombay Presidency/ Flora of Marathwada)
5. Students should undertake excursion to ecologically different areas for plant study and submission of at least 10 wild plants at the time of examination.

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Elective

B. Sc. III Year (Practical)
Semester- VI
Paper: XXIV (B)
(Economic Botany)

45L
Credit-1.5

Economic Botany:

1. Study of morphology, structure and simple histochemical tests of food storing tissues in Maize, Rrice, Jowar, Gram, Pigeon pea, Potato
2. Study of histochemical tests of lignin and cellulose (Jute, Cotton, Sunnhemp)
3. Hand section of Groundnut, Sunflower and staining of oil droplets
4. Study of plantation crops(Tea and Coffee)
5. Study of condiments and spices (Cardamom, Black Pepper and Chillies)
6. Study of horticultural crops (Banana, Orange and Mango)
7. Study of Vegetable crops (Brinjal, Potato, Onion, Tomato)
8. Study of ornamental plants (Rose and *Chrysantemum*)

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Elective

B.Sc. III Year (Practical)
Semester –VI
Paper XXIV (C)
(Microbiology and Disease Management)

45L

Credit-1.5

1. Study of fungicides as per theory syllabus
2. Preparation of Bordeaux mixture, burgundy mixture and Bordeaux paste
3. Study of insecticides with respect to active ingredient, colour code, formulation, mode of action, antidote and uses
4. Study of *Trichoderma* culture
5. Study of plant protection equipments –pneumatic air pump, knapsack sprayer, mist blower cum duster
6. Principle and working of autoclave, laminar air flow, Tilak air sampler
7. Use of aerobiological techniques to study fungal spora (gravity slide method, Tilak air sampler)
8. Calibration of microscope and measurement of fungal spores
9. Sketching of fungal spore by camera lucida technique
10. Detection of organic acids from healthy and infected leaves by circular paper chromatography
11. Detection of Amino acids from healthy and infected leaves by circular paper chromatography
12. Study of pathogens in fruits from local market
13. Study of fungi from locally available seed samples
14. Preparation of sterile media - nutrient agar, potato dextrose agar
15. Preparation of stains and mounting media - cotton blue, lacto phenol and gram stain

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Elective

B. Sc. III Year (Practical)
Semester- VI
Paper XXIV (D)
(Bioinformatics)

45L
Credit -1.5

1. Use of operating system and creation of a job from word processor, spread sheet, presentation and data base
2. Creating files, folders and directories
3. Internet browsing and downloading information with special reference to biological literature
4. Creating an e - mail account, sending and receiving e - mail
5. Graphical presentation of data
6. Computer based statistical techniques
7. Frequency table of single discrete variable
8. Computation of mean, median, and mode
9. Computation of mean deviation, standard deviation, coefficient of variation, variance, and standard error
10. Computation of chi- square test, and t - test
11. Students should undertake a visit biotechnology industry, biotechnology research laboratory

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PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD
TQ. & DIST. AURANGABAD

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPERXVIII - A

FISHERY SCIENCE – I
(Elective Paper)

CAPTURE FISHERIES IN INDIA

1.	**Introduction** Definition and history General characters and classification Concept of blue revolution Importance of fishes.	**05**
2.	Freshwater fisheries. Status of freshwater fisheries, past, present and future Freshwater capture fisheries, cat fishes, rout. Effect of aquatic pollution on fisheries.	**10**
3.	Revering and reservoir fisheries. Major river systems of India Important fisheries of Indian rivers system Major reservoirs of Maharashtra Reservoir fisheries and its management. Exploitation of reservoir fisheries	**10**
4.	Brackish water fisheries Principle fisheries of brackish water, milkfish, mullet, tilapia. Fisheries of the chilka, pulicat and Kolleru Lake	**08**
5.	Marine water fisheries. Oil-sardine Mackeal Ribbon fish fisheries. Bombay-duck Pomfret-fishery	**08**
6.	Application of remote sensing technique in pelagic fisheries.	**04**
	Total periods	**45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – B

ANIMAL CULTURE - I
(Elective Paper)

APICULTURE

1.	Introduction and history	**02**
2.	Status, problems and prospects of Bee-keeping practices	**02**
3.	Systematic position and distribution of different honey bees. a) Wild species b) Domesticated species c) Brief account of honey production	**06**
4.	Organization in colony and polymorphism in Wild species Caste differentiation Division of work	**06**
5.	Life cycle of honey bees Morphology of queen, worker and drone	**06**
6.	Behavior of domesticated bees a) Nesting behavior b) Swarming and colony production c) Communication d) Defense, foraging e) Mating f) Comb construction g) Humidity and temperature control	**08**
7.	Food plants and plant –bee relations. a) Pollination by honey bees.	**04**
8.	Disease, pets, prasites and predators of bees and their control. a) Protozoan diseases-Nosemd Bacterial disease- American and European foul brood Viral disease- sac brood Fungal disease- chalk brood and stone brood b) External mites and dipterans, internal mites c) Bats –was math d) predators- wasps, brinks, rats, lizard, mantis, bears etc. e) Poisoning and pestisidal hazards in bees	**08**
9	bee products and their uses	**03**
	Total periods	**45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPERXVII - C

ENTAMOLOGY-I
(Elective Paper)

ECONOMIC ENTAMOLOGY

I	Introduction to Economic entamology.	**03**
II	Methods of collection and preservation of insect.	**05**
III	Type study of grasshopper- systematic position, external morphology, digestive, nervous, reproductive system including development.	**08**
IV	Insect –orders (general characters)	**12**
	Thysanura	
	Collembella	
	Lepidoptera	
	Diptera	
	Coeloptera	
	Hymenoptera	
V	House hold and Human insect pest:-	**06**
	Bed bugs, Mosquito, Rat Flea, and House fly, Cockroach, Pediculus.	
VI	Metamorphosis in insect, types of metamorphosis with example.	**05**
VII	Insect Culture (gross study) Apiculture, Sericulture and lac culture	**06**
	Total periods	**45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – D

PARASITIC PROTOZOA AND HELMINTHES - I
(Elective Paper)

A- PARASITIC PROTOZOA

1. Introduction to parasitology :- Definition-Parasite &host, Parasitism, Types of parasites, host-parasite relationship	05
2. Classification of protozoan parasites.	02
3. Structure, life cycle, Pathogenecity and control measure of the following:	
➢ *Entamoeba coli*	03
➢ *Entamoeba gingivalis*	03
➢ *Giardia intestinalis*	03
➢ *Trichomonas vaginalis*	04
➢ *Trypanosoma gambience*	04
➢ *Balantidium coli*	03
➢ *Plasmodium vivax*	04
➢ *Plasmodium falcipparium*	04
➢ *Plasmodium ovale*	04
➢ *Plasmodium malariae*	03
➢ *Eimeria tenella*	03
Total Periods	**45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – E

COMPUTER APPLICATION AND MEDICAL LABORATORY TECHNOLOGY- I
(Elective Paper)

A- COMPUTER APPLICATION

1.	History of computer and their application to biology.	**03**
2.	Operating systems DOS, WINDOWS: Windows XP, Windows 7, and UNIX	**07**
3.	System Units: Mother board, Microprocessor and memory.	**05**
4.	Storage Devices, Input/ output devices.	**04**
5.	Microsoft office (2007): MS-word, MS-Power point, MS- Excel, MS- Publisher.	**05**
6.	Internet: Basics, Internet services, WWW services, E-mail services, Search engines.	**05**
7.	Demonstration of web utilities in biology.	**05**
8.	The introduction to programming.	**01**
9.	Programming using "C'.	**02**
10.	"C' Data types.	**03**
11.	Simple programs using C.	**05**

Total Periods **45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – F

BIOTECHNOLOGY – I
(Elective Paper)

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1. Introduction to biotechnology Definition and concept Old and new biotechnology Scope and importance, Biotechnology in India.	**03**
2. Genetic engineering Concept and definition Steps involved in gene cloning Application	**04**
3. Isolation & amplification of desired gene Isolation of DNA from cell Genomic library, cDNA library In vitro synthesis of gene Polymerase chain reaction	**04**
4. Enzymes in gene cloning Restriction enzymes (Nomenclature, type) DNA Ligase, taq polymerase, alkaline phosphates Polymerase etc	**04**
5. Cloning vectors Plasmid, bacteriophase, cosmid YAC, BAC, shuttle vector, Agro bacterium etc	**04**
6. Gene transfer methods Transformation, conjugation, Electrophoration, transfection Liposome mediated gene transfer, Gene gun, microinjection etc	**05**
7. Screening of cloned gene Direct selection, Insertional inactivation method Immunological assay, Autoradiography Colony and plaque blotting	**05**
8. Problems and solutions for gene cloning	**02**
Total periods	**45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - G

DAIRY TECHNOLOGY – I
(Elective Paper)

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1. Milk:-Definition, Composition, Factors affecting composition of milk — **05**
   - Food and Nutritive value of milk
   - Physico-chemical properties of milk.
2. Microbiology of milk:-Introduction — **05**
   - Growth and Destruction of microorganisms
   - Classification of microorganism.
3. Milk and public health: Introduction — **03**
   Safe guarding of milk supply
   - Clean milk production.
4. Buying and collection of milk :- — **04**
   - Introduction , Method of buying, Method of collection
   - Cooling of milk
   - Transportation of milk.
5. Manufacture, Packaging and storage of Pasteurized milk :- — **09**
   - Introduction., Milk reception operation, Standardization
   - Pasteurization, Homogeuration.
   - Packing and storage of milk.
6. Judging and grading of milk:-Introduction — **06**
   - Importance and procedures.
7. Indian dairy products :- — **04**
   - Introduction
   - Importance and Classification
8. Khoa :-
   - Introduction, definition classification and Composition.
   - Food and Nutritive Value.
   - Methods of production and defects of khoa.
9. Channa :- — **04**
   - Introduction, definition and Composition.
   - Channa Based sweets, Food and Nutritive Value.
   - Methods of production.
10. Dahi :- — **04**
    - Introduction, definition and Composition.
    - Channa Based sweets, Food and Nutritive Value.
    - Methods of production.

Total Periods **45**

Elective

B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - H

POULTRY SCIENCE- I
(Elective Paper)

1.	Introduction to poultry science.	**02**
2.	Classification of poultry breeds;	**08**
	➢ American	
	➢ Asiatic	
	➢ English	
	➢ Mediterronean.	
3.	Digestive, circulatory, Respiratory and Male and female reproductive system of poultry.	**15**
4.	Formation, structure and nutritive value of eggs.	**06**
5.	Breeding of poultry;	**10**
	➢ Selection	
	➢ Objective	
	➢ Methods of Selection	
	➢ Mating system.	
6.	Management of incubators	**02**
7.	Hatching of eggs.	**02**
	Total Periods	**45**

B.Sc. V Semester

Course Code - ZOL- 503
PAPER - XIX

ECOLOGY (PRACTICAL)

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1. Estimation of productivity of pond ecosystem using white and dark bottle method. **02**

2. Determine the following parameters of soil. **04**
   - pH
   - Alkalinity
   - Chlorinity
   - Salinity
   -

3. Analysis of DO, CO_2, Salinity, Chlorinity of water sample. **04**

4. Study of animal association ship with example (Charts/photo) -Competition, mutualism, parasitism, predation and commensalisms. **01**

5. Estimation of population density by Quadrate method on field and by Simulation method. **04**

6. Preparation of permanent slides of following
   Spirogyra, Verticella, Odogonium, Daphnia, Cyclops, Mysis, Cypris, keretella

7. Project report: - Forest or fresh water ecosystem.

Total practical periods: - 15

Elective

B.Sc. V Semester

Course Code - ZOL- 504
PAPER XX - A

FISHERY SCIENCE – I (PRACTICAL)
(Elective Paper)

!.	Study of freshwater fishes. Major carps Other carps. Cat fishes Clupoides	**03**
2.	Study of brackish water fishes. *Hilsa hilsa, Chanos chanos (milkfish), Latis calcarifer, Tilapia*	**02**
3.	Study of marine ware fishes. Oil sardine Mackerel Ribbon -fish Bombay-duck Pomfret Sole Polynemus	**03**
4.	Water analysis	**05**
5.	Visit to local or any reservoir and marine fish landing centre and student should be submit a project report at the time of practical examination	**02**

Total practical periods: - 15

Elective

B.Sc. V Semester

Course Code - ZOL- 504
PAPER XX - B

ANIMAL CULTURE – I (PRACTICAL)
(Elective Paper)

1.	Identification of members of bee family	03
2	.study of bee hive	02
3	study of different types of bees.	02
4	mounting of mouth parts and sting apparatus of honey colony.	04
5.	Identification of different types of hives and equipment used in apiculture.	04
	Total practical periods: -	**15**

Elective

B.Sc. V Semester

Course Code - ZOO- 504
PAPER XX - C

ENTAMOLOGY – I (PRACTICAL)
(Elective Paper)

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1. Collection and preservation of insects 02

2. Dissection –grasshopper-Digestive system, Nervous system, Reproductive system. 03

3. Mounting: - Mouth parts of Grasshopper, Mosquito, Housefly, Cockroach. 02

4. Museum study- five Human insect pest and representatives of orders: Lepidoptera, coleopteran, Odoneta, Hymenoptera, Orthoptera, with examples. 04

5. Collection of insects (at least 15 specimens should be collected and submitted at the time of examination by students) 04

Total practical periods 15

Elective

B.Sc. V Semester

Course Code - ZOO- 504
PAPER XX - D

PARASITIC PROTOZOA AND HELMINTHES – I (PRACTICAL)
(Elective Paper)

Parasitic protozoa

1. Study of microscopic structure of the following; **03**
   - *Entamoeba coli*
   - *Entamoeba histolytica*
   - *Opalina*
   - *Nyctotherus*
   - *Balantidium coli*
   - *Trichomonas* species
   - *Trypanosoma* species
   - *Plasmodium* species
   - *Eimeria* species.

2. Smear preparation:- Rat/ Fish blood smear (Giemsa stain) **04**

3. Flagellate parasite from rectum of frog and Calotes with giemsa stain. **04**

4. Ciliate parasite from rectum of frog, smear with iron haematoxxyline or tungesto phosphoric acid for Balantidium Nyctotherus and Opalina. **04**

Total practical periods: - 15

Elective

B.Sc. V Semester

Course Code – ZOO - 504
PAPER XX – E

COMPUTER APPLICATION AND MEDICAL LABORATORY TECHNOLOGY- I (Practical)
(Elective Paper)

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1. Demonstration of the use of the following devices:- **03**

   Visual Display Unit (VDU), Key board, Mouse, Light pen, Joystick, Printers, Plotters, Disks, CD-Rom.

