

**Syllabus of courses offered
during 2016 – 2017**

Bachelor of Commerce (B.Com) Semester –I

1. FINANCIAL ACCOUNTING – I

Unit – I - An overview of basic of Book Keeping and Accountancy. - Rules of Double Entry Account System. - Preparation of Journal, Ledger, Cash Book, Trial Balance & Annual Accounts of Sole Traders. - Accounting Concepts & Conventions. - Accounting Standards: - Introduction, Need & Objectives, AS 1 to AS 10, Accounting Policies and their Discloser.

Unit – II Hire Purchase Accounts (Excluding Installment System and Repossession of Assets)

Unit – III Branch Accounts (Excluding Foreign Branch)

Unit – IV Accounts of Co - Operative Societies. (Preparation of Cash Book and Trading and Profit and Loss A/c and Balance Sheet as per Maharashtra State Co - Operative Societies Act,1960)

Unit – V - Consignment Account

- Joint Venture Accounts (Centralized & Decentralized Method)

Note :- Accounting year should be 31st March.

2. Business Organization

Unit – I

Nature and scope of business: Meaning and definition of business, characteristics, objectives of business, classification of business activities, Industry, Service, Commerce & Trade. Social Responsibility of Business towards different groups.

Unit – II

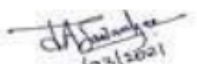
Forms of Business Units: Meaning, Characteristics, Advantages and Disadvantages of Sole Trader, Partnership, One Person Company, Private Company, Joint Stock Company- Concept, Classification, Service sector business: - meaning, types including BPO and KPO, advantage its role in economy

Unit - III

Organization: Meaning, Definition ,Concept and functions of Organization, Principles of Organization, Types of Organization- Line and Staff, Modern types of organizations- Project, Matrix, Formal and Informal Organization, Advantages and Disadvantages.

Unit IV

Recent Trends in Business Organization: Internal constituents of the Business Organization; key managerial personnel (KMP); chairman- qualities of a chairman, powers, responsibilities and duties of a chairman; chief executive officer (CEO), role and responsibilities of the CEO; E-commerce, E-business, E-banking.


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3. Company Law

Level of Knowledge: - Basic Conceptual Knowledge.

Objective: To make aware the students with basic concept of company law
[The Company Act 2013 with Amendments up to June 2016]

UNIT - I

- (i) Background of New Company Act 2013.
- (ii) Corporate Personality – Company, Meaning of Company, Characteristics of a Company, Lifting of Corporate Veil
- (iii) Kinds of Company- Private Company, Public Company, Company limited by Share, Company Limited by guarantee, Unlimited Company, Association not for profit, Government Company, Foreign Company, Holding and Subsidiary and associate company with features of all kinds of company.
- (iv) Promotion and incorporation of company- stages in formation and incorporation of company, registration and commencement of business, Certificate of Incorporation

UNIT – II

- (i) Memorandum of Association- Meaning, Definition, Importance and Content of Memorandum of Association.
- (ii) Articles of Association – Meaning, Definition, Importance and content of Articles of association.
- (iii) Private Placement and Prospectus: Meaning and definition of private placement and prospectus, public offer, types of prospectus- Deemed prospectus, Shelf prospectus, Red Herring Prospectus, Abridge prospectus.
- (iv) Misrepresentation in prospectus, Consequences of misrepresentation and remedies for misrepresentation in prospectus.

UNIT- III

- (i) Share and share capital- Meaning and nature of capital and share capital, kinds of share- equity, preference, sweat equity, bonus, employee stock option scheme, and Right issue.
- (ii) Debt Capital (Borrowing and Debenture)- Meaning and nature of debt and debt capital, Types of different types of borrowing
- (iii) Difference between- Share and debenture, owned capital and debt capital.
- (iv) Depositories and dematerialization of securities- meaning and nature of depositories, procedure of dematerialization of securities.

UNIT – IV

- (i) Membership in a company – Meaning of shareholder and member, distinction between shareholder and member, kinds of member.
- (ii) Procedure to become member and shareholder of a company, Concept of Transfer and Transmission of Securities (Share and Debenture)
- (iii) Directors – Meaning, Appointment, Power and Duties, Managing Director and Whole Time Director – Appointment and Qualification.

(iv) Concept of Small Shareholders Director, Women Director, Resident Director and Independent Director, Auditor – Meaning, Appointment and Removal

4. Business Economics – I

Unit I: Nature and Scope of Business Economics

Business Economics-Meaning, scope and objectives of business economics. Nature and types of business decisions. Role and social responsibility of business & business economist. Micro and Macro Economics- Definition, scope, merits and demerits.

Unit II: Theory of Consumption

Law of Demand, Demand determinants, Changes in demand, Indifference Curve Concept- Definition, properties, importance of indifference curves. Elasticity of Demand- Concept, definition, kinds, measurement of elasticity of demand, Factors influencing elasticity of demand, Importance of elasticity of demand. Demand Forecasting- Meaning, need, importance, methods of demand forecasting.

Unit III: Theory of Production

Concept of Production Function- Concept, definition, Types of Products, Total Production, Average Production, Marginal Production. Law of Variable Proportions- Assumptions, significance & limitations. Isoquant Curves- Definition, general properties of Isoquant curves, Expansion Path. Law of Returns to Scale, Internal and External Economies and Diseconomies of Scale, Ridge Lines. Theories of Population - Malthusian Theory of Population, Optimum Theory of Population, Demographic Transition Theory of Population and Criticisms. Law of Supply.

Unit IV- Theory of Cost and Revenue

Law of Supply & Criticisms, Factors influencing supply. Concept of Cost in the Short & Long Run- Accounting Cost, Economic Cost, Opportunity Cost, Fixed Cost, Variable Cost, Direct and Indirect Costs, Real Cost, Explicit & Implicit Costs, Money Cost, Total Cost, Average Cost, Marginal Cost, Selling Costs. Revenues - Total Revenue, Average Revenue, Marginal Revenue and their Relationship.

5. Compulsory English

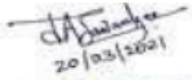
Unit –I Short Stories:

1. The Gifts by O Henry
2. The Quality by J. Galsworthy
3. The Axe by R. K. Narayan

Unit –II Poems:

1. You turned away yourself by Kabir
2. Mending wall by Robert Frost
3. Unknown Citizen by W.H. Auden

Unit –III Essays:


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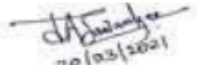
1. Tolerance by E.M. Forster
2. The Philosophy of Pleasure by Fulton J. Sheen
3. On Painted Face by A. G. Gardiner

Unit –IV

- A) I) Synonym/Antonym of Given words (Match the following format)
 II) One Word Substitute
 B) Business Correspondence:
 Job Application Letter, Interview Call Letter, Job Offer Letter
 C) Comprehension of an Unseen Passage
 D) Precis Writing

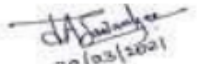
6. Marathi

प्रश्न क्र.	घटक क्र.	अभ्यासक्रम	गुण	शेरा
१	१	समकालीन राष्ट्रीय, सामाजिक समस्यावर आधारित (चार पर्यायांपैकी एका विषयावर, शब्द मर्यादा-४००)	२०	
२	२	गद्य विभाग : पाठ्य पुस्तक : भाषा दर्शन भाग एक १. लोकशाहीचे भवितव्य (डॉ. बाबासाहेब आंबेडकर) २. नौका (प. भा. भावे) ३. अस्पृश्यांचा आधारवड (शिवाजी सावंत) ४. बेगड (योगीराज वाघमारे) ५. उमा (वि. स. जोग)	३५	
३	३	पद्य विभाग : पाठ्य पुस्तक : भाषा दर्शन भाग एक १. ज्ञानेश्वरांच्या विराण्या (संत ज्ञानेश्वर) २. मन (बहिणाबाई चौधरी) ३. गणपतवाणी (बा. सी. मर्ढेकर) ४. गिरणीची लावणी (नारायण सुर्वे) ५. माउली भुकेले बेट (सुधाकर गायधनी)	३५	
४	४	व्यावहारिक मराठी १. पत्रलेखन २. इतिवृत्त लेखन	१०	

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7. Hindi

Unit	Particulars
Unit - 1	निबंध
Unit - 2	गद्य विभाग - पाठ्यपुस्तक साहित्य वीथिका
1)	गपशप (निबंध) नामवर सिंह
2)	सच्ची विरता (निबंध) सरदार पूर्णसिंह
3)	कफन (कहानी) प्रेमचंद
4)	चीफ की दावत (कहानी) भीष्म साहनी
5)	शरणागत (कहानी) वृन्दावनलाल वर्मा
Unit - 3	पद्य विभाग
इकाई - 1)	कबीर के दोहे कबीरदास
2)	बाल-लीला सुरदास
3)	भक्ति, नीति के दोहे बिहारी
4)	वर दे, वीणादिनी वर दे । सूर्यकांत त्रिपाठी 'निराला'
5)	हिमाद्रि तुंग शृंग से जय शंकर प्रसाद