2. Use of DOS and windows- manipulating files **02**
3. Use of internet, demonstration of various web sites related to biology. **05**
4. Introduction to programming, editing files, programming in "C'. **05**

Total practical periods: - 15

Elective

B.Sc. V Semester

Course Code – ZOO - 504
PAPER XX – F

BIOTECHNOLOGY – I (PRACTICAL)
(Elective Paper)

A)	Principle and application of following equipments 1) gel electrophoresis 2) column chromatography 3) high pressure liquid chromatography 4) centrifuge 5) laminar flow 6) spectrophotometer	**04**
B)	Estimation of total DNA from animal tissue using Diphenylamine method.	**02**
C)	Estimation of total RNA from animal tissue using orcinol method	**02**
D)	Isolation of messenger RNA from animal source using affinity chromatography	**02**
E)	Isolation of total DNA from tissue	**01**
F)	DNA electrophoresis by agarose gel	**02**
G)	Demonstration of Animinated methods of following • Gene cloning • Restriction digestion of DNA • Southern blotting techniques • Northern blotting technique	**02**

Total practical periods **15**

Elective

B.Sc. V Semester

Course Code - ZOO-504
PAPER XX – G

DAIRY TECHNOLOGY- I (PRACTICAL)
(Elective Paper)

1.	Study of steps for clean and safe milk production.	01
2.	Sampling of milk	01
3.	Platform test for judging the quality of milk; ✓ Organoleptic test ✓ Temperature ✓ COB test ✓ Alcohol test ✓ Sediment test.	01
4.	Determination of fat of milk.	01
5.	Determination of SNF and TS of milk.	01
6.	Determination of Specific gravity of milk	01
7.	Determination of acidity and ph of milk.	01
8.	Staining of Bacteria.	02
9.	Methyline blue reduction test (MBR) for milk.	01
10.	Standard plate count (SPC) of milk. Detection of adulterants and preservative in milk.	01
11.	Preparation of khoa.	01
12.	Preparation of Chhans	01
13.	Preparation of Dahi.	02
	Total practical periods	15

Elective

B.Sc. V Semester

Course Code – ZOO - 504
PAPER XX – H

POULTRY SCIENCE- I (PRACTICAL)
(Elective Paper)

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1. To study American Class poultry breeds.	01
2. To study Asiatic Class poultry breeds	01
3. To study English Class poultry breeds.	01
4. To study Mediterranean Class poultry breeds.	01
5. To Study the Circulatory system of Poultry.	02
6. To Study the Respiratory system of Poultry.	02
7. To Study the Digestive system of Poultry.	02
8. To Study the Reproductive (Male and Female) system of Poultry	02
9. To Study Formation of egg.	02
10. To Study Structure of egg.	01
Total practical periods	15

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 501
PAPER XVII

ECOLOGY

Time: 01:30 hours **Max. Mark:-30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1to3 OR Based on chapter 1to3
Q2	Long answer question. OR Long answer question.	Based on chapter 4&5 OR Based on chapter 4&5
Q3	Long answer question. OR Long answer question.	Based on chapter 6 OR Based on chapter 6

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - A

FISHERY SCIENCE – I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1& 2 OR Based on chapter 1 & 2
Q2	Long answer question. OR Long answer question.	Based on chapter3 &4 OR Based on chapter 3& 4
Q3.	Long answer question. OR Long answer question.	Based on chapter 5 & 6 OR Based on chapter 5 & 6

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – B

ANIMAL CULTURE - I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 to 4 Based on chapter 1 to 4
Q2	Long answer question. OR Long answer question.	Based on chapter 4 &5 OR Based on chapter 4 &5
Q3	Long answer question. OR Long answer question.	Based on chapter 6 &7 OR Based on chapter 6 & 7

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - C

ENTAMOLOGY - I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 to 3 OR Based on chapter 1 to 3
Q2	Long answer question. OR Long answer question.	Based on chapter 4 & 5 OR Based on chapter 4& 5
Q3	Long answer question. OR Long answer question.	Based on chapter 6 & 7 OR Based on chapter 6 & 7

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - D

PARASITIC PROTOZOA AND HELMINTHS – I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1& 2 OR Based on chapter 1& 2
Q2	Long answer question. OR Long answer question.	Based on chapter 3 OR Based on chapter 3
Q3	Long answer question. OR Long answer question.	Based on chapter 3 OR Based on chapter 3

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – E

COMPUTER APPLICATION & LAB. TECHNOLOGY- I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1to 4 OR Based on chapter 1to 4
Q2	Long answer question. OR Long answer question.	Based on chapter 5 to7 OR Based on chapter 5 to7
Q3	Long answer question. OR Long answer question.	Based on chapter 8 to11 OR Based on chapter 8 to11

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – F

BIOTECHNOLOGY – I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1, 2, 3 OR Based on chapter 1, 2, 3
Q2	Long answer question. OR Long answer question.	Based on chapter 4, 5 OR Based on chapter 4, 5
Q3	Long answer question. OR Long answer question.	Based on chapter 6, 7, 8 OR Based on chapter 6, 7, 8

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII - G

DAIRY TECHNOLOGY- I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 to 3 OR Based on chapter 1 to 3
Q2	Long answer question. OR Long answer question.	Based on chapter 4 to6 OR Based on chapter 4to 6
Q3	Long answer question. OR Long answer question.	Based on chapter 7 to 10 OR Based on chapter 7 to 10

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. V Semester

Course Code - ZOL- 502
PAPER XVIII – H

POULTRY SCIENCE - I (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 & 2 OR Based on chapter 1& 2
Q2	Long answer question. OR Long answer question.	Based on chapter 3 OR Based on chapter 3
Q3	Long answer question. OR Long answer question.	Based on chapter 4 to 7 OR Based on chapter 4to 7

Note: - wherever necessary sub-questions may be asked

B.Sc. VI Semester

Course Code – ZOL - 601
PAPER – XXI

EVOLUTION

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1. Concept of organic evolution :- **06**
   - Definition and concept.
   - Theories of organic evolution in brief; Preformation theory, Bear's Law, Biogenetic law, catastrophism, Lamarckism, Darwinism and Germplasm theory.
2. Origin of Life :- **03**
   - Definition, Abiogenesis, Biogenesis.
   - Chemical evolution of life.
3. Evidences of Organic Evolution :- **04**
   - Anatomical evidences.
   - Embryological evidences.
4. Darwinism :- **05**
   - Introduction :- Natural selection theory,
   - Artificial selection theory and sexual selection theory.
5. Elemental forces of evolution :- **07**
   - Mutation: - Concept and role in evolution.
   - Recombination: - Concept and role in evolution.
   - Natural selection: - Concept and role in evolution.
   - Isolation: - Concept and role in evolution.
   - Genetic Drift. : - Concept and role in evolution.
6. Basic patterns of evolution :- **09**
   - Sequential and divergent evolution.
   - Microevolution: - Concept, silent features and mechanism with example.
   - Macro evolution: - Concept, silent features and mechanism with example.
   - Mega evolution: - Concept, silent features and mechanism with example.
7. Species and speciation:- **07**
   - Species: - Morphological concept, Genetical concept, biological concept of species
   - Speciation: - Definition, concept, mechanism of speciation.
   - Allopatric, Sympatric and Parapatric speciation.
8. Fossils :- **04**
   - Definition , fossil formation
   - Types of fossils.

Total Periods **45**

Elective

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - A

FISHARY SCIENCE – II
(Elective Paper)

FISH CULTURE AND FISH TECHNOLOGY

A. fish culture

1. Introduction **15**
   a) Types of freshwater ponds-perennial and seasonal.
   b) Different types of ponds-nursary, rearing and stoking ponds.
   c) Design, contruction and maintenance of nursery, rearing and stocking ponds.
   d) Productivity of ponds
   e) principles of fish collection
   f) Fish culture methods
   g) Culture – cat fisheries
   h) Sewage fed fisheries

2. Fish crop production (fish diseases) **06**
   Protozoan, fungal, bacterial, viral worms diseases
3. Breeding of fishes **08**
   a) Natural spawning of carps
   c) Artificial breeding by hypophysation
   d) Common carp breeding

B. fish technology

4. Fish preservation and processing **08**
   a) Fish processing methods
   b) Fish –spoilage
   c) Value added products
   d) Sanitation and HACCP

5. Crafts and gears **08**
   a) Different types of gears
   b) Different types of crafts
   c) Preservation of gears

Total Periods 45

Elective

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - B

ANIMAL CULTURE – II (Elective Paper)

SERICULTURE

1. History and general account of sericulture industry **02**

2. Status, scope and problems of sericulture industry in India and Maharashtra. **02**
3. Different types of silkworms, their systematic position and distribution. **03**
4. life cycle of mulberry silk worm
5. Morphology of different stages of B. mori. - Egg and types, larva, pupa, adult **03.**
6. structure and working of silk gland **02**
7. Food plants. **10**
   Brief account of food plants required for non –mulbabary silk worms.
   Systematic position mad morphology of mulberry plant.
   Selection of variety, preparation of planting material
   Agro climate condition required for plantation
   Methods of plantation (mulberry cultivation)
   Maintenance of mulberry garden (irrigation and rainfed)
   Common diseases and pest of mulberry and their control.
   Harvesting and preservation of leaves
8. silk worm rearing **10**
   Rearing house, model rearing house and others.
   Rearing equipments and their uses.
   Disinfection of rearing house and equipments
   Egg incubation, buck boding and its importance.
   Hatching and brushing of larvae, methods of brushing
   Feeding and its schedule
   Bed cleaning, methods of bed cleaning
   Role of environmental conditions in rearing
   Moulting, care taken during moultiong
   Spacing and its schedule
   Mounting spinning, harvesting of cocoon
   Transportation and marketing of cocoon.

9.	Important diseases, pest of silk worm and their control:- Bacterial, fungal, viral, protozoan	04
	Pest predators- beetle, mites, ants, lizards, birds, rats etc	02
10.	Introduction to post harvesting technology (reeling) Cocoon stifing, methods of stifing. Preservation and storage of cocoons. Cocoon cooking, methods of cocoon coking Reeling- country charkha, filature.	06
11.	Sericulture as agro cottage, employment generating village industry.	01
12.	Economics of sericulture.	01
	Total Periods	**45**

Elective

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - C

ENTAMOLOGY – II
(Elective Paper)

PEST MANAGEMENT

I	pest –Definition, types of pest, agricultural, veterinary and medical pest.	**06**
II	study of major crop pest: - Classification, Characters. Jawar- Stem borer, Midge flies Cotton- Red cotton bug, pink bollworm Groundnut-White grub, pod sucking bug Sugarcane- Pyrilla, Stem borer.	**12**
III	Study of Stored grain pests: Rice weevil, pulse bettle	**08**
IV	Control measures of insect pest. Methods of control measures-Chemical, Biological, integrated pest management.	**08**
V	migration of insect.	**03**
VI	Insecticides and plant protection appliances like Hand compression spray, Hand rotating duster, bucket pump	**08**

Total Periods **45**

Elective

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - D

PARASITIC PROTOZOA AND HELMINTHES – II
(Elective Paper)

B- PARASITIC HELMINTHES

1. General characters and classification of helminthes	02
2. Structure ,life history, pathogenecity and control measure of the following;	
➢ *Schistosoma haematobium*	03
➢ *Taenia Saginata*	03
➢ *Echinococcus granulossus*	03
➢ *Trichinella spiralis*	03
➢ *Enterobius vrmicularis*	03
➢ *Ancylostoma duodenale*	02
➢ *Wuchereria bancroftii*	03
➢ *Dracunculus medinensis.*	01
3. Gross morphology of Trematoda Cestoda and Nematode.	06
4. Reproductive organs of Trematodes Cestodes and Nematodes.	06
5. Body wall of Trematodes Cestodes and Nematodes.	06
Total periods: -	**45**

Elective

B.Sc. VI Semester

Course Code – ZOL - 602
PAPER XXII - E

COMPUTER APPLICATION AND MEDICAL LABORATORY TECHNOLOGY - II
(ELECTIVE PAPER)

B-MEDICAL LABORATORY TECHNOLOGY

1. Basic Laboratory principles and procedure. **08**

Introduction

Laboratory management system.

Responsibility of laboratory worker.

Laboratory safety and aids and Training of technician.

2. Basic requirement of Laboratory. **12**

Glassware, solution and reagent, equipment and instruments.

(Autoclave, Hot air oven, Incubator, Water bath Centrifuge, Colorimeter, PH meter, Haemoglobometer, Micrometer, Glocometer.)

3. Routine examination of body fluids. **10**

Collection and examination procedure /method with special reference to clinical significance.

Blood, HB percentage, WBC, RBC count, Homeostasis (mechanism of blood coagulation).

Urine- Physical examination (Color and Odour),Chemical examination

(Protein, Glucose, Bilurubin, Uroblinogene Blood, Ketone bodies, Acetone bodies)

Sputum- Microscopic examination.

Semen- Microscopic examination, Sperm count, Sperm motility, Sperm morphology, Examination for the presence of semen.

4. Basic histopathological techniques. **10**
Collection, fixation, preparation of tissue for section

Staining and observations with critical comments.

5. Scope and importance of laboratory technique in clinical field of medical science. **05**

Total Periods: - **45**

Elective

B.Sc. VI Semester Course

Code - ZOL - 604
PAPER XXII – F

BIOTECHNOLOGY - II
(Elective paper)

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1. Animal cell culture **06**
   - Basic requirements, Culture media & sterilization
   - Contamination and sterilization of laboratory.
   - Application and limitations of cell culture

2. Manipulation of reproduction and transgenic animals **05**
   - Invitro fertilization, nuclear transplantation (Dolly sheep)
   - Transgenic animals –methods
   - (Retroviral vector method, microinjection and ES cell methods)

3. Protein engineering **06**
   - Site-directed mutagenesis (Cassette mutagenesis oligonucliotide directed)
   - Applications of mutagenesis, Hybrodoma technology
   - Commercial production of enzymes

4. Gene therapy and DNA fingerprinting **06**
   - Introduction, ex vivo, in vivo gene therapy
   - Antigene &antisence gene therapy
   - DNA fingerprinting

5. Human disease-diagnosis using biotechnology **02**

6. Applications of biotechnology **06**
   - Agriculture
   - Medicine
   - Industry

Total Periods: - 45

Elective

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - G

DAIRY TECHNOLOGY – II
(Elective paper)

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1. Concentrated indigenous dairy products :- **08**
   - Definition, Composition, Methods of production and yield of Peda, Burfi, Rabdi, Basundi and Gulabjamun.
2. Fermented indigenous dairy product: - **05**
   - Definition, Composition, Methods of production and yield of Chakka, Shrikhand and Shrikhand wadi.
3. Frozen indigenous dairy product: - **06**
   - Definition Composition, Methods of production and yield of Kulfi, Malai ka Barf.
4. Fat rich indigenous dairy product: - **06**
   - Definition Composition, Methods of production and yield of Butter and Ghee.
5. Special milk :- **10**
   - Definition Composition and Methods of production of Milk Shake, Flowered milk, Toned milk, Fortified milk, Recombined milk and Soya milk.
6. Study of microbial toxins in dairy products **05**
7. Role of dairy industry as on entrepreneur for development of small scale industry. **05**

Total Periods **45**

Elective

B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - H

POULTRY SCIENCE - II
(Elective Paper)

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1. Poultry Management ; **10**
   - Brooder management.:- Housing, sanitation&hygine,litter, Temperature space
   - Grower management.
   - Layer management.
   - Rising of Broilers.
2. Housing for poultry; **14**
   - selection site for poultry form
   - Free range or extensive system.
   - Semi intensive system.
   - Intensive system.
   - Folding System
3. Feeding of poultry. **05**
   Requirement of poultry feed, feed ingredients, Conventional and nonconventional poultry feed
4. Processing of poultry products. Preservation of poultry products. **05**
5. Marketing of poultry products. **03**
6. Poultry diseases; **08**
   Parasitic, Protozoan
   Bacterial, Fungal.

Total Periods **45**

B.Sc. VI Semester

Course Code – ZOL - 603
PAPER XXIII

EVOLUTION (PRACTICAL)

1.	Embryological evidences of evolution with the help of slide/chart/pictures.	02
2.	Adaptive modification in feets of birds and mouth parts of insects	02
3.	Study of successive stages of evolution with the help of models/charts ➢ Horse ➢ Human	02
4.	Discussion on patterns of speciation with the help of charts /pictures. ➢ Allopatric speciation ➢ Sympatric speciation.	02
5.	Study the homologous and analogous organs.	04
6.	Study of natural selection using *E.coli* bacteria against antibiotics (Tetramycin/ Penicillin)	01
7.	Study of geographical era.	02
	Total Practical periods	**15**

Elective

B.Sc. VI Semester Course

Code - ZOL- 604
PAPER XXIV – A

FISHARY SCIENCE – II (PRACTICAL)
(Elective Paper)

1.	Primary productivity of ponds (plankton studies).	**02**
2	identification, classification and culturaable significance of following. Catla, rohu, mrigal, catfishes, exotic canoj	**03**
3	Collection and identification of fish parasites and worms.	**04**
4	Removal of fish pituitary gland and preparation of pituitary extract	**02**
5	Identification of crafts and gears. Gill net, Rampanni, Satpalti, Machwa, Catamaran.	**02**
6.	A visit to fish farm and fish processing centre is compulsory.	**02**
	Total Practical Periods	**15**

Elective

B.Sc. VI Semester Course

Code - ZOL- 604
PAPER XXIV – B

ANIMAL CULTURE – II (PRACTICAL)
(Elective Paper)

1.	Different stages of silk worm from egg to adult.satges (egg, sheet diff. ages of the larvae, pupa and adult.)	03
2.	Dissection of the silkworm to study the internal anatomy and mounting the silk glands, mounting of mouth parts spinner ate spiracle etc.	02
3.	Study of disease causing pests of larvae, pupa and adult.	03
4.	Equipment needed in silkworm rearing centre.	02
5	mulberry leaves and utilization and study of mulberry varieties.	02
6.	Preparation of model of life cycle of *bombex mori* and submition at the time of Examination.	03
	Total Practical Periods	**15**

Elective

B.Sc. VI Semester Course

Code - ZOL- 604
PAPER XXIV – C

ENTAMOLOGY – II (PRACTICAL)
(Elective Paper)

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1. Collection, preservation and identification of Major crop pests (any five) **05**

   Jawar- Stem borer, Midge flies.

   Cotton- Red cotton bug, pink bollworm

   Groundnut-White grub, pod sucking bug

   Sugarcane- Pyrilla,

2. Identification of common stored grain pests. **02**

   A- Rice Weevil
   B- Rice bettle
   C- Grain moths

3. Study of common plant protection appliances like Sprayers and dusters. **02**

4. Collection of major crop pests in locality and submission at the time of examination. **04**

5. Visit of an agricultural Field and field study report. **02**

Total Practical Periods 15

Elective

B.Sc. VI Semester Course

Code – ZOL - 604
PAPER XXIV – D

PARASITIC PROTOZOA AND HELMINTHES – II (PRACTICAL)
(Elective Paper)

B-PARASITIC HELMINTHES

1. Study of microscopic structure of the following; **03**
   - ✓ *Schistosoma* Species
   - ✓ *Fasciola hepatica*
   - ✓ Redai larva
   - ✓ Cercaria larva
   - ✓ V.S. Body wall of Fasciola.
   - ✓ *Mehrorchis*
   - ✓ *Ganeo*
   - ✓ *Tremorchis*
   - ✓ *Paramphistomum*
   - ✓ *Taenia Saginatta*
   - ✓ *Echinococcus granulosus*
   - ✓ Scolex of *Taenia solium* and *Taenia saginatta.*
   - ✓ Mature proglottids
   - ✓ Gravid proglottids
   - ✓ Hexacanth Larva
   - ✓ Body wall of tape worm
   - ✓ *Enterobius vermicularis*
   - ✓ *Ascaris lumbricoides* (Specimen)
   - ✓ T.S. of Body wall of *Ascaris*
   - ✓ T.S. of *Ascaris* Male and Female
   - ✓ *Ancylostoma* W.M.
   - ✓ Microfilaria W.M.
   - ✓ *Trichinella spiralis*
2. Collection preservation staining and identification of the Trematode parasite from the rectum of frog. **04**
3. Collection preservation staining and identification of the Cestode parasite from the chick intestine **04**
4. Collection, preservation, mounting and identification of the Nematode parasite from the vertebrate. **04**

Total Practical periods: - 15

Elective

B.Sc. VI Semester Course

Code - ZOL- 604
PAPER XXIV - E

COMPUTER APPLICATION AND MEDICAL LABORATORY TECHNOLOGY – II (PRACTICAL)
(Elective Paper)

MEDICAL LABORATORY TECHNOLOGY

1. Study of laboratory equipments. **02**
   Autoclave, hot air oven, incubator water bath,
   Centrifuge, refrigerator, colorimeter, PH meter,
   Haemoglobinometer, microtome, and Glocometer.
2. Preparation of various reagents and fixatives. **02**
3. Histological techniques: preparation of biological material,
   Fixing, embedding sectioning, staining, and mounting. **02**
4. Study of blood pressure apparatus, stethoscope. **03**
5. Blood analysis- Hb percentage
   , Counting of WBC and RBC, Homeostasis. **03**
6. Urine analysis- Protein, Glucose, Bilurubin, Blood,
   Ketone bodies, Acetone bodies,
   Or any other normal and abnormal constituent. **03**

Total Practical periods: - 15

Elective

B.Sc. VI Semester Course

Code - ZOL- 604
PAPER XXIV – F

BIOTECHNOLOGY- II (PRACTICAL)
(Elective Paper)

A-	Sterilization of glassware and chemicals in tissue culture	**03**
B-	Preparation of culture media and sterilization	**02**
C-	Assay of cell viability using dye.	**02**
D-	Effect of pH on acid phosphatase activity	**02**
E-	Study of chromosomal aberration	**01**
F-	Pure Culture of airborne/water bacteria.	**02**
G-	Study of antibiotic resistant /susceptibility of bacterial culture.	**01**
H-	Demonstration of Animinated methods of following Nuclear transplantation Hybrodoma technique DNA fingerprinting Bt- cotton	**02**
	Total Practical Periods	**15**

Elective

B.Sc. VI Semester Course

Code - ZOL- 604
PAPER XXIV – G

DAIRY TECHNOLOGY- II (PRACTICAL)
(Elective Paper)

1.	Preparation of Peda.	01
2.	Preparation of Burfi.	01
3.	Preparation of Rabdi.	01
4.	Preparation of Bassundi.	01
5.	Preparation of Gulab Jamun.	01
6.	Preparation of Chakks.	01
7.	Preparation of Shrikhand.	02
8.	Preparation of Shrikhandwadi.	01
9.	Preparation of Kulfi.	01
10.	Preparation of Butter (Makhan).	01
11.	Preparation of Ghee.	01
12.	Preparation of Milk Shake.	01
13.	Flavored milk.	01
14.	Soya Milk.	01

Total Practical Periods **15**

Elective

B.Sc. VI Semester

Course Code - ZOL- 604
PAPER XXIV - H

POULTRY SCIENCE – II (PRACTICAL)
(Elective Paper)

1.	To study Poultry housing system.	03
2.	To identify and study feed ingredients	02
3.	To preservation of eggs.	02
4.	To study Protozoan diseases.	01
5.	To study parasitic diseases.	01
6.	To study Bacterial diseases.	01
7.	To study fungal diseases.	01
8.	to compute ration for chicken	01
9.	to identify equipments in poultry farm	01
10.	visit to poultry farm	01

Total Practical Periods 15

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 601
PAPER XXI

EVOLUTION

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.Long answer question. OR Long answer question.	Based on chapter 1to4 OR Based on chapter 1to4
Q2 Long answer question. OR Long answer question.	Based on chapter 5&6 OR Based on chapter 5&6
Q3 Long answer question. OR Long answer question.	Based on chapter 7&8 OR Based on chapter 7&8

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPERXXII - A

FISHARY SCIENCE - II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 OR Based on chapter 1
Q2	Long answer question. OR Long answer question.	Based on chapter 2&3 OR Based on chapter 2 & 3
Q3	Long answer question. OR Long answer question.	Based on chapter 4 & 5 OR Based on chapter 4 & 5

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPERXXII - B

ANIMAL CULTURE – II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 to 7 OR Based on chapter 1 to 7
Q2	Long answer question. OR Long answer question.	Based on chapter 8 to 10 OR Based on chapter 8 to 10
Q3	Long answer question. OR Long answer question.	Based on chapter 11 to 13 OR Based on chapter 11 to 13

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPERXXII - C

ENTAMOLOGY – II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter1 & 2 OR Based on chapter 1& 2
Q2	Long answer question. OR Long answer question.	Based on chapter 3 & 4 OR Based on chapter 3 & 4
Q3	Long answer question. OR Long answer question.	Based on chapter 5 & 6 OR Based on chapter 5& 6

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code – ZO - 602
PAPERXXII - D

PARASITIC PROTOZOA & HELMINTHS – II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 &2 OR Based on chapter 1 &2
Q2	Long answer question. OR Long answer question.	Based on chapter 2 OR Based on chapter 2
Q3	Long answer question. OR Long answer question.	Based on chapter 3 to 5 OR Based on chapter 3 to 5

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII - E

COMPUTER APPLICATION & LABORATORY TECHNOLOGY – II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 & 3 OR Based on chapter 1&3
Q2	Long answer question. OR Long answer question.	Based on chapter 2 OR Based on chapter 2
Q3	Long answer question. OR Long answer question.	Based on chapter 4&5 OR Based on chapter 4&5

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPERXXII - F

BIOTECHNOLOGY – II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1, 2 OR Based on chapter 1, 2
Q2	Long answer question. OR Long answer question.	Based on chapter 3, 4 OR Based on chapter 3, 4
Q3	Long answer question. OR Long answer question.	Based on chapter 5, 6 OR Based on chapter 5, 6

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII – G

DAIRY SCIENCE - II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1& 2 OR Based on chapter 1&2
Q2	Long answer question. OR Long answer question.	Based on chapter 3& 4 OR Based on chapter 3& 4
Q3	Long answer question. OR Long answer question.	Based on chapter 5 to7 OR Based on chapter 5 to 7

Note: - wherever necessary sub-questions may be asked

Elective

Pattern of Question Paper
B.Sc. VI Semester

Course Code - ZOL- 602
PAPER XXII – H

POULTRY SCIENCE-II (Elective Paper)

Time: 01:30 hours **Max. Marks: 30**

N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.

Q1.	Long answer question. OR Long answer question.	Based on chapter 1 OR Based on chapter 1
Q2	Long answer question. OR Long answer question.	Based on chapter 2 &5 OR Based on chapter 2 & 5
Q3	Long answer question. OR Long answer question.	Based on chapter 3, 4, 6 OR Based on chapter 3, 4, 6

Note: - wherever necessary sub-questions may be asked

B.Sc. V + VI Semester

Course Code - ZOL- 503 + 603
PAPER XIX – A + XXIII – A

ECOLOGY + EVOLUTION (PRACTICAL)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Estimation of .....of water sample. (DO/ CO_2,/salinity/Chorinity) OR Estimation of primary productivity of pond water OR Estimation of .....of Soil sample. (Alkalinity / Chlorinity / Salinity)	20
Q.2	study of natural selection of E.coli against.....antibiotics OR Comment on successive stages of evolution of Horse/ man	20
Q.3	Calculate the population density of given sample using Quadrate method. OR Identify and comment on homologous organs and analogous organs. (Any two)	10
Q.4	Identify the given spots and comment on it. (Embryological evidence -01, Adaptive modification- 02, Animal associationship- 02)	25
Q.5	submission of permanent slides (At least five)	10
Q.6	Record book	10
Q.7	Vivo-vice	05

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL-504+604
PAPER XX – A + XXIV – A

FISHERY SCIENCES-I & II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Estimation of .....from given water sample. (DO, Alkalinity, chlorinity, Hardness, etc.)	**15**
Q.2	Identify any four primary producers from given sample OR Dissection of .....fish to expose its pituitary gland.	**15**
Q.3	Collection and Identification of .....parasites from fish. OR Identify and comments on crafts and gars.	**15**
Q.4	Identify and comments on given Spots. (Major carp-03, brackish water-02, Marine water-03 culturable -02)	**30**
Q.5	submission of project report	**10**
Q.6	record book	**10**
Q.7	Vivo-vice	**05**

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL-50 4+ 604
PAPER XX – B + XXIV - B

ANIMAL CULTURE –I& II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Identify the types of bee hives and equipments used in apiculture.	**15**
	OR	
	Identify and comments on bee hive.	
Q.2	Dissection of silkworm so as to expose its silk gland	**15**
Q.3	Mounting of supplied material and write procedure followed.	**10**
Q.4	Identification of given pests of silkworm and write their consequences.	**10**
Q.5	Identify the given spots and comments on it	**25**
	(Equipments in apiculture-02, silkworm stages-01, types of bee -02)	
Q.6	submission of model	**10**
Q.7	record book	**10**
Q.8	Viva-vice	**05**

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL-504 + 604
PAPER XX – C + XXIV – C

ENTAMOLOGY – I & II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Dissection of ----------system of grasshopper. Leave the well labeled Diagram of the same.	15
Q.2	study of major crop pest	15
Q.3	Mounting / temporary preparation of supplied material	10
Q.4	Identify and describe (any five) (Stored grain pest-03, plant protection appliances-02)	15
Q.5	Identify and comment on given spots. (Insect specimen-03, human insect pest-02)	20
Q.6	submission of collected insect and agricultural and field report	10
Q.7	record book	10
Q.8	vivo-vice	05

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL-504 + 604
PAPER XX – D + XXIV - D

PARASITIC PROTOZOA & HELMINTHS – I & II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	collect and identify .....protozoan from rectum of	**25**
	OR	
	Prepare the blood Smear and identify parasitic protozoa from it.	
Q.2	Dissect .....and identify ..... helminthes (Frog rectum /chick intestine).	**20**
	OR	
	Dissect the given fish and identify the Helminthes from it.	
Q.3	Identify the given helminthes larvae and comment on it.	**10**
Q.4	identify the given spots and comments on it	**30**
Q.5	record book	**10**
Q.6	vivo-vice	**05**

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL- 504 + 604
PAPER XX – E + XXIV – E

COMPUTER APPLICATION AND
LABOLATORY TECHNIQUES –I & II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Demonstrates any five DOS commands on computer and writes their syntax. OR Demonstrate and use of any two window commands	**20**
Q.2	Give WBC/ RBC count of given blood sample write the procedure OR Find out the constitute of given urine sample and write the procedure	**20**
Q.3	prepare the data sheet of given data on Excel sheet OR Search..... on internet and show to Examinar. (Keyword related to zoology like ecosystem, urine formation, gene etc)	**10**
Q.4	preparation of given solutions /fixative and write procedure followed for it. OR Preparation of block of given tissue for microtome	**10**
Q.5	Identify the given Spots and comments on it. (Computer hard-were - 03/ lab. Instruments -2)	**25**
Q.6	Record book	**10**
Q.7	Vivo-vice	**05**

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL-504+604
PAPER XX – F + XXIV – F

BIOTECHNOLOGY – I & II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Estimation of total DNA from .....tissue of	**25**
	OR	
	Isolation of messenger RNA from.....tissue of.....	
	OR	
	Isolation of total DNA from..... tissue of	
Q.2	preparation of culture media for animal culture	**25**
	OR	
	Sterilization of ..... for tissue culture and write procedure. (Chemical / glassware/ lab)	
	OR	
	Effect of pH on acid phosphatase activity and Record the observation	
Q.3	writes principle and application of.....	**20**
	OR	
	Assay of cell viability using.....dye.	
	OR	
	Observation of susceptibility/resistant of..... antibiotic to bacterial stain.	
Q.4	study of chromosomal aberration	**15**
Q.5	Record book	**10**
Q.6	Vivo-vice	**05**

Elective

Skeleton of question paper
B.Sc. V+VI Semester

Course Code - ZOL-504+604
PAPER XX – G + XXIV – G

DAIRY SCIENCES – I & II (PRACTICAL)
(Elective Paper)

Time: - 4:00 hrs **Total marks:-100**

Q.1	Insure the quality of given milk sample using.....methods (At least two methods) OR Determine the amount of fat in given milk sample.	25
Q.2	Prepare .....from milk	20
Q.3	Determine the .....of milk (any one) (Acidity, TS, SNF, MBR, SPC) OR Prepare ..... from milk.	10
Q.4	Identify and comments on following spots. (Milk products)	30
Q.5	Record book	10
Q.7	vivo-vice.	05

PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE
& SCIENCE COLLEGE, KARMAD
TQ. & DIST. AURANGABAD

V – 3 elective
VI – 2 elective

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Scl./B.Sc. & M.Sc. Syll./5/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under** :-

Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCL./
2015/3761-4160
Date:- 16-06-2015.