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Unit	Particulars	From
5	बादल को घिरते देखा है नागार्जुन	
Unit - 3	पारिभाषिक शब्दावली वाणिज्य सम्बन्धी पारिभाषिक शब्द	
1)	Affiliated	
2)	Agriculture	
2)	Abbreviation	
4)	Allowance	
5)	Indigenous Bank	
6)	Borrowing	
7)	Consignment	
8)	Expansion	
9)	Indemnity	
10)	Voyage etc.	
Unit - 5	कल्पना विस्तार	
1)	जैसा देश वैसा भेष ।	
2)	पराधीन सपने हूँ सुख नाही ।	
3)	जहाँ सुमति वहाँ नाना सम्पति ।	
4)	कर्म बिना सिद्धांत मिथ्या है।	
5)	नेत्रदान महादान	
6)	जो जैसा करता है वैसा भरता है ।	
7)	परिवर्तन ही गति है ।	
8)	सौच को औँच नाही ।	
9)	एकता में बल होता है ।	
10)	भय मनुष्य का सबसे बड़ा शत्रु है ।	

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8. Supplementary English

Unit 1- Prose

1. A New Star Rises- Jawaharlal Nehru
2. Mahatma Gandhi- Louis Fischer
3. Jagdish Chandra Bose- Aldous Huxley
4. My Greatest Olympic Prize- Jesse Owens
5. Eating for Health- Rajkumari Amrit Kaur

Unit 2 - Poetry

1. Virtue- George Herbert
2. Solitude- Alexander Pope
3. How Sleep the Brave- William Collins

Non-Textual portion-

Unit 3 – Writing Skills

(A) Social Correspondence:

Letter of Congratulations, Letter of Condolence, Informal Invitation

(B) Writing Classified Advertisements

Unit 4 – Grammar

Spotting errors in the use of - (1) Articles (2) Subject-Verb Agreement

Bachelor of Commerce (B.Com) Semester –II

9. Statistics and Business Mathematics

Unit – I Statistics & Measures of Central Tendency

Meaning, Scope, Importance, Functions and Limitations of Statistics. Collection of data, Tabulation and Classification, Frequency distribution.

Mean, Median, Mode, Geometric Mean and Harmonic Mean (**Theory & Numericals**)

Unit – II

Dispersion- Meaning and significance of dispersion, Methods of measuring dispersion, Mean Deviation, Standard Deviation, Quartile Deviation, co-efficient of variation

(**Theory & Numericals**)

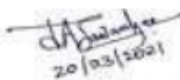
Unit – III

Skewness-Absolute Measures of Skewness, Relative Measures of Skewness, Karl Pearson's Coefficient of Skewness, Bowley's Coefficient of Skewness. (**Numericals**)

Unit – IV

Business Mathematics:- Ratio Proportion, Percentages, Simple & Compound Interest,

Profit/ Loss. (**Numericals**)


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10. Business Management

Unit I Introduction: Meaning, Definition, concept and types of management. Principles of business Management. Scope and significance of business management.

Process of business management. Function of business Management. Management as a science or art.

Unit II Planning: - Meaning, Nature and Characteristics, Importance, Types & Components of Planning. **Decision Making:** Meaning, characteristics & importance of decision making. Traditional and Modern techniques of Decision-Making.

Unit – III Delegation of Authority:— Meaning, Elements, Advantages, & Obstacle of Delegation

of Authority. Centralization and decentralization of authority and its merits and demerits.

Co-ordination & Controlling: Meaning, Concept and principles of Coordination, Internal & External Coordination. Meaning, concept and elements of control.

Unit IV Recent trends in management:

Management of Change Management of Crisis, Total Quality Management, Stress Management, International Management.

11. Secretarial Practice

UNIT – I

(i) Procedure for Incorporation of Companies, Conversion of Companies – Private Limited to Public Limited and Public Limited to Private Limited

(ii) Procedure for Alteration of Memorandum of Association and Article of Association

(i) Company Secretary – Meaning, Qualification and Functions/ Role

(ii) Directors – Procedure for Appointment of Directors and Director's Identification Number (DIN)- allotment and surrender

UNIT- II

(i) Types and characteristics of company meeting, statutory, board, general and extra ordinary meeting, and meetings of committee of director.

(ii) Agenda, Notice and provision regarding quorum of Board meeting, Annual General Meeting and Extra ordinary General Meeting

(iii) Voting and resolution- Meaning of poll, postal ballot and E-Voting, Meaning of ordinary and Special Resolution.

(iv) Circular Resolution, Explanatory statement, Ordinary and special Business to be transacted in meetings.

UNIT – III

(i) Report Writing - Essential and content of Board Report and Annual Report.

(ii) Concept of secretarial audit, Secretarial standards, corporate social responsibility and

corporate governance, National Financial Reporting Authority.


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(iii) E-Governance and E-Filing- Meaning, features and procedure of E-Governance and E-Filing, MCA-21

UNIT – IV

- (i) Key managerial personnel- Appointment and function of managing director, whole time director and manager.
- (ii) Procedure for appointment of Additional Directors, Alternate Directors, Nominee Directors.
- (iii) Managerial Remuneration - Remuneration of managing director, whole time director or manager.
- (iv) Provisions regarding resignation, removal of directors, Casual vacancy.

12. Business Economics – II

Unit I: Market Structure

Meaning, Definition, Classification of Market Structures. Firm & Industry- Meaning, Difference between Industry and Firm. Pricing of Products-Types, Cost-based pricing, Customer-based pricing, Competitor-based pricing.

Unit II: Perfect & Imperfect Competition Markets

Definition, Features, Price-output determination under Perfect Competition Market. Monopoly - Definition, Features, Types, Price determination under Monopoly. Concept of Price Discrimination .Monopolistic Competition- Meaning, Features, Price determination under Monopolistic Competition.

Unit III: Theories of Distribution

Theory of Distribution -Modern Theory of Distribution. Theories of Rent- Ricardian theory of Rent, Modern theory of Rent, Concept of Quasi Rent. Theory of Wages- Marginal Productivity theory of Wages with Criticisms, Nominal & Real wages. Theories of Interest-Loanable Funds Theory of Interest, Liquidity Preference Theory of Interest, Criticisms, Concept of Gross Interest & Net Interest. Theories of Profit- Dynamic Theory of Profit, Innovation Theory of Profit, Criticisms of the Theories, Gross Profit & Net Profit.

Unit IV- Business Cycles & National Income

Business Cycles-Concept, Features, Types, Phases of Business Cycles. National Income - Meaning, Concepts, Methods of Measuring National Income, Difficulties in National Income Accounting.

13. Compulsory English

Unit –I Short Stories

- 1. Some Day by Issac Asimov
- 2. Marriage is a private affair by Chinua Achebe
- 3. The Taxi Driver by Kartar Singh Duggal

Unit –II Poems

- 1. Art of Life by Tukadoji from Gramgeeta (Translation by Dr. Bhelkar)
- 2. Horses Graze by Gwendolyn Brooks
- 3. Swan and Shadow by John Hollander

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Unit –III Essays

1. Knowledge and Wisdom by Bertrand Russell
2. On education by Albert Einstein
3. What is Indianness? by Shelia Dhar

Unit –IV

- A)a. Degrees of Comparison b. Words often Confused
B) Business Correspondence:
Sales Letter, Inviting Quotations, Placing Orders
C) Comprehension of an Unseen Passage
D) Essay in about 300 words on any one Topics out of the Four Given Topics [Social issues, Economic issues, Environmental issues, Personal (Reflective) essays]

14. Marathi

प्रश्न क्र.	घटक क्र.	अभ्यासक्रम	गुण	शेरा
१	१	आत्मवृत्तपर, वर्णनपर, विषयावर आधारित निबंध (चार पर्यायांपैकी एका विषयावर शब्द मर्यादा-४००)	२०	
२	२	गद्य विभाग : पाठ्य पुस्तक : भाषा दर्शन भाग एक १ जेट युगातील मराठी माणूस (शंतनू किलोस्कर) २ विठ्ठल तो आला आला (पु. ल. देशपांडे) ३ नवसमाजनिर्मितीचे प्रणेते: महात्मा ज्योतीबा फुले (गंगाधर पानतावणे) ४ भरती (वसंत कऱ्हाडपांडे) ५ महालूट (संदानंद देशमुख)	३५	
३	३	पद्य विभाग : पाठ्य पुस्तक : भाषा दर्शन भाग एक १ तुकारामांचे अभंग (संत तुकाराम) २ प्रेमाचा गुलकंद (केशव कुमार) ३ पृथ्वीचे प्रेमगीत (कुसुमाग्रज) ४ स्वप्न (येस) ५ दोन कामागारांच्या गोष्टी (लोकनाथ यशवंत)	३५	
४	४	व्यावहारिक मराठी ३. मुलाखत तंत्र ४. म्हणी व वाकप्रचार	१०	

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15. Hindi

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16. Supplementary English

Unit 1- Prose

1. Using the Dictionary- Albert Walker and Mary R. Parkman
2. On the Rule of the Road- A.G. Gardiner
3. How I became a Public Speaker- George Bernard Shaw
4. Seeing People Off- Sir Max Beerbohm
5. The Postmaster- Rabindranath Tagore