★ ★ ★ ★ ★ ★ ★

Director,
Board of College and University Development.

..2..

Copy forwarded with compliments to:-

1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

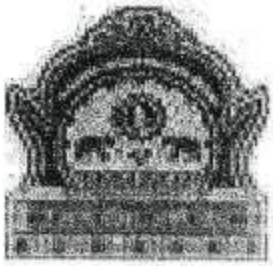
Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [M.Sc. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

-***-

S*/-160615/-

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.



Syllabus of B. A. /B. Sc. Third year (Mathematics) (Optional) With Effect from June – 2015

DR . BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

BOARD OF STUDIES IN MATHEMATICS

REVISED SYLLABUS FOR THIRD YEAR B.Sc. (MATHEMATICS)

(With Effect From June -2015)

Semester V

Compulsory Papers:

Paper – MAT 501: Real Analysis – I
Paper – MAT 502: Abstract Algebra – I

Optional Papers (Any One):

Paper – MAT 503: Mathematical Statistics – I
Paper – MAT 504: Ordinary Differential Equations – I
Paper – MAT 505: Programming in C – I

Semester VI

Compulsory Papers:

Paper – MAT 601: Real Analysis – II
Paper – MAT 602: Abstract Algebra – II

Optional Papers (Any One):

Paper – MAT 603: Mathematical Statistics – II
Paper – MAT 604: Ordinary Differential Equations – II
Paper – MAT 605: Programming in C – II

REVISED SYLLABUS FOR THIRD YEAR B.A. (MATHEMATICS)

(With Effect From June -2015)

Semester V

Main Papers:

Paper – MAT 501: Real Analysis – I
Paper – MAT 502: Abstract Algebra – I

Subsidiary Papers:

Paper – MAT 503: Mathematical Statistics – I
Paper – MAT 504: Ordinary Differential Equations – I

Semester VI

Main Papers:

Paper – MAT 601: Real Analysis – II
Paper – MAT 602: Abstract Algebra – II

Subsidiary Papers:

Paper – MAT 603: Mathematical Statistics – II
Paper – MAT 604: Ordinary Differential Equations – II

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 501: Real Analysis – I

Periods : 60
Marks : 50

1) Prerequisite:
Sets and elements, Operations on sets.

2) Functions:
Functions, Real-valued functions, Equivalence, Countability, Real numbers, Least upper bounds. [1]

3) Sequences of Real Numbers:
Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences, Operations on convergent sequences, Operations on divergent sequences, Limit superior and limit inferior, Cauchy sequences. [1]

4) Series of Real Numbers:
Convergence and divergence, Series with non-negative terms, Alternating series, Conditional convergence and convergence, Test for absolute convergence. [1]

5) Jacobians:
Definitions, Case of function of functions, Jacobian of implicit functions, Necessary and sufficient condition for a Jacobian to vanish. [2]

Recommended books:

1] R. R. Goldberg : ***Methods of Real Analysis*** : Oxford and IBH Publishing Co. Pvt. Ltd. NewDelhi.

Scope:

Chapter 1 : 1.3(A, B, C, D, E, F, G, H, I), 1.4(A, B, C, D, E), 1.5(A, B, C, D, E, F, G, H, I), 1.6(A, B, C, D, E), 1.7(A, B, C, D, E).

Chapter 2 : 2.1(A, B, C, D), 2.2(A, B), 2.3(A, B, C, D), 2.4(A, B, C), 2.5(A, B), 2.6(A, B, C, D, E), 2.7(A, B, C, D, E, F, G, H, I, J), 2.8(A, B, C, D), 2.9(A, B, C, D, E, F, G, I, J, K, L, M), 2.10(A, B, C, D, E), 2.12(A, B).

Chapter 3 : 3.1(A, B, C, D), 3.2(A, B, C, D, E), 3.3(A, B), 2.4(A, B, C), 3.6 (A, B, C, D, E, F, G, H, I,)

2] J. N. Sharma and A. R. Vashistha : ***Real Analysis*** : Krishna Prakashan Media (P), Ltd. Meerut.

Scope:

Chapter 13 : Articles 1, 2, 3, 4, 5, 6, 7

References:

1) D. Somasundaram and B. Choudhary : ***A first Course in Mathematical Analysis*** : Narosa Publishing House, New Delhi.
2) Hari Kishan ***: Real Analysis*** : Pragati Prakashan, Meerut.
3) S. K. Mittal and S. K. Pundir : ***Real Analysis*** : Pragati Prakashan, Meerut.

Note : Questions on prerequisite should not be asked.

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 502: Abstract Algebra – I

Periods : 60
Marks : 50

1) Prerequisite:
Sets, Functions, Integers.

2) Group Theory:
Definition of a group, Some examples of groups, Some preliminary lemmas Subgroups, A counting Principle, Normal subgroups and quotient groups Homomrphism, Automorphism. [1]

3) Ring Theory:
Definition and examples of rings Some special classes of ring, Ideals and quotient rings More ideals and quotient rings, Polynomial ring. [1]

Recommended books:
1] I. N. Herstein : ***Topics in Algebra*** : Willey Eastern Pvt. Ltd., NewDelhi.

Scope:
Chapter 2 : 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7(Cauchy's Theorem for Abelian Groups and Cauchy's Theorem for Abelian Groups are without proof), 2.8.
Chapter 3 : 3.1, 3.2, 3.3, 3.5, 3.9(Omit Theorem 3.9.1)

References:
1) A. R. Vasishtha : ***Modern Algebra*** : Krishna Prakashan Media Pvt. Ltd. Meerut.
2) M. L. Khanna : ***Modern Algebra*** : Jai Prakash Nath and Co. Meerut.
3) Vijay K. Khanna and S. K. Bhambri : ***A course in Abstract Algebra*** : Vikas Publishing House Pvt.Ltd. New Delhi.
4) Surjeet Singh and Qazi Zameeruddin : ***Modern Algebra*** : Vikas Publishing House Pvt. Ltd. New Delhi.
5) Bhupendra Singh : ***Advanced Abstract Algebra*** : Pragati Prakashan Meerut.
6) Shanti Narayan and Sat Pal : ***A Text book of Modern Abstract Algebra*** : S. Chand and Co. Ltd. New Delhi.
7) I. N. Herstein : Abstract Algebra (Third Edition): Prentice-Hall, Upper Saddle River, New Jersey 07458.
8) Joseph A. Gallian : Contemporary Abstract Algebra (Seventh Edition) : Brooks/Cole 10 Davis Drive Belmont, CA 94002 – 3098 USA.
9) Goyal J. K. and K. P. Gupta : ***Advanced course in Abstract Algebra*** : Pragati Prakashan, Meerut.
10) J. N. Kapoor and K. R. Kalra : ***Modern Algebra*** **(Volume I and II)**: R. Chand and Co. New Delhi.
11) S. Nanda : ***Topics in Algebra***: Allied publishers Pvt. Ltd., New Delhi.

Note : Questions on prerequisite should not be asked.

Optional Papers (any ONE)

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 503: Mathematical Statistics – I

Periods : 60
Marks : 50

1) Frequency Distribution and Measures of Central Tendency:
Frequency distribution, Continuous frequency distribution, Graphical representation of a frequency distribution, Histograms, Frequency Polygon, Measures of Central Tendency, Arithmetic mean, Properties of arithmetic mean, merits and demerits of Arithmetic mean, Weighted mean, Median, Merits and demerits of Median, Mode Merits and demerits of mode, Geometric mean, Merits and demerits of Geometric mean, Harmonic mean, partitions [1]

2) Measures of Dispersion Skewness and Kurtosis:
Dispersion, Characteristic for an ideal measure of dispersion, Measures of dispersion, Range, Quartile deviation, Mean deviation, Standard deviation and root mean square deviation, Relation between and s, Different formulae for calculating variance, Variance of the combined series, Coefficient of dispersion, Coefficient of variations, Moments, Relation between moments about mean in terms of moments about any point and vice versa, Effect of change of Origin and scale on moments, Pearson's and coefficients, Skewness and kurtosis. [1]

3) Theory of Probability:
Introduction, Definition of various terms, Mathematical or Classical Probability, Statistical Probability, Axiomatic approach to probability, Random experiments, Sample space, Events, Some illustrations, Algebra of events, Probability – Mathematical Notion, Probability function, Theorems on Probability of events, Law of addition of Probability, Multiplication law of probability and conditional probability, Independent events, Pairwise independent events, Conditions for mutual independence of n events. [1]

4) Random Variables and Distribution Functions:
Random Variable, Distribution function, Properties of distribution function, Discrete random variables, Probability mass function, Discrete distribution function, Continuous random variable, Probability density function, Various measures of Central tendency, Continuous distribution function. [1]

Recommended Book:
1] S. C. Gupta and V. K. Kapoor : ***Fundamentals of Mathematical Statistics*** (Nineth Edition) : Sultan Chand and Sons, New Delhi.

Scope:
Ch – 2: 2.1, 2.1.1, 2.2, 2.2.1, 2.2.2, 2.3, 2.4, 2.5, 2.5.1, 2.5.1, 2.5.2, 2.5.3, 2.6, 2.6.1, 2.7, 2.7.1, 2.8, 2.8.1, 2.9, 2.9.1, 2.11.
Ch – 3: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.7.1, 3.7.2, 3.7.3, 2.8, 2.8.1, 3.9, 3.9.1, 3.9.2, 3.10, 3.13, 3,14.
Ch – 4: 4.1, 4.3, 4.3.1, 4.3.2, 4.5, 4.5.1, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.6, 4.6.1(omit Thm 4.1), 4.6.2, 4.7, 4.7.2, 4.7.3, 4.7.4, 4.7.5
Ch – 5: 5.1, 5.2, 5.2.1, 5.3, 5.3.1, 5.3.2, 5.4, 5.4.1, 5.4.2, 5.4.3

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 504: Ordinary Differential Equations – I

Periods : 60
Marks : 50

Prerequisite: Complex numbers

1) Preliminaries:
Introduction, Functions, Polynomials, Complex series and the exponential function, Determinants. [1]

2) Linear Equations of First Order:
Introduction, Differential Equations, Problems associated with differential equations, Linear equations of the first order, The equation $y' + ay = 0$, The equation $y' + ay = b(x)$, The general linear equation of the first order. [1]

3) Linear Equations with Constant Coefficients:
Introduction, The second order homogeneous equation, Initial value problems for second order equations, Linear dependence and independence, A formula for Wronskian, The non-homogeneous equation of order two. [1]

Recommended Book:

1] Earl A. Coddington : ***An Introduction to Ordinary Differential Equations*** : Prentice Hall of India Learning Private Limited, New Delhi-110001, (2009)

Scope:
Chapter 0. - Article 1, 3, 4, 5, 6
Chapter 1. - Article 1, 2, 3, 4, 5, 6, 7
Chapter 2. - Article 1, 2, 3, 4, 5, 6

Reference Books:

1) E.A.Coddington and Levinson Norman : ***Theory of Ordinary Differential Equations*** : McGraw Hill New York, (1955)
2) A.H.Siddiqi and P. Manchanda : ***A First Course in Differential Equations with Applications*** : Macmillan India Ltd., (2006)
3) D.G.Zill and M.R.Cullen : ***Advanced Engineering Mathematics*** (Second Edition) : Jones and Bartlett Publishers, (2000)

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Paper – MAT 505: Programming in C – I

Periods : 45
Marks : 40

1) Overview of C :
Introduction, Importance of c, Sample C Programs, Basic structure of C programs, programming style, Executing a C program. [1]

2) Constants, Variables and Data Types :
Introduction, Character set, C tokens, Keywords and identifies, Constants, variables, Data types, Declaration of Variables, Storage class Assigning values to variables, Defining symbolic constants, case studies. [1]

3) Operators and Expressions:
Introduction, Arithmetic of operators , Relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special operators, Arithmetic expression, Evaluation of expressions, Precedence of arithmetic operators, Some computational problems, Type conversions in expression, Operators precedence and Associativity, mathematical functions. [1]

4) Managing Input and Output Operators:
Introduction, Reading a character, Writing a character, Formatted input, Formatted output. [1]

Recommended Book :

1] E. Balagurusamy : ***Programming in ANSI C*** (Fourth Edition) :Tata McGraw Hill

Scope:
Ch.1 :1.1,1.2, 1.3,1.4,1.5,1.6, 1.8 to 1.10
Ch.2 : 2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.9,2.10, 2.11
Ch.3 : 3.1 to 3.16
Ch.4 : 4.1 to 4.5

References:
1) Y.P. Kanetkar : ***Let us C*** : BPB Publication
2) Gottfried : ***Programming in C*** : Schaum's Series
3) Moolish Kooper : *Spirit of "C"*
4) D. Ravichandran : ***Programming in C*** : New-Age International Publisher
5) J.B.Dixit :***Mastering C Programs***
6) Pradip D Y and Manas Ghosh : ***Fundamentals of Computing and Programming in C***
7) V.Rajaraman : ***Computer Programming in C*** : PHI Pvt Ltd, New Delhi(2005)

B.Sc. (Third Year)(Mathematics)(Fifth Semester)

Practical Paper – MAT-PR- 505(Based on MAT 505)

Periods : 15
Marks : 10

List of Experiments/Programs:

1. Program to find Maximum between two numbers using conditional operator.
2. Program to convert Temperature in Farad into Celsius. (C=0.5(F-32))
3. Program to find addition of two numbers.
4. Program to find square root of a number using *sqrt()* function.
5. Program to find m^n using *pow()* function.
6. Program to find simple interest (Si=(p+n+r)/100).
7. Program to find Area of Circle ($A=\pi r^2$)
8. Program to find Circumference of Rectangle (C= 2(length+breadth))
9. Program to find root of Quadratic Equation $\frac{-b\pm\sqrt{b^2-4ac}}{2a}$
10. Program to find Area of Rectangle (A = w x h)
11. Program to find circumference of circle
12. Program to find Area of Triangle. (A= ½ x b x h)
13. Program to find Area of Square (A = a2)
14. Program to find Area of Sphere (A = 4 π r2√)□
15. Program to Find Area of Cone (A= π r (r + 2+r2)

Note: University Practical Examination will be conducted annually.

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 601: Real Analysis – II

Periods : 60
Marks : 50

1) Limits in Metric Spaces:

Metric spaces, Limits in metric spaces. [1]

2) Continuous Functions on Metric Spaces:

Functions continuous on metric spaces, open sets, Closed sets. [1]

3) Connectedness, Completeness and Compactness:

More about open sets, connected sets, bounded sets and totally bounded sets, Complete metric spaces, Compact metric spaces, Continuous functions on compact metric spaces, Uniform continuity. [1]

4) Calculus:

Sets of measure zero, Definition of Riemann Integral, Existence of Riemann Integral, Fundamental Theorem of Calculus. [1]

5) Fourier Series:

Introduction. [2]

Recommended books:

1] R. R. Goldberg : ***Methods of Real Analysis*** : Oxford and IBH Publishing Co. Pvt. Ltd. NewDelhi.

Scope:

Chapter 4 : 4.2(A, B, C), 4.3(A, C, D).

Chapter 5 : 5.3(A, B, C, D, E, F, G, H), 5.4(A, B, C, D, E, F, G), 5.5(A, B, C, D, E, F, G, H, I, J, L, M).

Chapter 6 : 6.1(A, B), 6.2(A, B), 6.3(A, B, C, D, E), 6.4(A, B, C, D, E, F), 6.5 (A, B, C, D, E), 6.6(A, B, C, D), 6.8(A, B, C, D, E)

Chapter 7 : 7.1(A, B, C, D), 7.2(A, B, C, D, E, F, G), 7.3(Theorem and Lemma are without Proof), 7.4(A, B, C, D, E, F), 7.8(A, B, C, D, E, F, G)

2] D. Somasundaram and B. Choudhary : ***A first Course in Mathematical Analysis*** : Narosa Publishing House, New Delhi.

Scope:

Chapter 10 : Articles 10.1

References:

1) J. N. Sharma and A. R. Vashistha : ***Real Analysis*** : Krishna Prakashan Media (P), Ltd. Meerut.

2) Hari Kishan : ***Real Analysis*** : Pragati Prakashan, Meerut.

3) S. K. Mittal and S. K. Pundir : ***Real Analysis*** : Pragati Prakashan, Meerut.

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 602: Abstract Algebra – II

Periods : 60
Marks : 50

1) Vector Spaces and Modules:

Elementary basic concepts, Linear independence and bases, Dual Spaces, Inner product spaces, Modules. [1]

Recommended books:

1] 1. N. Herstein : ***Topics in Algebra*** : Willey Eastern Pvt. Ltd., NewDelhi.

Scope:

Chapter 4 : 4.1, 4.2, 4.3, 4.4, 4.5

References:

1) A. R. Vasishtha : ***Modern Algebra*** : Krishna Prakashan Media Pvt. Ltd. Meerut.
2) M. L. Khanna : ***Modern Algebra*** : Jai Prakash Nath and Co. Meerut.
3) Vijay K. Khanna and S. K. Bhambri : ***A course in Abstract Algebra*** : Vikas Publishing House Pvt.Ltd. New Delhi.
4) Surjeet Singh and Qazi Zameeruddin : ***Modern Algebra*** : Vikas Publishing House Pvt. Ltd. New Delhi.
5) Bhupendra Singh : ***Advanced Abstract Algebra*** : Pragati Prakashan Meerut.
6) Shanti Narayan and Sat Pal : ***A Text book of Modern Abstract Algebra*** : S. Chand and Co. Ltd. New Delhi.
7) P. N. Chatterjjee : ***Linear Algebra*** : Prentice-Hall, Upper Saddle River, New Jersey 07458.
8) Joseph A. Gallian : ***Contemporary Abstract Algebra*** (Seventh Edition) : Brooks/Cole 10 Davis Drive Belmont, CA 94002 – 3098 USA.
9) Goyal J. K. and K. P. Gupta : ***Advanced course in Abstract Algebra*** : Pragati Prakashan, Meerut.
10) J. N. Kapoor and K. R. Kalra : ***Modern Algebra*** **(Volume I and II)**: R. Chand and Co. New Delhi.
11) S. Nanda : ***Topics in Algebra***: Allied publishers Pvt. Ltd., New Delhi.

Optional Papers (any ONE)

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 603: Mathematical Statistics – II

Periods : 60
Marks : 50

1) Mathematical Expectation, Generating Functions:
Mathematical expectation, Expectation of a function of a random variable, Addition theorem of expectation, Multiplication theorem of expectation, Expectation of linear combination of random variables, Covariance, Correlation coefficient, Variance of a linear combination of random variables. [1]

2) Theoretical Discrete Probability Distributions:
Binomial distribution, moments, Recurrence relation for the moments of Binomial distribution, Moment generating function of Binomial distribution, Additive property of Binomial distribution, Cumulants of Binomial distribution, Recurrence relation for cumulants of Binomial distribution, Poission distribution, Moments of Poission distribution, Recurrence relation for moments of Poission distribution, Moment generating function of Poission distribution, cumulants of Poission distribution, Additive property of independent Poission variates, Geometric didtribution, Lack of memory, Moment of geometric distribution, Moment generating function of Geometric distribution. [1]

3) Theoretical Continuous Distributions:
Rectangular or Uniform distribution, Moments of rectangular distribution, Moment generating distribution of rectangular distribution, Normal distribution, Normal distribution as a limiting case of a binomial distribution, Mode of Normal distribution, Median of Normal distribution, moment generating function of Normal distribution, Cumulant generating function of Normal distribution, moments of Normal distribution, Gamma distribution, Moment generating function of Gamma distribution, Cumulant generating function of Gamma distribution, additive property of Gamma distribution, Exponential distribution, Moment generating function of exponential distribution. [1]

4) Correlation and Regression:
Bivariate distribution, Correlation, Scatter diagram, Karl Pearson's coefficient of correlation, limits for correlation coefficient, Assumptions underlying Karl Pearson's correlation, Regression, Lines of regression, regression curves, Properties of regression coefficients, Angle between two lines of regression. [1]

Recommended Book:
1] S. C. Gupta and V. K. Kapoor : ***Fundamentals of Mathematical Statistics*** (Ninth Edition) : Sultan Chand and Sons, New Delhi.

Scope:
Ch – 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.6.1, 6.7
Ch – 7: 7.2, 7.2.1, 7.2.2, 7.2.6, 7.2.7, 7.2.9, 7.2.10, 7.3, 7.3.2, 7.3.4, 7.3.5, 7.3.7, 7.3.8, 7.5, 7.5.1, 7.5.2, 7.5.2
Ch – 8: 8.1, 8.1.1, 8.1.2, 8.2, 8.2.1, 8.2.3, 8.2.4, 8.2.5, 8.2.6, 8.2.7, 8.3, 8.3.1, 8.3.2, 8.3.3, 8.6, 8.6.1
Ch – 10: 10.1, 10.2, 10.3, 10.3.1, 10.3.2, 10.7, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Paper – MAT 604: Ordinary Differential Equations – II

Periods : 60
Marks : 50

1) Linear Equations with Variable Coefficients:
Introduction, Initial value problems for the homogeneous equation, Solution of homogeneous equation, The Wronskian and linear independence, Reduction of the order of a homogeneous equation, The nonhomogeneous equation, Homogeneous equation with analytic coefficients, The Legendre equation. [1]

2) Linear Equations with Regular Singular Points:
Introduction, The Euler equation, Second order equations with regular singular points- an example, Second order equations with regular singular points- the general case, The Bessel equation. [1]

Recommended Book:
1] Earl A. Coddington : ***An Introduction to Ordinary Differential Equations*** : Prentice India Learning Private Limited, New Delhi-110001, (2009)

Scope:

Chapter 3.- Article 1,2,3,4,5,6,7,8
Chapter 4.- Article 1,2, 3, 4, 7

Reference Books:

1) E. A. Coddington and Levinson Norman : ***Theory of Ordinary Differential Equations*** : McGraw Hill New York, (1955)
2) A.H.Siddiqi and P. Manchanda : ***A First Course in Differential Equations with Applications*** : Macmillan India Ltd., (2006)
3) D.G.Zill and M.R.Cullen : ***Advanced Engineering Mathematics*** (Second Edition) : Jones and Bartlett Publishers, (2000)

B.Sc. (Third Year)(Mathematics)(Sixth Semester)
Paper – MAT 605: Programming in C – II

Periods : 45
Marks : 40

1) Decision Making and Branching:
Introduction, Decision making with if statement, Simple if statement, The ifelse statement, Nesting of ifelse statement, The elseif ladder, The switch statement, The ?: Operator, The goto statement [1]

2) Decision Making and Looping:
Introduction, The while statement, The do statement, The for statement, Jumps in loops [1]

3) Arrays:
Introduction, One dimensional arrays, Declaration, Initialization, Two dimensional arrays, Initializing two-dimensional arrays, Multidimensional arrays. [1]

Recommended Book :
1] E. Balagurusamy : ***Programming in ANSI C*** (Second Edition) : Tata McGraw Hill

Scope:
Ch – 5 : 5.1 to 5.9
Ch – 6 : 6.1 to 6.5
Ch – 7 : 7.1 to 7.7

References:
1) Y.P. Kanetkar : ***Let us C*** : BPB Publication
2) Gottfried : ***Programming in C*** : Schaum's Series
3) Moolish Kooper : *Spirit of "C"*
4) D. Ravichandran : ***Programming in C*** : New-Age International Publisher
5) J.B.Dixit :***Mastering C Programs***
6) Pradip D Y and Manas Ghosh : ***Fundamentals of Computing and Programming in C***
7) V.Rajaraman : ***Computer Programming in C*** : PHI Pvt Ltd, New Delhi(2005)

Note: (i) There should be annual practical based on Paper : MAT 505 and MAT 605 of 20 Marks in Mar/Apr Practical Examination
(ii) There should be separate passing for Theory and Practical.

Dr. B. R. Sontakke
(Chairman, Board of Studies in Mathematics)

B.Sc. (Third Year)(Mathematics)(Sixth Semester)

Practical Paper – MAT-PR 605(Based on MAT 605)

Periods : 15
Marks : 10

List o f Experiments/Programs:

1. Program to find minimum between two number using if.
2. Program to Calculate factorial of a number.
3. Program to check given number is prime or not.
4. Program to check given number is Armstrong or not. ($153 = 1^3+5^3+3^3$)
5. Program to find n terms of Fibonacci Series (1 1 2 3 5 8 13 21 .....)
6. Program to find n terms of the Series.

$$\sum_{n=1}^{\infty} \frac{1}{2^n} = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \cdots.$$

7. Program to Sort any 10 Array Elements.
8. Program to Calculate Addition/Subtraction of two Matrices.
9. Program to calculate multiplication of two matrices.
10. Program to calculate Determinant of Matrix.
11. Program to Find Transpose of a Matrix.
12. Program to check given year is leap or not.
13. Program to find sum of series 1 to n.
14. Program to Calculate Grade of Student by inputting Percenta ge of the student.
15. Program to C heck given number is palindrome or not (ex. 12321)

Note: University Practical Examination will be conducted ann ually.

PRACTICAL QUESTION FORMAT

(MAT-PR-505 &605) (20 Marks) **Max.Time :Three Hours**

Q.1.	**Record Book**	**05 Marks.**
Q.2.	**Oral (Viva)**	**05 Marks.**
Q. 3.	**Write/Edit/Print a program in C (Based on MAT-505& 605)**	**10 Marks.**
	OR	
Q. 4.	**Write /Edit/Print a program in C (Based on MAT-505& 605)**	**10 Marks.**

Dr. Bhausaheb Sontakke
Chairman,
BOS in Mathematics

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/NP/B.Sc.-Ist Yr./SEM.-I & II/157/2013

It is hereby notified for information of all concerned that, on the recommendations of the Boards of Studies, Ad-hoc Boards, and Faculty of Science, the Academic Council at its meeting held on 25-03-2013 has accepted the following revised syllabi for B.Sc. First Year progressively under the Faculty of Science :-

Sr. No.	Revised Syllabus	
[1]	B.Sc. [Physics]	Semester- I & II,
[2]	B.Sc. [Dairy Science & Technology]	Semester- I & II,
[3]	B.Sc. [Industrial Chemistry]	Semester- I & II,
[4]	B.Sc. [Geology]	Semester- I & II,
[5]	B.Sc. [Chemistry]	Semester- I & II,
[6]	B.Sc. [Botany]	Semester- I & II,
[7]	B.Sc. [Electronics] Science	Semester- I & II,
[8]	B.Sc. [Fisheries]	Semester- I & II,
[9]	B.Sc. [Microbiology]	Semester- I & II,
[10]	B.A. [Statistics]	Semester- I & II,
[11]	B.Sc. [Statistics]	Semester- I & II,
[12]	B.Sc. [Zoology]	Semester- I & II,
[13]	B.Sc. [Textile and Interior Decoration]	Semester- I & II,
[14]	B.Sc. [Home Science]	Semester- I & II,
[15]	B.A. / B.Sc. [Mathematics]	Semester- I & II.

This is effective from the Academic Year 2013-2014 and onwards.

These **syllabi are available on the University Website www.bamu.net**

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/NP/B.SC.-IST YEAR/
Sem-I & II/2013/5132-541
A.C.S.A.I.No.327[9].

Date:- 08-05-2013.

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Director,
Board of College and University Development.

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Copy forwarded with compliments to :-

1] **The Principals, affiliated concerned Colleges,**
Dr. Babasaheb Ambedkar Marathwada University.

2] The Director, University Network & Information Centre, UNIC, with **a request to upload the above all syllabi on University Website [www.bamu.net].**

Copy to :-

1] The Controller of Examinations,

2] The Superintendent, [B.Sc. Unit],

3] The Superintendent, [B.A. Unit],

4] The Superintendent, [Eligibility Unit],

5] The Programmer [Computer Unit-1] Examinations,

6] The Programmer [Computer Unit-2] Examinations,

7] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,

8] The Public Relation Officer,

9] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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S'/-080513/-

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD

SYLLABUS

of

B.Sc. FIRST & SECOND SEMESTER

[ELECTRONICS (OPTIONAL)]

{Effective from – June- 2013 onwards}

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.Sc. Electronics (Optional) Course Structure in Semester System
(I to VI SEMESTER)
{Effective from June 2013}

B.Sc. First, Second & Third Year

Semester	Course Code	Paper Number	Title of Paper	Credits	Marks
I	ELE-101	Paper-I	Network Theorems & Semiconductor Devices	03	50
	ELE-102	Paper-II	Digital Electronics – I	03	50
	ELE-103	Paper-III	Practicals based on Paper – I & II	1.5	50
II	ELE-201	Paper- IV	Amplifiers	03	50
	ELE-202	Paper-V	Digital Electronics – II	03	50
	ELE-203	Paper-VI	Practicals based on Paper – III & IV	1.5	50

Note: (i) ***For Theory Papers, 1 Credit = 15 Periods***
For Practical Papers, 1 Credit = 30 Periods

(ii) In the examination the students will perform only ONE experiment from papers III and VI, carrying 100 marks. The distribution of 100 marks will be as follows:
Experiment: 80 marks
Project : 20 marks

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. First Semester **Subject: ELECTRONICS**
Paper – I **Course: ELE – 101**

(effective from June 2013)

Paper – I (ELE – 101): Network Theorems and Semiconductor Devices
Marks: 50 **Credits:03** **Periods : 45**

1. **Components and Network Theorems :** **(12) [0.8credits]**
   Active & passive elements, Resistors, Capacitors, Inductors, Transformers, Relays and Fuses { classification, specification & Applications},Voltage divider theorem, current divider theorem, ideal Constant voltage source, Ideal constant current source, superposition theorem, Thevenin's theorem, maximum power theorem,
2. **Diodes :** **(09) [0.6credits]**
   P-N junction Diode, Biasing a semiconductor diode, Static and Dynamic resistance of a diode, breakdown of PN junction, ideal diode, Special diodes (Zener diode, Tunnel diode, Varactor diode, Light Emitting diode and Photodiode)
3. **Transistors:** **(12) [0.8credits]**
   Transistor, transistor action, transistor symbols, transistor configurations, characteristics of transistor in common base, common emitter, common collector configurations, comparison of CE,CB and CC configuration, transistor current gains α and β, relation between α and β, Junction field effect transistor, Static characteristics of JFET, JFET characteristics with external bias, transfer characteristics, small signal JFET parameters, MOSFET.
4. **Power supplies:** **(12) [0.8credits]**
   Block diagram of Regulated Power Supply, Half wave rectifier, efficiency of HWR, Full wave rectifier, Bridge rectifier, efficiency of FWR, ripple factor, types of filter circuits, Zener diode as voltage regulator, transistor series voltage regulator, fixed positive linear regulators, fixed negative linear voltage regulators

Text Books:

1. Electrical Technology – B.L.Theraja (S. Chand 2004) (Chp.1)
2. Semiconductor Electronics – A.K.Sharma New age international 1996(Chp.2)
3. Principle of electronics – V.K.Mehta (S. Chand and Co. 2004) (Chp.2,3 and 4)
4. Basic Electronics (solid stste) – B L Theraja (S. Chand and Co. 2012) (Chp.1, 2,3 and 4)
5. Basic Electronics by Grobe

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. First Semester **Subject: ELECTRONICS**
Paper – II **Course: ELE – 102**

(effective from June 2013)

Paper – II (ELE – 102): Digital Electronics – I

Marks: 50 **Credits:03** **Periods : 45**

1. **Number System:** **(15) [1 credits]**
Number System: Decimal, Binary, Hexadecimal Number Systems and their inter conversions , Binary arithmetic (addition, subtraction, multiplication and division), 1's and 2's compliment method for binary subtraction, Hexadecimal addition and subtraction, Binary Codes (8421 (BCD) code, Gray code, Excess-3 code), BCD addition and subtraction, Excess-3 addition and subtraction, ASCII Code