Unit 2 - Poetry

1. The Daffodils- William Wordsworth
2. Stopping by Woods on a Snowy Evening- Robert Frost

Unit 3 Non-Textual Portion

(A) Social Correspondence:

- ☐ Letter of Recommendation
- ☐ Letter of Introduction
- ☐ Making reservations in hotels for accommodation

(B) Note making :

- ☐ Serial or sequential format
- ☐ Tree diagram

Unit 4 – Grammar

Spotting errors in the use of- (1) Prepositions (2) Tenses

Bachelor of Commerce (B.Com) Part II (Yearly Pattern)

17. Compulsory English

Unit –I Short Stories

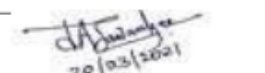
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3. What is Indianness? by Shelia Dhar


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Unit –IV

A)a. Degrees of Comparison b. Words often Confused

B) Business Correspondence:

Sales Letter, Inviting Quotations, Placing Orders

C) Comprehension of an Unseen Passage

D) Essay in about 300 words on any one Topics out of the Four Given Topics [Social issues, Economic issues, Environmental issues, Personal (Reflective) essays]

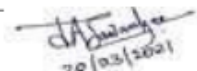
18 Marathi

अनुक्रमणिका		
गद्य विभाग		पृष्ठ क्र.
१. दुःखाक्रांत लेंकी येणें	- म्हाईभट	३
२. इंद्रायणीच्या वाळवंटात	- श्री. म. माटे	५
३. माझे दत्तक वडील	- चिं. वि. जोशी	१६
४. मित्र	- ना. सी. फडके	२६
५. माणसांत विरलेला माणूस	- दुर्गा भागवत	३०
६. सांगावा	- शंकरराव खरात	३७
७. रामा मैलकुली	- व्यंकटेश माडगूळकर	४८
८. प्रेम	- मारुती चितमपल्ली	५६
९. शेवटची माती	- आनंद यादव	६१
१०. विज्ञानयुगात भारत	- जयंत नारळीकर	७०
११. जनसामान्यांच्या प्रबोधनाचे गतिचक्र ✓	- बा. ह. कल्याणकर	७८
पद्य विभाग		
१. संतवाणी	- चोखामेळा, सेना न्हावी,	८७
	नरहरी सोनार	
२. दोन भारुडे	- संत एकनाथ	९०
३. लटपट लटपट तुझे चालणें	- होनाजी बाळा	९३
४. विद्यार्थ्याप्रत	- केशवसुत	९५
५. माझी कन्या	- बी	९७
६. आई	- यशवंत	९९
७. आभाळाची अम्ही लेकरे	- वसंत बापट	१०२
८. विचार झाला पाहिजे	- वसंत आबाजी डहाके	१०३
९. इथेच	- यशवंत मनोहर	१०५
१०. जहर खाऊ नका !	- ज्ञानेश वाकुडकर	१०७
११. आता आम्ही	- वैभव सोनारकर	१०९
व्यावहारिक मराठी		
१. प्रसारमाध्यमांसाठी वृत्तलेखन		११३
२. स्मरणिका संपादन		१२१
३. कल्पना विस्तार		१२९
४. वाक्प्रचार		१३३

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19. Hindi

Class : B.Com II Year III Sem		Subject : HINDI	
Unit	Particulars		
	गद्य विभाग		
1)	हिम्मत और जिंदगी रामधारी सिंह दिनकर		
2)	जीवन की किताब अनंत गोपाल शेंवडे		
3)	पर्यावरण-प्रदूषण समस्या मनोजगत की विवेकी राय		
4)	गौरा डॉ. रामकुमार वर्मा		
5)	प्रतिशोध महादेवी वर्मा		
	पद्य विभाग		
1)	विनय-पत्रिका तुलसीदास		
2)	मीरा के पद मीराबाई		
3)	रहीम के दोहे रहीम		
4)	प्रियप्रवास अयोध्यसिंह उपाध्याय 'हरिऔध'		

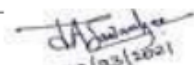

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Class	B.Com II Year III Sem	Subject	HINDI
Unit	Particulars	From	
	जीवनवृत्त (Bio-Data)		
1)	जीवन-वृत्त का सामान्य परिचय दिजिए ।		
2)	जीवन-वृत्त की परिभाषा दिजिए ।		
3)	जीवन-वृत्त की विशेषताएँ बताईये ।		
4)	जीवन-वृत्त का एक सामान्य प्रारूप बनाइए ।		
5)	एक काल्पनिक जीवन-वृत्त बनाइए ।		
6)	जीवन-वृत्त के प्रकारों को स्पष्ट किजिए ।		
	1) कालानुक्रमिक रेज्यूमे		
	2) क्रियाव्यक्त रेज्यूमे		
	साक्षात्कार (Interview)		
1)	साक्षात्कार की परिभाषा दिजिए ।		
2)	साक्षात्कार के उद्देश्य बताइए ।		
3)	साक्षात्कार के प्रकारों का वर्णन किजिए ।		
4)	साक्षात्कार का महत्व स्पष्ट किजिए ।		
5)	साक्षात्कार के सिद्धांतों का वर्णन ।		
6)	साक्षात्कार की प्रमुख सीमाएँ बताइए ।		

20. Supplementary English

Unit 1- Prose

1. Using the Dictionary- Albert Walker and Mary R. Parkman
2. On the Rule of the Road- A.G. Gardiner
3. How I became a Public Speaker- George Bernard Shaw
4. Seeing People Off- Sir Max Beerbohm
5. The Postmaster- Rabindranath Tagore


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Unit 2 - Poetry

1. The Daffodils- William Wordsworth
2. Stopping by Woods on a Snowy Evening- Robert Frost

Unit 3 Non-Textual Portion

(A) Social Correspondence:

- ☐ Letter of Recommendation
- ☐ Letter of Introduction
- ☐ Making reservations in hotels for accommodation

(B) Note making :

- ☐ Serial or sequential format
- ☐ Tree diagram

Unit 4 – Grammar

Spotting errors in the use of- (1) Prepositions s (2) Tenses

21 FINANCIAL ACCOUNTING

Unit – I

- Flotation of Joint Stock Companies and their Capital Structure.
- Accounting for Issue, Forfeiture of shares & reissue of forfeited shares.

Unit – II

- Annual or Final Accounts of Joint Stock Companies. (Excluding Managerial Remuneration)

Unit – III

- Final Accounts of Banking Companies (Preparation of Annual accounts as per Banking Companies Regulation Act 1949 as per amendment by RBI)

Unit - IV

- Final Accounts of General Insurance Companies.

Unit - V

- Profit Prior to Incorporation. • Liquidation of Company. • (Preparation of Liquidator's Final Statement of Account only)

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22. COST AND MANAGEMENT ACCOUNTING

Unit – I - Cost Accounting :- Meaning, Importance, Element of Cost, Cost Absorption, Allocation of Overheads and Methods of costing, Difference between Cost Accounting and Financial Accounting. - Management Accounting :- Meaning, Scope, Importance, and Limitations of Management Accounting. Difference between Cost Accounting and Management Accounting, Role of Management Accounting

Unit – II - Cost Sheet, Tender and Quotations. Reconciliation of Profit /Loss shown by Cost and Financial Accounts.

Unit – III - Process Cost Accounting (Including Abnormal loss and Abnormal effectives, Joint Process Accounts) - Contract Cost Accounting (One years contract for complete & incomplete contract)

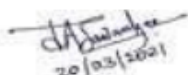
Unit – IV - Break -Even Point Analysis - Ratio Analysis (Ratios related to Trading and Profit and Loss Account and Current Ratio, Liquid Ratio, debtors Turnover Ratio, Creditors Turnover Ratio, Working Capital Turnover Ratio) Unit – V 39 - Fund Flow Analysis - Business Budget (Cash Budget and Flexible Budget Only)

23. Business Communication

Unit I: Business communication: concept, objective, elements, purpose & importance. Salient features & principles of effective communication. Types of communication, interpersonal, supervisory & grapevine communication, their characteristics. Public speaking: concept, principles, qualities & role of manager as Public speaker, importance of humor. Business writing: Elements, do's & don'ts, layout of business writing. Sales letter, enquiry, order, complaint letter, commercial letter, interview letter, appointment letter & show cause notice.

Unit II: Communication media: Types, characteristics, advantages & disadvantages of print media, audio visual & internet. Organizational communication: Salient features, benefits & effectiveness of Company manual, house journal, placement broacher, leaflets. Public relations: Meaning, objectives, principles. Functions & qualities of public relation officer, corporate image, communication with government.

Unit III: Word processing Introduction, Creating document, Structure of Ms-word window and its application, mouse & keyboard operations, designing a document; formatting-selection, cut, copy, paste, Toolbars, Printing, Saving, Opening, Closing of document; creating a template; Tables, borders, textbox operations; Spelling and Grammar check, Mail merge, Envelope and label, protection of document, Change the view of document.