2. **Logic gates:** **(09) [0.6credits]**
Positive and negative logic, Logic Gates (NOT gate, AND gate, OR gate, NAND gate, NOR gate) using diodes & transistors, Ex-OR gate, Ex-NOR gate,

3. **Boolean algebra:** **(09) [0.6 credits]**
Boolean Operations, Rules and laws of Boolean algebra, DeMorgan's theorems, minterms, maxterms, SOP and POS form of Boolean expressions, Simplification of Boolean Expressions, Karnaugh map [K-map] (up to four variables only)

4. **Combinational logic circuits:** **(12) [0.8 credits]**
NAND and NOR gate as universal building blocks, Half adder, Full adder, Half subtractor, full subtractor, 4 bit parallel adder and subtractor, 2's complement adder /subtractor, 3 bit binary decoder, decimal to BCD encoder, 8 to 1 multiplexer, 1 to 8 demultiplexer

Books Recommended:

1. Digital Fundamentals – Thomas L Floyd, Universal Book Stall New Delhi
2. Digital Electronics and Microcomputers – R.K.Gaur
3. Digital Analog Techniques – Navneth, Kale and Gokhale, Kitab Mahal
4. Digital Electronics with Practical Approach – G N Shinde, Shivani Publications Nanded
5. Digital Principles and Circuits – C B Agarwal, Himalaya Publishing House

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Second Semester **Subject: ELECTRONICS**
Paper – III **Course: ELE – 201**

(effective from June 2013)

Paper – III (ELE – 201): Amplifiers

Marks: 100 **Credits:03** **Periods : 45**

1. **Bias for Transistor Amplifiers:** **(12) [0.8credits]**
   Transistor load line analysis, Operating point, Inherent variation of transistor parameters, Stabilisation, essentials of transistor biasing circuit, stability factor, methods of transistor biasing, base resistor method, voltage divider bias method.
2. **Small signal Amplifiers:** **(12) [0.8credits]**
   Two port network, h-parameter equivalent circuit, equivalent circuit for BJT, transconductance model, CE amplifier, CB amplifier, emitter follower circuit, equivalent circuit for JFET, Common Source amplifier, source follower amplifier
3. **Feedback Amplifier:** **(12) [0.8credits]**
   An amplifier black box with feedback, stabilization of gain by negative feedback, reduction of nonlinear distortion by negative feedback, , effect of feedback on output resistance, effect of feedback on input resistance, voltage series feedback,
4. **Multistage transistor amplifier:** **(09) [0.6credits]**
   Multistage transistor amplifier, important terms, RC coupled transistor amplifier, direct coupled amplifier

Text Books :

1. Electronics fundamentals and applications–J.D.Ryder,5th ed. (Chp. 1, 2 and 3)
2. Principle of electronics - V.K.Mehta (S Chand and co. 2004)(Chp.1 and 4)

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.Sc. Second Semester **Subject: ELECTRONICS**
Paper – VI **Course: ELE – 202**
(effective from June 2013)

Paper – VI (ELE – 202): Digital Electronics – II
Marks: 100 **Credits:03** **Periods : 45**

1. **Flip-Flops:** **(9 periods) [0.6 credits]**
   flip flops (SR, D, JK and T) [using gates], Methods of triggering flip flops, Edge triggered flip flops (SR, D, JK and T), Asynchronous inputs, Master slave JK flip flop, Operating characteristics
2. **Counters:** **(9 periods) [0.6 credits]**
   Concept of counter, Asynchronous Counters (three and four bit), Synchronous Counters (three and four bit), decade Counter (asynchronous), Up/Down Synchronous Counter (three bit only)
3. **Shift Registers:** **(9 periods) [0.6 credits]**
   Shift register functions, Serial In – Serial Out Shift Register, Serial In – Parallel Out Shift Register, Parallel In – Serial Out Shift Register, Parallel In – Parallel Out Shift Register, Bidirectional Shift Register, Ring Counter, Buffer Register
4. **Memories:** **(9 periods) [0.6 credits]**
   Memory Concept, Read Only Memory (ROM), Programmable ROMs (PROMs & EPROMs), Random Access (Read / Write) Memories (RAMs)
5. **D/A and A/D converters:** **(9 periods) [0.6 credits]**
   R-2R Ladder type D/A converter, DAC Characteristics (Monotonicity, Resolution, Accuracy and Setting Time), Successive approximation A/D converter, Dual slope A/D converter

Books Recommended:

1. Digital Fundamentals – Thomas L Floyd, Universal Book Stall New Delhi
2. Digital Electronics and Microcomputers – R K Gaur
3. Digital Analog Techniques – Navneeth, Kale and Gokhale, Kitab Mahal
6. Digital Electronics with Practical Approach – G N Shinde, Shivani Publications Nanded
7. Digital Principles and Circuits – C B Agarwal, Himalaya Publishing House

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. First Semester — Subject: ELECTRONICS

Paper – V — Course: ELE – 103

(effective from June 2013)

Paper – V (ELE – 103): Experiments based on paper I & II

Marks: 50 **Credits: 1.5**

Every candidate appearing for examination must produce journal showing that he/she has completed 06 experiments during academic year. The journal must be certified at the end of the year by Head of the Department.

1. Study of PN junction diode characteristics, determination of ac and dc resistance
2. Study of zener diode characteristics, determination of V_Z, I_Z, Z_Z.
3. Study of transistor characteristics in CE configuration, determination of α.
4. Study of JFET characteristics, determination of parameters.
5. Built and study of Full wave rectifier
6. Built and study shunt regulator using zener diode, line and load regulation
7. Built and study power supply with capacitor filter
8. Built and Built and study NOT, OR, & AND gates using Diodes and Transistor/ 74XX.
9. Built and Built and study NAND & NOR gates using Diodes and Transistor/ 74XX.
10. Built and Built and study basic gates using NAND/ NOR gates.
11. Built and study of Half adder using gates.
12. Built and study of Half subtractor using gates.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Second Semester **Subject: ELECTRONICS**

Paper – VI **Course: ELE – 204**

(effective from June 2013)

Paper – VI (ELE – 203): Experiments based on paper II & IV

Marks: 50 **Credits: 1.5**

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during academic year. The journal must be certified at the end of the year by Head of the Department.

1. Built and study CE amplifier, plot the frequency response curve and find 3 dB bandwidth
2. Built and study common source FET amplifier, plot the frequency response curve and find 3 dB bandwidth
3. Built and study current series feedback amplifier, plot frequency response curve with and without feedback
4. Built and study two stage RC coupled CE amplifier, plot the frequency response curve and find 3 dB bandwidth
5. Built and study JK, T and D- Flip-Flops using IC 7476
6. Built and study 4-bit binary parallel adder / subtractor using IC 7483
7. Built and study MOD 16 Asynchronous binary UP counter
8. Built and study binary decade counter IC 7490
9. Built and study D/A converter using R-2R ladder network

The students should built a mini project and submit it at the time of examination along with project report. The project will carry 20 marks in the examination.

V sem - 2 elective
VI sem - 2 elective
Elec : 3rd year

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under** :-

Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCI./
2015/3761-4160
Date:- 16-06-2015.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Director,
Board of College and University Development.

..2..

Copy forwarded with compliments to:-

1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [M.Sc. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

-**-

S*/-160615/-

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

B. Sc. (THIRD YEAR)

SYLLABUS

B.Sc. FIFTH & SIXTH SEMESTER

[ELECTRONICS (OPTIONAL)]

{Effective from – June – 2015 onwards}

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.Sc. Electronics (Optional) Third Year Course Structure in Semester System

B.Sc. Third Year

Semester	Course Code	Paper Number	Title of Paper	Marks
V	ELE-501	Paper XV	POWER ELECTRONICS	50
	ELE-502A OR ELE-502B	Paper XVI (A) OR XVI (B)	(A) MICROCONTROLLER – I OR (B) 8085 INTERFACING – I	50
	ELE-503	Paper XVII	Practicals based on Paper XV	50
	ELE-504 A OR ELE-504 B	Paper XVIII (A) OR XVIII (B)	Practicals based on Paper XVI (A) OR Practicals based on Paper XVI (B)	50
VI	ELE-601A OR ELE-601B	Paper XIX(A) OR XIX(B)	(A) PROGRAMMABLE LOGIC CONTROLLERS Or (B) INSTRUMENTATION	50
	ELE-602A OR ELE-602B	Paper XX (A) OR XX (B)	(A) MICROCONTROLLER– II OR (B) 8085 INTERFACING – II	50
	ELE-603 A OR ELE-603 B	Paper XXI (A) OR XXI (B)	Practicals based on Paper XIX (A) OR Practicals based on Paper XIX (B)	50
	ELE-604 A OR ELE-604 B	Paper XXII(A) OR XXII(B)	Practicals based on Paper XX(A) OR Practicals based on Paper XX (B)	50

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Fifth Semester

Subject: ELECTRONICS

Course: ELE-501 **Paper – XV**

(Effective from June 2015)

Title: POWER ELECTRONICS

Marks: 50 **Periods: 45**

1. **Thyristors** **(12)**
   Silicon Controlled Rectifiers { Construction, Operation, Equivalent Circuit, Characteristics}; Unijunction Transistors, Diac, Triac, IGBTs

2. **Detection Sensors** **(12)**
   Limit Switches, Proximity Detectors, Inductive Proximity Switches {Ports, Output Stages, Operation}: Capacitive Proximity Switches, Photoelectric Sensors, Methods of Detection, Operating Specifications, Sensor Interfacing { Electromagnetic Relays, Resistive Load, Inductive Load, Solid State Relay, Two Wire System}

3. **D C Drives:** **(09)**
   DC Drive Fundamentals, Variable Voltage DC Drive, Motor Braking

4. **A C Drives** **(12)**
   AC Drive Fundamentals, AC Drive System, Drive Controller Internal Circuitry, Circuit Operation of AC Drive, PWM Control Methods, Control Panel Inputs Drive functions, Inverter Self – Protection Function, Motor Braking,

Books Recommended

1. Industrial Electronics { Circuits, Instruments and Control Techniques} – Terry Bartelt, DELMAR, Cengage Learning India Pvt. Ltd. Delhi, 2009
2. Introduction to Power Electronics – V Jagannathan, PHI, New Delhi, 2004
3. Power Electronics – M D Singh and K B Khanchandani,

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B. Sc. Fifth Semester

Subject: ELECTRONICS

Course: ELE-502 A **Paper XVI (A)**

(Effective from June 2015)

Title: MICROCONTROLLER – I

Marks: 50 **Periods: 45**

1. 8051 Microcontroller **(15)**

Introduction, Microcontrollers and microprocessors, history of microcontrollers, embedded versus external memory devices, 8-bit and 16-bit microcontrollers, CISC and RISC processors, Harvard and Von Neumann architecture, commercial microcontroller devices, Features of 8051 Microcontroller, MCS-51 architecture, Registers in MCS-51, 8051 Pin Description, Memory Organization

2. Addressing Modes and Instructions **(09)**

8051 Addressing Modes, MCS – 51 Instruction Set, 8051 Instructions and Simple Programmes, Using Stack Pointer

3. Interrupts, Timer/ Counters and Serial Communication **(09)**

Interrupts, Interrupts in MCS – 51, Timers and Counters, Serial Communication

4. Applications of MCS – 51 **(12)**

Pin diagrams of 89C51 and 89C 2051, Square Wave Generation, Pulse Generation, Staircase Ramp Generation, Pulse Width Measurement

Books Recommended:

1. Microcontrollers [Theory and Applications] – Ajay Deshmukh, TMH, New Delhi, 2009
2. The 8051 Microcontroller and Embeded system – M A Mazadi, J G Mazadi and R D McKinlay, Pearson PHI, 2009
3. The 8051 Microcontroller – K J Ayala, DELMAR, Cengage Learning India Pvt. Ltd. Delhi, 2008

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B. Sc. Fifth Semester

Subject: ELECTRONICS

Course: ELE-502B **Paper XVI (B)**

(Effective from June 2015)

Title: 8085 INTERFACING – I

Marks: 50 **Periods: 45**

1. Semiconductor Memories and Interfacing **(15)**

Semiconductor Memories, Introduction to Memory Interfacing, Memory Organization, Using Decoder for Chip Select Logic, Interfacing Designs (Problem 1 to 5)

2. Programmable Peripheral Interface PPI – 8255 **(15)**

Intoduction, 8255 Functional Block Diagram, 8255 Initialization, I / O Operating Modes

3. Programmable Communication Interface – 8251 **(15)**

Introduction to 8251, Pin Description, 8251 Block Diagram and Functional Description, 8251 Control Word, 8251 Data Transfer Operation, Asynchronous Mode Transmission, Asynchronous Mode Receiver, Synchronous Mode Transmission, Synchronous Mode Reception, 8251 Status Word

Books Recommended:

1. 8 – Bit Microprocessor System Design – V J Vibhute and P B Borole, Technova Publications, Pune
2. Microprocessor Architechture, Programming and Applications with 8085 – Ramesh S Gaonkar, Penram International Publishing

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B. Sc. Fifth Semester

Subject: ELECTRONICS

Course: ELE-503 **Paper XVII** (Practicals)

(Effective from June 2015)
Practicals Based on Paper XV

Every candidate appearing for examination must produce journal showing that he/she has completed *Six* (06) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments **(Marks 50)**

1. Study of SCR characteristics.
2. Study of UJT characteristics.
3. Study of DIAC characteristics.
4. Study of TRIAC characteristics.
5. Study of IGBT characteristics.
6. Study of firing of two SCRs using one UJT for power control.
7. Study of Triac as light dimmer.
8. Half wave & full wave rectifier using SCR.
9. Diac operated temperature sensitive switch using thermister.
10. UJT relaxation oscillator.
11. Timer using SCR & UJT
12. Study of Inductive Switch.
13. Study of Capacitive Switch.

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B. Sc. Fifth Semester

Subject: ELECTRONICS

Course: ELE-504A **Paper XVIII (A)** (Practicals)

(Effective from June 2015)

Practicals Based on Paper XVI (A)

Every candidate appearing for examination must produce journal showing that he/she has completed *Four* (04) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

(A) Experiments **(Marks 30)**

1. Write a program to blink LED with 0.5 Hz frequency and implement it using Atmel 89C51.
2. Write a program for 8 – bit up counter and implement it using Atmel 89C51.
3. Write a program for 8 – bit binary down counter and implement it using Atmel 89C51.
4. Write a program to interface a switch and 8 LEDs for binary up counter when switch is closed and pause the counter when switch is open, implement it using Atmel 89C51.
5. Write a program to generate square waveforms using Atmel 89C51 and implement it.
6. Write a program for pulse generation using Atmel 89C51 and implement it.
7. Write a program for pulse width measurement using Atmel 89C51 and implement it.

(B) Project **(Marks 20)**

Every student should construct one *Suitable* project. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Fifth Semester
Subject: ELECTRONICS

Course: ELE-504 B **Paper XVIII (B)** (Practicals)

(Effective from June 2015)
Practicals Based on Paper XVI (B)

Every candidate appearing for examination must produce journal showing that he/she has completed *Four* (04) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

(A) Experiments **(Marks 30)**

1. Write an assembly language program (ALP) to interface 8 LEDs and 8 switches to display status of switch using 8255 and implement it.
2. Write an assembly language program (ALP) to interface Hex keyboard and seven segment display to display key pressed on SSD using 8255 and implement it.
3. Write an assembly language program (ALP) to generate squre waveforms of frequency 500 Hz using DAC 0800 with 8255 and8085 microprocessor, implement it.
4. Write an assembly language program for 8 – Bit binary up counter and implement it using 8255.
5. Write an assembly language program for 8 – Bit binary down counter and implement it using 8255.