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Unit-IV : Spreadsheet Package Introduction To Ms-excel, Excel Toolbars and Operations, formatting Features, Copying Data Between Worksheets; Entering and Editing Cell Entries, Creation of Charts, Editing and Formatting Charts, Goal Seek, Auditing, Linking, Workbook, Database in Excel (Auto Filter, Advanced Filter, Sort, Form), Mathematical, Statistical and Financial Functions in Ms-Excel. Unit- V : Power point Working with Power point, Standard Toolbar, Formatting Toolbar, Drawing Toolbar, Moving the Frame, Inserting Clip Art, Picture, Slide; Text Styling, Send to Back, Entering Data to Graph, Organization Chart, Table, design Template, Master Slide, Animation Setting, show and Presentation, Auto Content Wizard, Package for CD (pack & Go Feature).

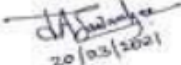
24. MONETARY ECONOMICS

Unit : I Money - Evolution, meaning, definition, nature and functions of money. - Types of Money (Metal, paper Plastic) - Quantity Theory of Money and Criticism. - Inflation, deflation, meaning, nature, Causes, effects, impact, remedial measures by RBI and role, - Money Market Concept of Money market objective importance, Monetary policy and fiscal policy Concept - meaning, objectives need, importance, impact, recent charges/Trends

Unit : II Banking Commercial Bank – Evolution, Meaning, definition, functions, role, credit creation, investment policy, Limitations. - Assets and liabilities and Management – (ALM) – Meaning objectives, balance sheet, importance, constituent, Ingredients of ALM - Non-Performing Assest. – Meaning, Criteria and Causes. - E-Banking & Core Banking – Meaning, nature, features, essential factors, Advantage & dis-advantages. ATM – (Automated Teller wachiues) Meaning, features. Merits and demerits credit cards (KCC) Plastic cards small cards, cheque cards, e-purse, laser cards – Meaning, features, Merits & demerits. - Automated clearing Houses, online Banking, Advanced Ledger Posting Machines, MICR Technology – Cheques – clearing EFT (Electron fund Transfer) Internet Banking e-cheque ECS (Electronics clearing system)

Unit : III Banks and Customers – Relationship and Services - Introduction, meaning of customer, Bank & Customer relationship – Debtor & creditors, Trustee and Beneficiary, Agent and Principal, Baitec and Baitec special relationship. - Opening, operating and closing of an Bank accounts, types – demat account advantages, role of demat partner. Buying and selling of demat securities. - Methods of Calculating Interest Rates – on deposits, on loans advances, on cash credits on overdraft facilities - Banker Right & obligations.

Unit : IV Central Bank - Introduction, Meaning, objectives, functions, role – professional & regulatory organization & Management - Credit Control – Meaning objectives methods :- Quantitative – Bank rate, open market operation, varying reserve requirement, credit rationing.


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Qualitative – Varying margin requirement, regulation of consumer's credit, Issuing directives to restrict bank advances and limitation. - Monetary Policy and Reserve Bank – Meaning, objectives function, role, measures, impact discrete actions and rules cash Reserve Ratio (CRR) statutory liquidity Ratio (SLR) Unit : V Public Finance – - Concept, Meaning, scope, importance – Principles of Public - finance Theory of Maximum Social Advantages & their criticism. - Taxation – Definition – Characteristics, cannons of taxation, - Taxable capacity – Meaning, importance, theory of ability to pay tax & criticism factors influencing taxable capacity. Types of taxation – proportional, progressive and regressive taxation system Direct and in directs tax concept, meaning, objectives merits & demerits. - Information Monetary fund – (IMF) Concept, meaning, objectives, need function, impact on economy.

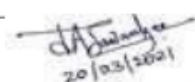
25. Business and Industrial Law

Unit – 1 - Indian Contract Act 1872- Definition, Kinds and concepts of contracts. Offer and Acceptance Consideration -Capacity of parties -Free consent - Legality and objects of consideration -Void Agreements-Performance of Contract -Discharge of Contract and Remedies. - Patent Act- 2002- Meaning, Objective and important Definition - Inventions not patentable - Patent office and power controller - Penalties.

Unit-2 - The Indian Partnership Act, 1932 -Concept of partnership -Test for determination of existence for partnership -Kinds of partnership - Registration, Effects of Non- Registration - Rights and duties of partners towards other partners -Authority of partner and liabilities towards third parties -Admission, retirement, expulsion of partners and their liabilities - Dissolution of the firm - The Sale of Goods Act- 1930 -Contract of sale of Goods -Conditions and Warranties - Transfer of Property -Performance of contract of sale -Rights of unpaid seller

Unit -3 - Information Technology Act- 2000 -Meaning, objective and scope, offences and penalties adjudicating -Digital Signature and Electronic Governance - Offences and penalties - Right to Information Act-2005 -Important Definition, aims and objects of Right to information Act -Request for acquiring Information and procedure regarding information -Charges for supply of information -Appeal Officers - Consequences of non supply of information -Format of complaint application

Unit-4 - The Consumer Protection Act -Salient Features of Act -DefinitionConsumer, Complaint, Services, -Defect and Deficiency, complaints -Rights and relief's available to consumers - Procedure to file complain -Consumer Disputes Redresser Agencies -Procedure followed by


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Redresser Agencies - Environment Protection Act- 1986 -Meaning, objective and scope -Power of Central Government to protect and improve Environment -Location of Industries, Process and Operations -Offences and penalties

Unit- 5 - The Indian Factories Act- 1948 -Important Definitions -Provisions regarding workers Health -Provisions regarding safety of workers -Rules regarding Labor welfare -Provisions regarding Adults, Women workers and young workers - The Industrial Disputes Act-1947 - Important Definition -Authorities for the settlement of Industrial Disputes -Work procedure of different authorities and their powers and responsibilities -Duties of Conciliation officer and board - Duties of court of enquiry -Strikes and Lock out.

Bachelor of Commerce (B.Com) Part III (Yearly Pattern)

26. FINANCIAL ACCOUNTING -III

Unit – I Amalgamation and Absorption of Companies.

Unit – II Reconstruction of Companies. (Internal and External Reconstruction of Companies)

Unit – III Accounts of Holding Companies. (Excluding Right Issue & Bonus Issue)

Unit - IV Valuation of Goodwill and Valuation of Share

Unit - V - Fire Insurance Claims. - (Excluding Computation of Loss of Profit) - Accounts of Public Utility Companies (Electricity, Gas and Water Supply Companies) According to Double Accounting System.

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27. Income Tax and Auditing

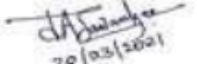
Unit – I: - Auditing: Nature of Auditing, Meaning & Definition, Objectives, Advantages, Principles, scope and Limitations of Auditing .Types of Auditing—Continuous Audit, Annual, Periodical Audit, Internal Audit - Definition, objectives, Advantages, Basic Principles of Internal Audit, and Auditor. - Audit Planning and Documentation: Commencement of New Audit, Preparation for Audit programme, Objectives, Types of Audit programme, Advantages and Disadvantages of Audit programme.

Unit – II : - Auditing Techniques: - Vouching- Meaning, Need for Vouching, Procedure of Vouching, Vouching of Cash Book, vouching of subsidiary book, Vouching of Ledgers. - Basic Concepts of Income Tax Assessment Year, Previous Year, Meaning & Definitions, GTI, Difference between Exemption & deduction, Capital & Revenue Expenditure. Due Dates of Filing return by different Assessee. - Introduction of Five Heads of Income Tax & theory Salary, House Property, Income from Business & Profession, Capital Gains & Income from Other Sources. - Residential Status and its effects on Tax incidence (Residential status of Individual, HUF, Firm & Association of Person, Company, Basic Conditions & Additional Conditions. (Theory)

Unit-III : - Income from Salary Types of allowances (Taxable & Tax free), perquisites, and Tax treatment of P.F, E.P.F., Superannuation Fund, Allowances & Perquisites, Computation of Income from Salary and Calculation of Tax Liability. (Problems) - Deduction under section 80C, 80CCC, 80CCD, 80D, 80DDB, 80E, 80G, 80GG, 80U.

Unit-IV: - Income from Business and profession Definition & Meaning of Business, Business deduction and allowances, maintenance of accounts by certain persons, Special provisions under section 44 AD and 44 AE, Depreciation U/S 32, Computation of income from business. Computation of Total Income of Individuals. (Theory/Problems). Tax Return Preparers Scheme 2006 (section 139 B) Definition of Tax Return Preparers (TRP), Educational Qualification, Duties and Responsibilities of Tax Return Preparer, Preparation and Submission of Return of Income by TRP, Remuneration of TRP, and Information related to TRP, Function and Restriction of assesses in relation to Tax Return Preparers scheme. (Theory)

Unit-V: - Income House Property -Meaning & Definition, Gross Annual Value Net Annual Value , Arrears of Rent ,Unrealized Rent, Interest on Loan Preconstruction & Post Construction, Composite Rent etc. Computation of Income from house property. - Income from Other Source – Basis of Charge, Chargeable Incomes, Exempt Incomes, Computation of Income from other sources. - (Income Tax Calculation – Rates applicable for respective Assessment year* Education Cess.) (* N. B.- Current Academic year will be the Assessment. year)


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28. Functional Management

Unit-I Human Resource Function:- - Human Resource Philosophy (Concept Scope Role and functions of HR) Human Resource planning , Recruitment , Selection, placement , Induction Training and deployment, Compensation, Job evaluation .