(B)Project **(Marks 20)**

Every student should construct one *Suitable* project. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Sixth Semester

Subject : ELECTRONICS

Course: ELE-601A **Paper – XIX (A)**

(Effective from June 2015)

Title: PROGRAMMABLE LOGIC CONTROLLERS

Marks: 50 **Periods: 45**

1. **Introduction to Programmable Controllers** **(15)**
   Industrial Motor Control circuits, Relay Ladder Logic Circuits, building a Ladder Diagram, Rack Assembly, Power Supply, PLC Programming Unit, Input / Output Sections, Processor Unit, Addressing, Relationship of Data File Addresses to I / O Modules

2. **Fundamental PLC Programming** **(15)**
   PLC Program Execution, Ladder Diagram programming Language, Ladder Diagram Programming, Relay logic Instructions, Timer Instructions, Counter Instructions, Data Manipulation Instructions, Arithmetic Operations, Writing a Program

3. **Advanced Programming, PLC Interfacing and Troubleshooting (15)**

   Jump Commands, Data Manipulations, Discrete Input / Output Modules, Troubleshooting I / O Interfaces,

Books Recommended

1. Industrial Electronics { Circuits, Instruments and Control Techniques} – Terry Bartelt, DELMAR, Cengage Learning India Pvt. Ltd. Delhi, 2009
2. Introduction to Power Electronics – V Jagannathan, PHI, New Delhi, 2004
3. Power Electronics – M D Singh and K B Khanchandani,

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B. Sc. Sixth Semester
Subject : ELECTRONICS

Course: ELE-601 B **Paper – XIX (B)**

(Effective from June 2015)

Title: INSTRUMENTATION

Marks: 50 **Periods: 45**

1. **Qualities of Measurements** **(10)**
   Performance Characteristics, Static Characteristics, Errors in Measurement, Types of Static Errors, Sources of Errors, Dynamic Characteristics, Standard, Atomic Frequency and Time Standards.

2. **Displays and Recorders** **(15)**
   LED display, LCD display, X-Y recorder, Magnetic Tape recorder, Frequency modulation recording, Digital data recording.

3. **Transducers** **(20)**
   Electrical transducers, selecting a transducer, Resistive transducer, Resistive position transducer, Inductive transducer, Differential output transducer, linear variable differential transducer(LVDT), capacitive(pressure) transducer, Load Cell, Piezo – electric transducer.
   Photo electric transducers: - photo multiplier tube, photo cells, photo-voltaic cell, semiconductor photo diode, photo transistor.
   Temperature transducer:- RTD, Resistance thermometer, Thermistor, Thermocouple.

Books Recommended

1. Electronic Instrumentation –Second edition by H.S.Kasi (Mc Graw Hill Company)
2. Transducers and Instrumentation by D V S Murty (PHI)

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B. Sc. Sixth Semester

Subject: ELECTRONICS

Course: ELE-602 A **Paper – XX (A)**

(Effective from June 2015)

Title: MICROCONTROLLER – II

Marks: 50 **Periods: 45**

1. **8051 Timer Programming in Assembly Language** **(9 periods)**
   Programming 8051 Timers, Counter Programming,

2. **8051 Serial Port Programming in Assembly Language** **(12 periods)**
   Basics of Serial Communication, 8051 Connection to RS232, 8051 Serial Port Programming in Assembly

3. **Interrupts Programming in Assembly Language** **(12 periods)**
   8051 Interrupts, Programming Timer Interrupts, Programming External Hardware Interrupts, Interrupt Priority in the 8051 / 8052

4. **LCD, Keyboard, ADC, DAC and Sensor Interfacing** **(12 periods)**
   LCD Interfacing, ADC {0809}, DAC{0808} Interfacing, Sensor Interfacing and Signal Conditioning {LM34 and LM 35}

Books Recommended:

1. The 8051 Microcontroller and Embeded system – M A Mazadi, J G Mazadi and R D McKinlay, Pearson PHI, 2009
2. The 8051 Microcontroller – K J Ayala, DELMAR, Cengage Learning India Pvt. Ltd. Delhi, 2008
3. Microcontrollers [Theory and Applications] – Ajay Deshmukh, TMH, New Delhi, 2009

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B. Sc. Sixth Semester

Subject : ELECTRONICS

Course: ELE-602B **Paper – XX (B)**

(Effective from June 2015)

Title: 8085 INTERFACING – II

Marks: 50 **Periods: 45**

1. 8253 / 8254 Programmable Interval Timer (15)

Intoduction, Features of Programmable Interval Timer, Pin Configuration of 8253 / 8254, 8253 / 8254 Functional Block Diagram, Controle Word Register Format, Modes of Operation, 8253 Write Operation, 8253 Read Operation

2. DMA Controlled I / O and DMA Controller (15)

Intoduction, Requirements of DMA Controlled Input / Output, The DMA Controller, Programmable DMA controller 8257, Organization, Operating Modes of 8257

3. Interrupt System and Controller (15)

The 8259 Interrupt Controller, Organization, 8259 – A Programming, command Words of 8259 – A, Singal PIC System, Cascaded PICs System (Vectored Mode), Polled System

Books Recommended:

1. 8 – Bit Microprocessor System Design – V J Vibhute and P B Borole, Technova Publications, Pune
2. Microprocessor Architechture, Programming and Applications with 8085 – Ramesh S Gaonkar, Penram International Publishing

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Sixth Semester

Subject : ELECTRONICS

Course: ELE-603 A **Paper – XXI (A)**

(Effective from June 2015)

Practicals Based on Paper XIX (A)

Every candidate appearing for examination must produce journal showing that he/she has completed *Four* (04) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VII – A: Experiments **(Marks 30)**

1. Study of Water Level Controller, Using PLC Simulator.
2. Study of Traffic Light Control, Using PLC Simulator.
3. Study of Horizontal Motion of Conveyor Belt using Limit Switches, Using PLC Simulator.
4. Study of Lift Control, Using PLC Simulator.
5. Study of Bottling Plant with Counter, Using PLC Simulator.

VII – B: Project **(Marks 20)**

Every student should construct one *Suitable* project. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Sixth Semester
Subject: ELECTRONICS

Course: ELE-603 B **Paper – XXI (B)**

(Effective from June 2015)

Practicals Based on Paper XIX (B)

Every candidate appearing for examination must produce journal showing that he/she has completed *Four* (04) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

A: Experiments **(Marks 30)**

1. Study of IC AD590 as Temperature sensor.
2. Study of PT100 as Temperature sensor.
3. Study of Thermister as Temperature sensor.
4. Study of photo transistor & photo diode as light sensor
5. Study of photo voltaic cell & LDR as light sensor
6. Study of temperature sensing transducer.
7. Study of strain gauge transducer.

B: Project **(Marks 20)**

Every student should construct one *Suitable* project. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Sixth Semester

Subject : ELECTRONICS

Course: ELE-604A **Paper – XXII (A)**

(Effective from June 2015)

Practicals Based on Paper XX (A)

Every candidate appearing for examination must produce journal showing that he/she has completed *Six* (06) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments **(Marks 50)**

1. Write a program to generate square waveforms and implement it using Atmel 89C51 with DAC.
2. Write a program to staircase waveforms and implement it using Atmel 89C51 with DAC.
3. Write a program to generate triangular waveform with period of 1ms and implement it using Atmel 89C51 with DAC.
4. Write a program for stepper motor direction control using a switch and implement it using Atmel 89C51.
5. Write a program to display Microcontroller on 2 × 8 LCD module and implement it using Atmel 89C51.
6. Interfacing of matrix keyboard using MCS – 51.
7. Program based on MCS – 51 TIMER.
8. Program based on MCS – 51 COUNTER.
9. Program based on MCS – 51 INTERRUPTS.
10. Temperature Controller with MCS – 51.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. Sixth Semester
Subject : ELECTRONICS

Course: ELE-604B **Paper – XXII (B)**

(Effective from June 2015)

Practicals Based on Paper XX (B)

Every candidate appearing for examination must produce journal showing that he/she has completed *Six* (06) experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments **(Marks 50)**

1. Study of decoder.
2. Study of 8253 in mode '0'.
8. Study of 8253 in mode '1'.
9. Study of 8253 in mode '2'.
10. Study of 8255 in BSR Mode.
11. Interfacing of ADC with 8255.
12. Interfacing of stepper motor for
    (a) Clockwise rotation
    (b) Anti clockwise rotation
8. Interfacing of LCD using 8255.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FIFTH SEMESTER
Subject: ELECTRONICS

Course: ELE-501 **Paper – XV**
(Effective from June 2015)

Title: POWER ELECTRONICS

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks:* 50

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 4 (10)
(b) Chapter No. 1 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 4 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **TWO MCQs** ON EACH CHAPTER]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FIFTH SEMESTER
Subject : ELECTRONICS

Course: ELE-502 A **Paper XVI (A)**
(Effective from June 2015)

Title: MICROCONTROLLER – I

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks: 50*

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 1 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 4 (10)
(b) Chapter No. 4 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 4 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **TWO MCOs** ON EACH CHAPTER]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FIFTH SEMESTER
Subject : ELECTRONICS

Course: ELE-502 B **Paper XVI (B)**
(Effective from June 2015)

Title: 8085 INTERFACING – I

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks:* 50

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 1 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 2 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 3 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 3 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **THREE MCQs** ON EACH CHAPTER]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. SIXTH SEMESTER
Subject : ELECTRONICS

Course: ELE-601 A **Paper – XIX (A)**

(Effective from June 2015)

Title: PROGRAMMABLE LOGIC CONTROLLERS

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks:* 50

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 1 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 2 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 3 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 1 / 2 / 3 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **THREE MCQs** ON EACH CHAPTER]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. SIXTH SEMESTER
Subject : ELECTRONICS

Course: ELE-601 B **Paper – XIX (B)**
(Effective from June 2015)

Title: INSTRUMENTATION

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks:* 50

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 1 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 2 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 3 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 3 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **THREE MCQs** ON EACH CHAPTER]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. SIXTH SEMESTER
Subject : ELECTRONICS

Course: ELE-602 A **Paper XX (A)**
(Effective from June 2015)

Title: MICROCONTROLLER – II

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks:* 50

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 4 (10)
(b) Chapter No. 1 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 4 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **TWO MCQs** ON EACH CHAPTER]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. SIXTH SEMESTER
Subject : ELECTRONICS

Course: ELE-602 B **Paper XX (B)**
(Effective from June 2015)

Title: 8085 INTERFACING – II

PAPER PATTERN (THEORY)

Time: Two Hours *Max. Marks:* 50

N.B.: (i) Attempt **All** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw flow charts wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 1 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 2 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 3 (10)

Q.4 Write short notes on any TWO:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 1 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER. [FURTHER AT LEAST **THREE MCQs** ON EACH CHAPTER]

S*/-110515/-

PRINCIPAL
RAJIV GANDHI ARTS, COMMERCE & SCIENCE COLLEGE, KARMAD
TQ & DIST. AURANGABAD

Ele – S.Y

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यू./विज्ञान/अ.सक्रम/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या बतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

..2..

[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सवपि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

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या परिपत्रकाची एक प्रत :-

१) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
२) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Revised SYLLABUS of

B.Sc. SECOND YEAR

ELECTRONICS (OPTIONAL)

(THIRD & FOURTH SEMESTER)

{ Effective for – June- 2014 -2015 }

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.Sc. Electronics (Optional) Course Structure in Semester System (III AND IV SEMESTER)

B.Sc. Second Year

Semester	Course Code	Paper Number	Title of Paper	Credits	Marks
III	ELE-301	Paper-VII	Operational Amplifiers	03	50
	ELE-302	Paper-VIII(A) OR Paper- VIII(B)	8086 Microprocessor OR 8085 Microprocessor – I	03	50
	ELE-303	Paper-IX	Practicals based on Paper – VII	1.5	50
	ELE-304	Paper-X (A) OR Paper-X (B)	Practicals based on Paper – VIII(A) OR Practicals based on Paper – VIII(B)	1.5	50
IV	ELE-401	Paper- XI	Communication Electronics	03	50
	ELE-402	Paper-XII(A) OR Paper-XII(B)	8086 Microprocessor Interfacing OR 8085 Microprocessor – II	03	50
	ELE-403	Paper-XIII	Practicals based on Paper – XI	1.5	50
	ELE-404	Paper-XIV (A) OR Paper-XIV (B)	Practicals based on Paper – XII(A) OR Practicals based on Paper – XII(B)	1.5	50

THE COLLEGE HAS TO SELECT EITHER VIII(A), X(A), XII(A) AND XIV(A) OR VIII(B), X(B), XII(B) AND XIV(B) ONLY AS AN ELECTIVE.

Note: For Theory Paper, 1 Credit = 15 Periods;
For Practical Paper, 1 Credit = 30 Periods

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-301 Paper – VII

(Effective from June 2014)

Title: Linear Integrated Circuits

Marks: 50 **Periods: 45** **Credits: 03**

1. Operational Amplifier: (15 periods) [1.0 credits]

Differential amplifier-Dual input balanced output differential amplifier, block diagram of typical Op-Amp, schematic symbol, interpreting data sheet, the ideal Op-Amp, equivalent circuit of an Op-Amp, Op-Amp Parameters-Input-Impedance, Output impedance, input offset voltage, Open Loop Voltage gain, input bias current, slew rate [definitions only] open loop Op-Amp configurations

2. Operational Amplifier Applications: (15 periods) [1.0 credits]

Voltage series feedback amplifier, Voltage shunt feedback amplifier, DC and AC amplifiers, summing, scaling and averaging amplifiers, voltage to current converter (Low voltage DC voltmeter and low voltage AC voltmeter only) , integrator, differentiator, basic comparator, zero-crossing detector, Schmitt trigger

3. Oscillators: (09 periods) [0.6 credits]

Oscillator principle, oscillator types, frequency stability, phase shift oscillator, Wien Bridge oscillator, square wave generator, triangular wave generator, saw tooth wave generator, voltage controlled oscillator

4. The 555 Timer: (06 periods) [0.4 credits]

The 555 as monostable multivibrator, monostable multivibrator applications, The 555 as an astable multivibrator, astable multivibrator applications, Free running ramp generator

Books Recommended:

1. Op-Amps & Linear Integrated Circuits (Second Edition) [Chapters 1 to 4]
Ramakant Gaikwad, Prentice Hall of India
2. Electronics Principles and Applications (Fifth edition) [Chapters 1and 2.]
John D Ryder
3. Linear Integrated Circuits
D Roy Choudhry & Shail B Jain
New Age International Publishing
4. Electronic Devices (Sixth Edition)
Floyd
Pearson Education
5. Op Amps & Linear Integrated Circuits
James M Fiore
Thomson Learning
6. Integrated Circuits
K R Botkar,
Khanna Publishers, New Delhi.

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B. SC. THIRD SEMESTER
Subject: ELECTRONICS
Course: ELE-302 Paper – VIII (A)

(Effective from June 2014)

Title: 8086 MICROPROCESSOR

Marks: 50 **Periods: 45** **Credits: 03**

1. **The 8086 Microprocessor:** **(15 periods) [1.0 credits]**
   Generation of Microprocessor, registered organization of 8086, features of 8086, Pin diagram (Signal Description),CPU architecture, Physical Memory Orgnaisation general bus operation, I / O processing capability, special processor activities, minimum mode 8086 system and timing, maximum mode 8086 system and timing
2. **The 8086 Microprocessor Instruction set:** **(15 periods) [1.0 credits]**
   Machine language instruction formats, addressing modes of 8086, Data copy / transfer instructions, Arithmetic instructions ,logical instruction, Branch instructions, loop instructions, machine control instructions, Flag manipulation instructions, Shift and rotate instructions, String instructions
3. **Assembly language programming :** **(15 periods) [1.0 credits]**
   Assembly language programs- addition of two numbers, addition of a series of 8 bit numbers, find the largest number from given array of 8 bit numbers, find out odd and even numbers from the given series of hexadecimal numbers, find out positive numbers and negative numbers from a given series of signed numbers, move a string of data from one location to other location, arrange given array of 8 bit numbers in ascending order, arrange given array of 8 bit numbers in descending order, one byte BCD addition, factorial of a 8 bit number , average of block of 8 / 16 bit data.