Unit-II Marketing Function:- - Evolution of Modern concept of Marketing Market Segmentation, Basis for Segmenting consumer and industrial market, Product planning and deployment, pricing policies and strategies. Channels of Distribution.

Unit-III Finance Function:- - Scope and Importance of Financial Management, Functions and Role of Financial manager, Sources of capital, cost of capital.

Unit-IV Production Function:- - Meaning Nature scope and Importance of production Management. Production process, production planning and control, product Design and product Research. Unit-V International Business Environment:- - Globalization – Introduction, Significance, Nature and Scope of Global Business, Social Cultural Economic, Political and Ecological factors of Global Business Environment.

29. INDIAN ECONOMICS

Unit I Indian Economy & Planning - Economic Planning:- Characteristics Rational features, Objectives, evaluation of the objectives of economic planning and recent five year plan. - Strategy of India's development plans: 10th, 11th plan - The employment perspectives in 11th plan. - Resources allocation and financing of five years plan :- way to Increase revenue and control expenditure. - Regional planning in India – aspects of regional planning – conceptualization, Magnitude, Regional and lack of gerunie regional planning in India. 54 - Assessment of India planning – Basic approach, targets and achievement an appraisal. - Achievement and short comings of Economics planning.

Unit II Indian Economy & policy - Concept of economic growth of Economic Development Characteristics of underdeveloped/Developing countries - Broad features of Indian economy - Natural resources – Land, soil, water, forest, mineral. - Infrastructure – sources of energy in India. Power, coal, oil and Gas, Atomic, Non-conventional, Energy strategy. Transport system in

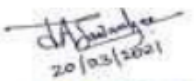
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India – Railways, Road, Water, Air Transport. - India's population: Size and Growth trends future, causes and consequences on economic development, Explosion, remedies, population policy. - Employments and unemployment :- Trends, structure, employment in India, Nature and estimates of unemployment – urban, rural, agricultural unemployment, causes, government policy for removing unemployment and Sectoral Issues

Unit III Indian Agriculture - Nature, Role of Agriculture in India economy - Cropping pattern in India and its determining factors. Crop insurance and live stock insurance – problem and Remedies - Progress of Land reform, cooperative farming - Green resolution: impact and constraints. - Trends in Agricultural Production and Productivity low levels and causes of low productivity, measures to increase production and productivity. - Agriculture marketing and finance – Need and sources, agriculture finance, cooperative credit societies. NABARD (National Bank for Agriculture and Rural Development) Financial inclusion. - Agriculture Marketing Concept Meaning Advantage, Disadvantages, problems, remedies, and Government measures to improve the system of agriculture Marketing co-operative marketing. - Agricultural price policy – Trends, Need, Agriculture, subsidies, Public distribution system in India. Targeted public distribution system (TPDS) - Agricultural Labour :- Definition, conditions and problems, Measures adopted by the Government, Measures for improvement.

Unit IV Indian Industry - Industrial policy 1991 some major Industries - Iron and steel, jute, Textile, sugar, cement - Small scale and cottage industries – Definition, role, performance, importance problems, and remedies - Public sector industries : Role, Performance, importance, Problems, and remedies - Privatization of Public sector industries: meaning, methods, Evolution of privatization policy in India. Process from disinvestment and methodologies adopted and a critique of privatization and disinvestment - Private sector industries Meaning Role importance, problems and remedies. 55 - Industrial sickness in India – Definition, causes, consequences, remedial measures - Service sector: Growth, contribution of services sector in India, rapid service growth share services in employment. - Indian trade union movement: Concept and Meaning, Role and functions, strength and weakness.

Unit V India's International Trade - Foreign Trade and foreign capital :- Concept and Meaning, advantages, disadvantages, Composition and direction export policy and import policy. - Special Economic Zones:- Concept history, benefits, arguments against SEZS, EGOM, Decision on


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SEZs and impact on Economics. - Foreign capital and Aid:- Need, role, problems, non-resident deposits, India's external debt. - Multinational corporation, Concept:- Role, importance, advantages and disadvantages of MNC's and control over MNC's, impact on economy. - Liberalization, privatization, Globalization meaning, importance, Role and steps forwards LPG, effects, and impact on Indian economy. - World Trade Organization (WTO) :- Objective, working and functions and Role - Public Expenditure – classification, Role, increasing causes of Public Expenditure. - Public debt Meaning, Concept Meaning, Classification, Role, problem and remedies.

30. BUSINESS FINANCE

Unit – I - Meaning, Nature, Significance, Objects and Scope of Business Finance, Recent Development and Reform in Finance Sector. Sources of Business Finance, Long- Medium and Short Term, Capital Market, Primary Market and Secondary Market.

Unit – II - Role and Functions of Stock Exchange and SEBI. Project Financing, Venture Capital Financing, International Finance, Euro Issue, External Commercial Borrowings, Financing and Management of Small and Medium Enterprises.

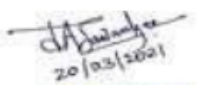
Unit – III - Meaning of Working Capital, Types, Determinants, Assessment of Working Capital Requirement, Operating Cycle. Inventory Management, Debtors Management and Creditors Management.

Unit - IV - Dividend Policy, Essentials of Sound Dividend Policy, Determination of Dividend Policy and its types. Surplus and Reserve Policy. Cash Flow for Investment Analysis.

Unit - V - Capital Budgeting :- Meaning, Nature and Types of Capital Budgeting, Investment Appraisal Techniques, Pay Back Period Method, Rate of return method, Net Present Value Method, Discounted Cash Flow Method, - Leverages -Concept of Leverages, Operating and Financial Leverages.

31. COMPUTERIZED ACCOUNTING

Unit-I - Introduction to Accounting, Advantages of accounting, Books of accounts, Classification of Accounts, Financial Statements, Inventory management, Computerized Accounting, Need of Computerized Accounting, Accounts Organization, Accounts group, Loans Liabilities, Assets and Budget.

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Unit-II - Accounting Software_s Introduction to tally Software, Features of Tally Screen, Company information, Creating new Company, Gateway, Selection of Company, selection of Options, Buttons at Gateway, Working with multiple Companies, Company Features.

Unit-III - Configuration- General, Numeric Symbols, Voucher Entry, Creation of Voucher Screen, invoice Order Entry, Printing. Accounts info menu, Account Groups-create new group, creation of primary group. Normal and advance information, Ledger Accounts, cost categories, Cost Centers. Creation of Budget, Types of budget.

Unit-IV - Voucher- Voucher Entry, creation of Vouchers Screen, types of Voucher, Selection of Voucher types, Post Dated Voucher, printing of Vouchers, Cheque Printing, advance Features of account Voucher. Inventory info, Features of Inventory info. Configure- Inventory Info, balance Sheet, Audit Trail, Ratio Analysis. Unit-V - Display-Accounting Report Display, Inventory report Display, and MIS Report Display. Printing Reports, Export of Data. Maintenance- Bank Reconciliation, House Keeping, Data Maintenance. Security- Users and Password, Security Controls, Types of Security, Creation New Security Levels and Tally Audit.

Bachelor of Commerce Computer Application (BCCA) Semester-I

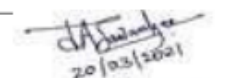
32. English – I (Communication Skills)

UNIT – I Language as Skill of Communication, Phonetics, Articles, The Proposition, Tenses, Subject-Verb Accord, The Infinitive, The Participle, Clauses, Degrees of Comparison, Transformation of Sentences, Direct and Indirect Speech.

UNIT – II Modifiers, Sentence Connectives, The Gerund, Punctuation and Capitalization, Vocabulary, Use of Abbreviations, Correct Usage, Differentiating the Pairs of Words, Eponym, Concord, Homophones, Letter Writing.

UNIT – III Paragraph Writing, Proposal Writing, Verbal Communication, Oral Presentation, Technical Written Communication, Forms of Technical Writing, Report Writing, Advertising, Precis Writing.

UNIT – IV Collections of Short Essays, Collections of Short Stories, Interview Skills and Group Discussion, Communication : Process & Elements, Reading Comprehension, Principle of Public Speaking, How to Create a Power Presentation, Speaking Skills, Listening Skills.


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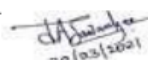
33. Financial Accounting

UNIT – I Introduction to Financial Accounting: Accounting as an information system, Financial, cost and management Accounting and their interrelationships, Finance Function and Accounting, Accounting as an academic Discipline, Accounting as an Career and Profession, Place of Accounting Officers in the Organization, Auditing and Internal Control, Ethical Issues in Accounting, Forms of Organizations and Their Effect on Accounting, Accounting and Corporate Governance. Accounting Concepts, Standards and IFRS: Introduction ,Accounting Concepts and Convention, Accounting Policies, Generally Accepted Accounting Principles(GAAP), International Financial Reporting Standards(IFRS),Indian Accounting Standards(Ind AS),India's Road map to Convergence with IFRS, Indian Government Accounting Standards(IGAS). Presentation of Financial Statements: Balance Sheet: Conceptual Basis of a Balance Sheet, Capital and Revenue Expenditure and receipts, Classification of Item on a Balance sheet, Format of Balance Sheet, Balance Sheet Equation, Preparing Balance Sheet.

UNIT – II Preparation of final Accounts: The Income Statements: Introduction, Format of Profit and Loss Account, Profit and Loss account of a Manufacturing Concern, Appropriation of Profit, Advantages of Profit and Loss Account. Mechanics of Accounting: Introduction, Classification of Accounts, Double Entry System, Overview of Accounting cycle, Preparing journals, Subsidiary Books, Ledger, Preparation of Trial Balance, Accounting Errors and Their Rectification, Bank Reconciliation statement (BRS), Computerised Accounting. Fixed Assets and Depreciation Accounting: Introduction, Cost of Fixed Assets, Depreciation, Method of computing depreciation, Accounting Treatments for transactions, Impairment of Assets.

UNIT – III Inventory Valuation: Introduction, Record Keeping for Inventory, Perpetual inventory System, Inventory Valuation/Measurement, Methods of Valuation of Inventories, Analysis of Inventories. Corporate Accounts: Introduction to Companies, Types of Companies, Shares and Share Capital, Issue of Shares. Share Issue: Payments in Installment, Buyback of Shares, Debentures and Bonds, Income Statement/Profit and Loss Account, Balance Sheet, Company Annual Report. Cash Flow Statement: Introduction to Cash Flow Statement, Cash and Cash Equivalents, Cash Flow Activities, Operating Activities, Some Special Items, Free cash Flow, Fund Flow Statement, Analysis of cash Flow Statement, Preparation of cash Flow Statement.

UNIT – IV Financial Statement Analysis: Introduction Techniques for financial Statement Analysis Horizontal Analysis: Comparative and Trend Statements, Vertical Analysis: Common Size, Liquidity Ratios: Current and Quick Ratio, Solvency Ratios: D/E, Interest Coverage,


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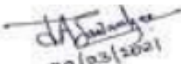
Profitability ratios: (GP,NP,EBIT,EBDITA,EPS), Return Ratios: ROI, ROE, Turnover Ratios, Analysis of Stock and Debtors, Working Capital Management, Stock Prices and Financial Data: P/E. Investments: Introduction, Financial Instruments, Assets and Liabilities, Joint Ventures, Subsidiaries and Associates, Consolidated Financial Statement, Business Combinations, Accounting for Investments, Contemporary Issues in Accounting : Introduction ,Foreign Currency Accounting , Creative Accounting, Forensic Accounting , Environmental Accounting, Lean Accounting ,Human Resource Accounting, Objectives of Human resource Accounting, HRA in India, Inflation Accounting, Responsibility Accounting, Transfer Pricing, Segment reporting, Extensible business Reporting Language(XBRL).

34. Fundamentals of Computer

UNIT – I Understanding the Computer: Introduction, Evolution of computers, Generation of computers, Classification of computers, Computing concepts, The computer system, Application of computers. Computer Organization and Architecture: Introduction, Central processing unit, Internal communications, Machine cycle, The bus, Instruction set. Memory and Storage Systems: Introduction, Memory representation, Random Access Memory, Read Only Memory, Storage systems, Magnetic storage systems, Optical storage systems, Magneto optical system, Solid-state storage devices, storage evaluation criteria.

UNIT – II Input Devices: Introduction, Keyboard, Pointing devices, Scanning devices, Optical recognition devices, Digital camera, Voice recognition system, Data acquisition sensors, Media input devices. Output Devices: Introduction, Display monitors, Printers, Impact printers, Non-impact printers, Plotters, Voice output systems, Projectors, Terminals. Computer Codes: Introduction, Decimal system, Binary system, Hexadecimal system, Octal system, 4-bit Binary Coded Decimal(BCD) Systems, 8-bit BCD Systems, 16-bit Unicode, Conversion of numbers

UNIT – III Computer Software: Introduction, Types of computer software, System management programs, System development programs, standard application programs, Unique application programs, Problem solving, Structuring the logic, Using the computer. Programming Languages: Introduction, History of programming languages, Generations of programming languages, Characteristics of good programming languages, Categorization of High-level languages, Popular High-level languages, Factors affecting the choice of languages, Developing a program, Running a program. Data Communication and Networks: Introduction, Data communication using modem, Computer network, Network topologies, Network protocol and software, Application of network.


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UNIT – IV Operating Systems: Introduction, History of operating systems, Functions of operating systems, Process management, Memory management, File management, Device management, Security management, Types of operating systems, Providing user interface, Popular operating systems. Microsoft Software: Introduction, MS-DOS, MS Word systems, MS Excel systems, MS PowerPoint systems, MS Access systems, MS Publisher,

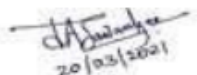
35. Programming in C

UNIT – I Data Types, Operators and some statements: Identifiers and keywords, Constants, C Operators, Type Conversion. Writing a Program in C: Variable declaration, Statements, Simple C Programs, Simple Input Statements, Simple Output Statements, and Features of stdio.h. Control Statements: Conditional Expressions, Loop Statements, Breaking control statements.

UNIT – II Function and Program Structures: Introduction, Defining a Function, Return Statement, Types of Functions, Actual & Formal Arguments, Local & Global Variables, Multifunction Program, and The Scope of Variables, Recursive Function, and ANSI Function Slander. Arrays: Array Notation, Array Declaration, Array Initialization, Processing with Arrays, Arrays and Functions, Multidimensional Array, Character Array.

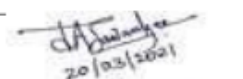
UNIT – III Pointers: Pointer Declaration, Pointer Arithmetic, Pointers and Functions, Pointers and Arrays, Pointer and Strings, Array of Pointers, Pointers to Pointers. More on Functions: Pre-processors, Macros, Header Files, standard Functions.

UNIT-IV Structures, unions and Bit Fields: Declaration of Structure, Initializing a Structure, Functions and Structures, Array of Structure, Arrays within Structure, Structure within structure, Pointer and ?Structure, Union, Bit Fields, Typedef Enumerations. Data File Operations: Review of input/output Functions, Opening and Closing of files, Simple File Operation, Structures and File Operation, Block Read/Write, More on File operations, Low level File operations, Random Access File processing.


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36. Practical List of Programming in C

- A1. Draw a flowchart, write an algorithm and program in "C" to check whether the entered character is either alphabet, Digit or Special Character.
- A2. Draw a flowchart, write an algorithm and program in "C" to check whether the entered character is in either Uppercase or Lowercase and also convert that character either in Uppercase or Lowercase by using toupper(), tolower(), getchar(), putchar(), isupper() and islower() library functions.
- A3. Draw a flowchart, write an algorithm and program in "C" to generate the mark sheet of student using following information.
- a. Name of the student.
 - b. Roll Number
 - c. Course Name
 - d. Marks of 5 subjects, each subject carries 100 marks. Passing marks of each subject is 45.
 - e. Calculate Total Marks.
 - f. Calculate Percentage.
 - g. Display the Result, the conditions for result is –
 - Result = "Pass", if the student get 50% aggregate and must not get less than 45 marks in each subject.
 - Else Result = "Fail"
 - h. Display the Grade, The grade will be –
 - Grade = "Distinction", If Percentage ≥ 75 .
 - Grade = "First Class", If $60 \leq \text{Percentage} < 75$.
 - Grade = "Second Class", If $50 \leq \text{Percentage} < 60$.
 - Grade = "Fail", If Percentage < 50 .
- A4. Draw a flowchart, write an algorithm and program in "C" to generate and print Fibonacci series and check whether each number is prime or unprimed.
- A5. Draw a flowchart, write an algorithm and program in "C" to generate and print Fibonacci series and check whether each number is EVEN or ODD.
- A6. Draw a flowchart; write an algorithm and program in "C" to convert the total number of days into number of years, months and remaining days. Consider 360 days in a year and 30 days in month.
- A7. Draw a flowchart; write an algorithm and program in "C" to perform the following arithmetic operations using arithmetic operators in switch statement. The Arithmetic operations are addition (+), Subtraction (-), Multiplication (*), Integer Division (/) Real Division (/), modulo (%) and Raise to power (^).
- A8. Draw a flowchart; write an algorithm and program in "C" to check the entered character is vowel or not using switch statement.
- A9. Draw a flowchart; write an algorithm and program in "C" to convert Decimal Number to its equivalent Binary Number.
- A10. Draw a flowchart; write an algorithm and program in "C" to convert Binary Number to its equivalent Decimal Number.