Books Recommended:

1. Advanced Microprocessors and Peripherals (Second Edition) [Chapters 1 to 3] – A K Ray & K M Bhurchandi Tata McGraw Hill 2009
2. The INTEL Microprocessors 8086 /8088, 80186/80188, 80286, 80386, 80486, Pentium and Pentium Processor –Barry B. Brey Printice-Hall INDIA
3. Microprocessors – S. K. Gupta Pragati Prakashan Meerut
4. Microprocessors – II –A. P. Godse Technical Publications PUNE

Dr. Babasaheb Ambedkar Marathwada University Aurangabad.

B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-302 Paper – VIII (B)

(Effective from June 2014)

Title: 8085 MICROPROCESSOR – I

Marks: 50 **Periods: 45** **Credits: 03**

1. **Microprocessor Architecture and Organisation: (09 periods) [0.6 credits]**
   The ideal microprocessor, architecture of microprocessor, organisation of microprocessor, features of Intel 8085, 8085 functional pin description, 8085 CPU architecture
2. **The Configuration: (09 periods) [0.6 credits]**
   Demultiplexing $AD_7 - AD_0$, generation of control signals, 8085 clock circuit, basic 8085 microprocessor unit, 8085 instruction fetching and execution operation
3. **8085 Instruction Set : (12 periods) [0.8 credits]**
   Instruction formats, addressing modes, op-code format, classification of instruction set, instruction set
4. **8085 Programming: (15 periods) [1.0 credits]**
   Programming technique, simple programs, concept of looping,

Books Recommended:

1. 8 - bit Microprocessors System Design – V J Vibhte & P B Borole
   [Chapters 1 to 4] Technova Publications, PUNE
2. Microprocessor Architecture, Programming, and Applications with the **8085**
   (5th Edition) –Ramesh S. Gaonkar Penram International Publishing.
3. Microprocessors –I –A. P. Godse Technical Publications PUNE

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-303 **Paper – IX** (Practical) **[1.5 credits]**

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 07 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments **(Marks 50)**

1. Study of Op – Amp as a non inverting amplifier.
2. Study of Op – Amp as an inverting amplifier.
3. Study of Op – Amp as an inverting adder.
4. Study of Op – Amp as an inverting subtractor.
5. Study of Op – Amp as an integrator.
6. Study of Op – Amp as a differentiator.
7. Study of Op – Amp as a Schmitt trigger.
8. Study of Op – Amp as an analog computer to solve simple equation.
9. Study of Op – Amp as Low voltage DC voltmeter
10. Built and study Wien Bridge oscillator using Op – Amp.
11. Built and study phase shift oscillator using Op – Amp.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. THIRD SEMESTER

Subject: ELECTRONICS

Course: ELE-304 Paper – X [A] [1.5 credits]

(Practicals based on 8086)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 07 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments **(Marks 50)**

1. Assembly language program to find sum of 8 bit numbers.
2. Assembly language program to find sum of 8 bit numbers in a given array.
3. Assembly language program to find out positive numbers and negative numbers from a given series of signed numbers.
4. Assembly language program to find average of block of data containing N numbers.
5. Assembly language program to determine whether the number is even or odd. If the number is odd, copy 00 to ML ------- otherwise copy EE.
6. Assembly language program to move a string of data from one location to other location.
7. Assembly language program to find a factorial of 8 bit number.
8. Assembly language program to find square root of a 16 bit number.
9. Assembly language program to perform one byte BCD addition.
10. Assembly language program to arrange given array of 8 bit elements in ascending order.
11. Assembly language program to arrange given array of 16 bit elements in descending order.
12. Assembly language program to add two multi-byte numbers and store the result as a third number.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FOURTH SEMESTER

Subject: ELECTRONICS

Course: ELE-304 **Paper – X [B]** **[1.5 credits]**

(Practicals based on 8085)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 07 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

Experiments **(Marks 50)**

1. Assembly language program to find sum of two 8 bit numbers.
2. Assembly language program to find sum of 8 bit numbers in a given array.
3. Assembly language program to find difference of two given numbers.
4. Assembly language program to find largest number in a block of data containing N numbers.
5. Assembly language program to find smallest number in a block of data containing N numbers.
6. Assembly language program to move a block of data from one location to other location.
7. Assembly language program to find a factorial of 8 bit number.
8. Assembly language program to find sum of two 16 bit numbers.
9. Assembly language program to perform one byte BCD addition.
10. Assembly language program to multiply two single byte numbers.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FOURTH SEMESTER
Subject : ELECTRONICS

Course: ELE-401 **Paper - XI**

(Effective from June 2014)

Title: COMMUNICATION ELECTRONICS

Marks: 50 **Periods: 45** **Credits: 03**

1. Types of Modulation: **(15 periods) [1.0 credits]**

Amplitude modulation, expression for amplitude modulated voltage, waveforms of amplitude modulated voltage, sidebands produced in amplitude modulated wave, Frequency modulation, expression for frequency modulated voltage, waveforms of frequency modulated voltage, sidebands produced in frequency modulated wave, Phase modulation, comparison of frequency modulated and phase modulated expressions

2. Pulse Modulation: **(06 periods) [0.4 credits]**

Pulse amplitude modulation, pulse code modulation, pulse frequency modulation, pulse position modulation, pulse width modulation

3. Modulation and Detection: **(12 periods) [0.8 credits]**

Amplitude modulation theory, Square Law modulation, class C linear diode detector, varactor diode frequency modulator, Armstrong modulator, phase discriminator, AM transmitter, Superheterodyne receiver

4. Digital Communication: **(12 periods) [0.8credits]**

Synchronization, Asynchronous transmission, Probability of error in base-band transmission, Matched filter, Bit timing recovery, Digital carrier system, amplitude shift keying, frequency shift keying, phase shift keying, differential phase shift keying

Books Recommended:

1) Electronics and Radio Engineering – M L Gupta (Chapters 1, 2 and 3) Dhanpat Rai & Sons
2) Electronic Communications [IV Edition] –Dennis Roddy & J Coolen, (Chapters 2, and 4) PHI Private Ltd. New Delhi
3) Advanced Electronic Communication Systems –Wayne Tomasi, PHI publication 2001.
4) Introduction to Telecommunication –A A Gokhale, Thomson Learning

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FOURTH SEMESTER
Subject: ELECTRONICS
Course: ELE – 402 Paper – XII(A)

(Effective from June 2014)

Title: 8086 MICROPROCESSOR INTERFACING

Marks: 50 **Periods: 45** **Credits: 03**

1. **Interfacing of memory and I/O** **(09 Periods) [0.6 credits]**
   Semiconductor memory interfacing, static RAM interfacing, dynamic RAM interfacing, interfacing I/O ports

2. **Programmable Input – Output 8255:** **(12 Periods) [0.8 credits]**
   Features of 8255, PIO 8255 pin diagram and architecture, modes of operation of 8255, Interfacing ADC, interfacing of DAC, stepper motor interfacing

3. **Communication Interface:** **(12 Periods) [0.8 credits]**
   Features of 8251, Methods of data communication, architecture and signal description, operating modes, interfacing and programming of 8251

4. **Programmable Interval Timer:** **(12 Periods) [0.8 credits]**
   Features of 8253 Pin diagram and architecture, control word, operating modes, programming and interfacing 8253.

Books Recommended:

1. Advanced Microprocessors and Peripherals (Second Edition) [chapters 1to 4] – A K Ray & K M Bhurchandi Tata McGraw Hill 2009

2. The INTEL Microprocessors 8086 /8088, 80186/80188, 80286, 80386, 80486, Pentium and Pentium Processor –Barry B. Brey Printice-Hall INDIA

3. Microprocessors – S. K. Gupta Pragati Prakashan Meerut

4. Microprocessors – II –A. P. Godse Technical Publications Pune

Dr. Babasaheb Ambedkar Marathwada University Aurangabad.

B. SC. FOURTH SEMESTER
Subject: ELECTRONICS
Course: ELE-402 Paper – XII (B)

(Effective from June 2014)

Title: 8085 MICROPROCESSOR – II

Marks: 50 **Periods: 45** **Credits: 03**

1. **Instruction Timing and Operations:** **(12 periods) [0.8 credits]**
   Introduction to machine cycle, machine cycles, timing diagram, 8085 wait, hold and halt states, 8085 transition state diagram

2. **Stack and Subroutine:** **(15 periods) [1.0 credits]**
   Stack, use of stack for programmer, advanced stack related instructions, use of stack by microprocessor subroutines, Call address and RET instructions, parameter passing techniques, subroutine documentation, conditional call and return instructions

3. **I / O Data Transfer Techniques:** **(09 periods) [0.6 credits]**
   Microprocessor controlled transfer, hand shake I / O data transfer techniques

4. **8085 Interrupts :** **(09 periods) [0.6credits]**
   Interrupt system, types of interrupts, 8085 interrupt structure, interrupt logic control instructions, priority interrupt structures

Books Recommended:

1. 8 - bit Microprocessors System Design – V J Vibhte & P B Borole
   [Chapters 1 to 4] Technova Publications, PUNE

2. Microprocessor Architecture, Programming, and Applications with the **8085**
   (5th Edition) –Ramesh S. Gaonkar Penram International Publishing

3. Microprocessors –I –A. P. Godse Technical Publications PUNE

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FOURTH SEMESTER
Subject: ELECTRONICS

Course: ELE-403 **Paper –XIII** (Practical) [**1.5 credits**]

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VII – A: Experiments (Marks 30)

1. Built and study astable multivibrator using IC 555.
2. Built and study monostable multivibrator using IC 555.
3. Built and study free running ramp generator.
4. Study of amplitude modulation using transistor.
5. Study of AM detector using diode.
6. Study of F M modulation using IC.
7. Study of F M detector using IC.
8. Study of Balance modulator.

VII – B: Project (Marks 20)

Every student should construct one project based on the syllabus of Third and Fourth Semester. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FOURTH SEMESTER
Subject: ELECTRONICS

Course: ELE-404 **Paper – XIV [A]** **[1.5 credits]**

(Practicals using 8086)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VIII – A: Experiments **(Marks 30)**

1. Interface 8 LED and 8 switches & write ALP to display status of switch using 8255.
2. Write a program for 8 bit binary UP counter and implement it using 8255.
3. Write a program for 8 bit binary DOWN counter and implement it using 8255.
4. Write a program to acquire 8 – bit data from an ADC and implement it using 8255.
5. Interface Hex Key board and seven segment display to display key pressed on seven segment display.
6. Write ALP to generate triangular waveform of frequency 500 HZ using DAC 0800 with 8255 & 8086 microprocessor.
7. Design stepper motor controller and write an ALP to rotate shaft of stepper motor in clockwise direction (5 rotations) & anticlockwise direction (5 rotations).
8. Study of modes '0'of 8253.
9. Study of modes '1'of 8253.
10. Study of modes '2'of 8253.

VIII – B: Project **(Marks 20)**

Every student should construct one project based on the syllabus of Third and Fourth Semester. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. SC. FOURTH SEMESTER
Subject: ELECTRONICS

Course: ELE-404 **Paper – XIV [B]** **[1.5 credits]**

(Practicals based on 8085)

(Effective from June 2014)

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during the semester. The journal must be certified at the end of the semester by The Head of the Department.

VIII – A: Experiments (Marks 30)

1. Assembly language program to add first ten even hexadecimal numbers and store the result in D register.
2. Assembly language program to find square of a single digit number.
3. Assembly language program to move a block of data from one location to other location in reverse order.
4. Assembly language program to find positive numbers in an array of ten elements. Store the result at -----.
5. Assembly language program to add two multi byte hex numbers. Each number consists of four bytes.
6. Assembly language program to divide a number by another number. Store the result in one register and remainder in another register.
7. Assembly language program to find first two highest numbers from a given array of 16 numbers.
8. Assembly language program to arrange given array of 8 bit elements in ascending order.
9. Assembly language program to arrange given array of 16 bit elements in descending order.

VIII – B: Project (Marks 20)

Every student should construct one project based on the syllabus of third and Fourth Semester. He/she should submit the project and project report thereon at the time of practical examination. The project report must be certified at the end of the semester by The Head of the Department.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science **B. SC. FIRST SEMESTER**

Subject: ELECTRONICS

Course: ELE-301 **Paper –VII**

(Effective from June 2014)

Title: Linear Integrated Circuits

PAPER PATTERN (THEORY)

Time: Three Hours *Max. Marks: 50*

N.B.: (i) Attempt ***All*** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 4 (10)

Q.4 Write note on any two:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No.3 (05)
(d) Chapter No.4 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science **B. SC. FIRST SEMESTER**

Subject: ELECTRONICS

Course: ELE-302 Paper –VIII (A)

(Effective from June 2014)

Title: 8086 MICROPROCESSOR

Paper pattern (Theory)

Time: Three Hours *Max. Marks: 50*

N.B.: (i) Attempt ***All*** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 1 (10)

Q.4 Write note on any two:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 1 (05)
(d) Chapter No. 2 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science B. SC. FIRST SEMESTER

Subject: ELECTRONICS

Course: ELE-302 Paper –VIII (B)

(Effective from June 2014)

Title: 8085 MICROPROCESSOR – I

Paper pattern (Theory)

Time: Three Hours *Max. Marks: 50*

N.B.: (i) Attempt ***All*** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 1 (10)

Q.4 Write note on any two:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 1 (05)
(d) Chapter No. 2 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science **B. SC. FIRST SEMESTER**

Subject: ELECTRONICS

Course: ELE-401 Paper –XI

(Effective from June 2014)

Title: COMMUNICATION ELECTRONICS
PAPER PATTERN (THEORY)

Time: Three Hours *Max. Marks: 50*

N.B.: (i) Attempt ***All*** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 4 (10)

Q.4 Write note on any two:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No. 3 (05)
(d) Chapter No. 4 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science **B. SC. FIRST SEMESTER**

Subject: ELECTRONICS

Course: ELE-402 Paper –XII(A)

(Effective from June 2014)

Title: 8086 MICROPROCESSOR INTERFACING PAPER PATTERN (THEORY)

Time: Three Hours *Max. Marks: 50*

N.B.: (i) Attempt ***All*** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 4 (10)

Q.4 Write note on any two:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No.3 (05)
(d) Chapter No.4 (05)

Q.5 Attempt the following: (10)

TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER.

FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

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Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Faculty of Science **B. SC. FIRST SEMESTER**

Subject: ELECTRONICS

Course: ELE-402 **Paper –XII(B)**

(Effective from June 2014)

Title: 8085 MICROPROCESSOR-II
PAPER PATTERN (THEORY)

Time: Three Hours *Max. Marks: 50*

N.B.: (i) Attempt ***All*** questions.
(ii) All questions carry equal marks.
(iii) Use only Blue or Black pen.
(iv) Draw neat circuit diagrams wherever necessary.

Q.1 Attempt any one:
(a) Chapter No. 1 (10)
(b) Chapter No. 2 (10)

Q.2 Attempt any one:
(a) Chapter No. 2 (10)
(b) Chapter No. 3 (10)

Q.3 Attempt any one:
(a) Chapter No. 3 (10)
(b) Chapter No. 4 (10)

Q.4 Write note on any two:
(a) Chapter No. 1 (05)
(b) Chapter No. 2 (05)
(c) Chapter No.3 (05)
(d) Chapter No.4 (05)

Q.5 Attempt the following: (10)
TEN MULTIPLE CHOICE QUESTIONS S HOULD BE ASKED WITH SINGLE CORRECT ANSWER.
FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

ANSWER
FURTHER AT LEAST **TWO** MCQs ON EACH CHAPTER.

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