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- A11. Draw a flowchart; write an algorithm and program in "C" to find LCM and HCF of two numbers.
- A12. Draw a flowchart, write an algorithm and program in "C" to Print and evaluate the following series. The series is ----
 $\text{Sum} = (x) + (x^2/2!) + (x^3/3!) + (x^4/4!) + (x^5/5!) + \dots$
- A13. Draw a flowchart, write an algorithm and program in "C" to Print and evaluate the following series. The series is ----
 $\text{Sum} = (x) + (x^3/3!) + (x^5/5!) + (x^7/7!) + (x^9/9!) + \dots$
- A14. Draw a flowchart, write an algorithm and program in "C" to enter the Nine digit number, find and print even and odd numbers from that nine digit number also find the summation of all even number and odd numbers.
- A15. Draw a flowchart, write an algorithm and program in "C" to check the entered number is Palindrome or not also print the reverse of the given number.
- A16. Draw a flowchart, write an algorithm and program in "C" to swap the values of two variables with and without using third variable.
- A17. Draw a flowchart, write an algorithm and program in "C" to generate and print the Prime Factors of a given number.
- A18. Draw a Flowchart; Write an Algorithm and Program in "C" to Calculate the Mean and Variance of 10 Integer Numbers.
 Where $\text{Mean} = \sum(X_i)/N$ and
 $\text{Variance} = \sum (X_i - \bar{X})^2 / N$
- A19. Draw a Flowchart; Write an Algorithm and Program in "C" to Find the Largest and smallest number form a single dimension array.
- A20. Draw a Flowchart; Write an Algorithm and Program in "C" to Search an Element from a single dimension array with its position using Sequential search Technique. Print the message "Element found at position _____", if the element present in an array and print message "Element Not Found", If element is not present in an array.
- A21. Draw a Flowchart; Write an Algorithm and Program in "C" to insert an element in a given position in an array.
- A22. Draw a Flowchart; Write an Algorithm and Program in "C" to delete an element from a given position of an array.
- A23. Draw a Flowchart; Write an Algorithm and Program in "C" to Sort elements of a given array using Bubble Sort in an ascending order.
- A24. Draw a Flowchart; Write an Algorithm and Program in "C" to find the sum of Each Row and each column of a given Matrix and also find the sum of all elements.
- A25. Draw a Flowchart; Write an Algorithm and Program in "C" to convert the matrix into Transpose of Matrix also print both the original and Transpose of Matrix.
- A26. Draw a Flowchart; Write an Algorithm and Program in "C" to add two matrices of the given range and print all the three matrices.

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- A27. Draw a Flowchart; Write an Algorithm and Program in "C" to find the product of two matrices of the given range and print all the three matrices.
- A28. Draw a Flowchart; Write an Algorithm and Program in "C" to check the given String is Palindrome or not with and without using String Manipulation Functions.
- A29. Draw a Flowchart; Write an Algorithm and Program in "C" to Find the character and replace that character with new character of the original to print the modified text.
- A30. Draw a Flowchart; Write an Algorithm and Program in "C" to count the number of spaces, alphabets, digits, special symbols from a given text using String Manipulation Functions.
- A31. Draw a Flowchart; Write an Algorithm and Program in "C" to count the number of spaces, alphabets, digits, special symbols from a given text using String Manipulation Functions.
- A32. Draw a Flowchart; Write an Algorithm and Program in "C" to count the number of words and all characters excluding spaces from a given text without using String Manipulation Functions.
- A33. Draw a Flowchart; Write an Algorithm and Program in "C" to concatenate two strings into third string without using string manipulation Functions.
- A34. Draw a flowchart, write an algorithm and program in "C" to Design and Print the following Output of any entered string, for example -

```

P
P  R
P  R  I
P  R  I  N
P  R  I  N  T
P  R  I  N
P  R  I
P  R
P

```

- A35. Draw a Flowchart; Write an Algorithm and Program in "C" to Append the elements of two arrays in third array.
- A36. Draw a Flowchart; Write an Algorithm and Program in "C" to Sort a String in either Ascending or Descending order.
- A37. Draw a Flowchart; Write an Algorithm and Program in "C" to insert an element at an appropriate position in a sorted array. The array is sorted in an ascending order.
- A38. Draw a flowchart, write an algorithm and program in "C" to Design and Print the following Output.

```

          1
        2 3 2
      3 4 5 4 3
    4 5 6 7 6 5 4
  5 6 7 8 9 8 7 6 5

```

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A39. Draw a flowchart, write an algorithm and program in "C" to Design and Print the following Output.

```

      *
    * * *
  * * * * *
 * * * * * *
  * * * * *
    * * *
      *
  
```

A40. Draw a flowchart, write an algorithm and program in "C" to Design and Print the following Output.

```

1
0 1
0 1 0
1 0 1 0
1 0 1 0 1
0 1 0 1 0 1
  
```

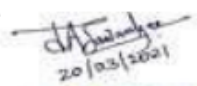
A41. Write an algorithm, draw a flowchart and develop 'C' program to Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.

A42. Write an algorithm, draw a flowchart and develop 'C' program to create a file "abc.txt" and store the text. Copy the content from "abc.txt" to another file "xyz.txt" using putc() and getc() function. Also read the content of both files.

Bachelor of Commerce Computer Application (BCCA) Semester-II

37 English – II (Business Communication)

UNIT- I Basic Ideas In The Study of Communication - Nature of Communication, Importance of Communication, Process of Communication, Barriers to Communication, Effective Communication, Communication Theories and Models, Audience Analysis, SWOT Analysis. Forms of Communication – Introduction to Classification of Communication, Verbal Communication-Written, Oral, Non-verbal Communication, Dimension/Direction of Communication, Formal and Informal Communication, Modern Forms of Communication Fax, Internet/Email. Listening As A Tool of Communication – Introduction to Listening Skills, Approaches to Listening, Barriers to Effective Listening, Tips for Effective Listening. Group Communication – Introduction to Meaning and Definition of Group, Advantages of Group


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Decision-Making, Techniques of Decision-Making, Meetings, Notice, Agenda, Minutes, Conferences, Seminars, Symposia and Workshops. Business Letter Writing – Business Correspondence, Essentials of a Good Business Letter, Structure of a Business Letter, Format of Business Letter, Tips for Clear Writing/Craft of Business Letter Writing

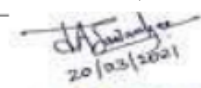
UNIT- II Enquiries, Quotations And Tender Notices - Enquiries, Quotations (Replies an Enquiries), Tender Notices. Placing Order and Their Fulfillment – Order, Fulfillment of Order. Complaints (Claims) And Adjustments – Complaints (Claim) Letters, Adjustment Letter (Replies to Complaints). Circular And Letters – Circular Letters, Sales Letters. Collection Letter – Introduction, Guideline for Writing Collection Letters, First Stage Collection Letter, Persuasive/Firm Reminder, Last Resort Letter/ Final Collection Letter

UNIT- III Export-Import Correspondence – The Number of Export-Import Correspondence, Export Procedure, Import Procedure, Terminology in Foreign Trade, Specimen Letters Correspondence With Banks – Introduction: General Instruction for Writing Banking Letters, Specimen Letters. Correspondence With Insurance Companies – Principles of Insurance, Drafting Insurance Letter, Specimen Insurance Letters. Job-Related Letters, Group Discussion, And Interviews – Job Application, CV (Biodata, Resume), Writing References, Group Discussion, Personal Interview, Appointment and Discharge Letters

UNIT- IV Correspondence With Public Authorities – Introduction, Correspondence With Government Departments, Correspondence With Income Tax and Sales Tax Authorities, Correspondence With Provident Fund(PF) Authorities, Correspondence With Postal Authorities. Internal Communication- Introduction, Memorandum, Office Order, Office Circular, Office Note, Correspondence With Branch Office. Precis And Summarising – What is Precis?, Uses of Precis, How to Write a Precis, Some Specimen Precis. Report And Personal Writing – Reports, Transmittal Letters, Proposals. Corporate Communication - Corporate Communication, House Journals, Corporate Brochures, Information Booklets, Press Releases and Press Conferences, Company Meeting, Agenda, Notice and Minutes, Relation, Basics of Advertisement, International Communication.

38 Principles of Business Management

UNIT- I Nature And Functions Of Management – Importance Of Management, Definition Of Management, Management Function Or The Process Of Management, Levels Of Management, Organizational Or Business Functions, Role Of A Senior Management, Managerial Skills, Managerial Effectiveness, Management And Administration, Management- A Science Or An Art?, Management- A Profession?, Professional Management Vs Family Management,


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Management Of International Business. Development Of Management Thought- Early Classical Approaches, Neo-Classical Approaches, Modern Approaches. Planning- Nature Of Planning, Importance Of Planning, Types Of Plans, Steps In Planning, Strategic Planning Process, Limitation Of Planning, Making Planning Effective, Planning Skills, Strategic Planning In The Indian Industry. Decision Making- Meaning Of Decision, Types Of Decision, Steps In Relational Decision-Making, Rationality In Decision-Making, Environment Of Decision Making, Common Difficulties In Decision-Making.

UNIT- II Organization- What Is An Organization?, Process Of Organizing, Principles Of Organizing, Span Of Management, Departmentalization, Process Departmentalization, Purpose Departmentalization, Organization Structure, What Type Of Structure Is Best?, Emerging Organization Structures, Committees, Teams, International Organization Structures. Coordination – Distinction Between Coordination And Cooperation, Distinction Between Coordination And Control, Need For Coordination, Requisites For Excellent Coordination, Types Of Coordination, Techniques Of Coordination, Difficulties Of Coordination, Coordinating Global Operations. Informal Organization – Why Do Informal Group Forms?, Types Of Informal Groups, Stages Of Group Development, Distinction Between Formal And Informal Organization, Benefits Of Informal Organization To Its Members, Benefits Of Informal Organization To Its Management, Dysfunctional Effects Of Informal Organization, How To Minimize The Dysfunctional Effects Of Informal Organization?, Group Dynamics. Staffing- Importance And Need For Proper Staffing, Manpower Planning, Recruitment, Selection, Placement, Induction, Manpower Planning In India, Staffing From A Global Perspective.

UNIT- III Training And Development- Difference Between Training, Education And Development, Advantages Of Training, Steps In Setting Up A Training And Development Programme, Design And Development Of The Training Programme, Evaluation Of Training And Development, Executive Training Practices In India, Mentoring, Learning Organization, Knowledge Management. Performance Management- Purpose Of Appraisal, Steps In Designing Performance Management System, Criteria And Standards Of Performance Appraisal, Frequency Of Appraisal, Performance Appraisal Methods, Limitations Of Traditional Appraisal Methods, Post-Appraisal Interview, Appraisal Of Management, Performance Management In Indian Industries, Expatriate Performance Appraisal, Career Planning And Development, Appraisal Of Organizational Development. Compensation Plans- Classification Of Compensation, Primary Compensation, Monetary Incentive, Non-Monetary Incentive,

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Recognition As A Reward, Benefits, Wage Packet Of Indian Worker, International Compensation. Direction And Supervision- Requirements Of Effective Direction, Giving Orders, Motivation, Job Satisfaction, Organizational Commitment, Morale, First-Level Or Front- Line Supervision.

UNIT- IV Communication- Importance Of Communication, Purpose Of Communication, Formal Communication, Forms Of Communication, Informal Communication, The Communication Process, Barriers To Communication, Principles Of Effective Communication, Communication Networks, Checks On In-Plant Communication, Communication In Indian Industries. Leadership – Difference Between A Leader And A Manager, Characteristics Of Leadership, Functions Of A Leader, Traditional Approaches To Leadership, Situational Factors Determining Choice Of Leadership Style, New Approaches To Leadership, Leadership Assessment, Leadership Style In Indian Organization, Worker Participation In Management In India. Managerial Control- Steps In A Control Process, Need For Control System, Benefits Of Control, Essentials Of Effective Control System, Problems Of The Control System, Control Techniques. Organizational Change- Need For Planned Change, Managing Organizational Change, Requisites For Successful Planned Change, Recent Planned Changes In The Corporate Sector In India.

39 Programming in C++

UNIT – I Introduction to Object Oriented Programming: Introduction, What is Object Oriented Programming(OOP)?, Structured Procedural programming(SPP), Object Oriented Programming OOP, Characteristics of OOPs, Advantages of OOPs, Disadvantages of OOPs, Comparison of SPP and OOP, Steps in Developing OOP Programs, Structure of Object Oriented Programs, Object Oriented Languages, Importance of C++. Data Types, Operators and Expressions: Identifiers & Keywords, Data Types, C++ Simple Data Types, Literals, Variables, the Const Data type, C++ Operators, Type Conversion. Input and Output Streams: Comments, Declaration of Variables, the Main () Function, Simple C++ Programs, Program Termination, Features of IOSTream, Keyboard and Screen I/O, Manipulator Functions, Input and Output (I/O) Stream Flags. Control Statements: Conditional Expressions, Loop Statements, Nested Control Structures, Breaking Control Statements.

UNIT – II Function and Program Structures: Introduction, Defining a Function, Return Statement, Types of Functions, Actual & Formal Arguments, Local & Global Variables, Default Arguments, Structure of C++ Program, Order of the Function Declaration, Manually invoked

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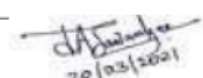
Functions, Nested Functions, Scope Rules, Side Effects, Storage Class Specifiers, Recursive Function, Pre-processors, Header Files, Standard Functions. Arrays: Introduction, Array Notation, Array Declaration, Array Initialization, Processing with Arrays, Arrays and Functions, Multidimensional Array, Character Array. Pointers and Strings: Introduction, Pointer Arithmetic, Pointers and Functions, Pointers to Functions, Pointers and Arrays, Array of Pointers, Pointers to Pointers, Pointer and Strings, Deciphering Complex Declarations. Structures, Unions and Bit Fields: Introduction, Declaration of Structure, Processing with Structures, Initialization of Structures, Functions and Structures, Array of Structure, Array within a Structure, Nested Structure, Pointer and Structure, Unions, Bit Fields, Typedef, Enumerations.

UNIT – III Classes and Objects: Introduction, Structures and Classes, Declaration of Class, Member Functions, Defining the Object of a Class, Accessing a Member of Class, Array of Class Objects, Pointer and Classes, Union and Classes, Classes within classes(Nested Class). Special Member Function: Introduction, Constructors, Destructors, Inline Member Functions, Static Class Members, Friend Function, Dynamic Memory Allocations, This Pointer, Mutable. Single and Multiple Inheritance: Introduction, Single Inheritance, Types of Base Classes, Type of Derivation, Ambiguity in Single Inheritance, Array of Class Objects and Single Inheritance, Multiple Inheritance, Container Classes, Member Access Control.

UNIT-IV Overloading Functions and Operators: Function Overloading, Operator Overloading, Overloading of Binary Operators, Overloading of Unary Operators. Polymorphism and Virtual Functions: Polymorphism, Early Binding, Polymorphism with Pointers, Virtual Functions, Late Binding, Pure Virtual Functions, Abstract Base Classes, Constructors under Inheritance, Destructors under Inheritance, Virtual Destructors, Virtual Base Classes. Templates and Exception Handling: Function Template, Class Template, Overloading of Function Template, Exception Handling. Data File Operations: Opening and Closing of Files, Stream State Member Functions, Reading/Writing a Character from a File, Binary File Operations, Classes and File Operations, Structure and File Operations, Array of Class Objects and File Operations, Nested Class and File Operations. Random Access File Processing.

40 E-Commerce and Web Designing

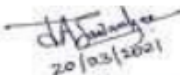
UNIT – I Introduction to Electronic Commerce Electronic Commerce : The Scope of Electronic Commerce, Definition of Electronic Commerce, Electronic Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, e-Commerce in Perspective. Business Strategy in an Electronic Age: The Value Chain, Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains. Competitive Advantage: —
Competitive


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Strategy, Porter's Model, First Mover Advantage, Sustainable Competitive Advantage, Competitive advantage using e-Commerce. Business Strategy: Introduction to Business Strategy, Strategic Implication of IT, Technology, Business Environment, Business Capability, Existing Business Strategy, Strategy Formulation and Implementation Planning, eCommerce Implementation, e-Commerce Evaluation. Case Study: e-Commerce in Passenger Air Transport: Choices, Airline Booking Systems, Competition and customer Loyalty, Web Booking Systems, Competitive Outcomes

UNIT – II Business to Business Electronic Commerce Inter Organizational Transactions: Inter Organizational Transactions, the Credit Transaction Trade Cycle, A Variety of Transaction, Pens and Things. Electronic Markets: Markets, Electronic Markets, Usage of Electronic Markets, Advantages and Disadvantages of Electronic Markets, Future of Electronic Markets. Electronic Data Interchange (EDI): Introduction to EDI, EDI definition, The Benefits of EDI, EDI Example. EDI:the Nuts and Bolts :, EDI technology, EDI Standards, EDI Communications, EDI Implementation, EDI Agreements, EDI Security, Nuts, Bolts and the Tool kit. EDI and Business :Organizations that use EDI, EDI Trading Patterns, EDI Transactions, EDI Adoption and EDI Maturity, IOS,EDI an Internet e-Commerce. Inter Organizational e-Commerce: Inter Organizational Transaction, Purchasing Online, After Sales Online, e-Commerce in Desk top Facilities Management, Pens and Things and the Web.

UNIT – III Business to Consumer Electronic Commerce Consumer Trade Transactions: What you want, when you want it, Internet eCommerce, The e-Shop, Internet Shopping and the Trade Cycle, Other e-Commerce Technologies, Advantages and Disadvantages of Consumer e-Commerce, Consumer eCommerce at Pens and Things. The Elements of e-Commerce : Elements, e-Visibility, The e-Shop, Online Payments, Delivering the Goods, After Sales Service, Internet eCommerce Security, A Web Site Evaluation Model. E-Business: Introduction, Internet Bookshops, Grocery Supplies, Software Supplies and Support. Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the Net, eDiversity Introduction to the Internet: Computer in Business, Networking, Internet, Electronic Mail(E-Mail), Resource Sharing, Gopher, World Wide Web, Usenet, Telnet, Bulletin Board Service, Wide Area Information Service. Internet Technologies: Modem, Internet Addressing, Physical Connections, Telephone Lines, Internet Browsers, Internet Explorer, Netscape Navigator. Introduction to HTML: Designing a Home Page, History of HTML, HTML Generations, HTML Documents, Anchor Tag, Hyper Links, Sample Html Documents. Header and Body Sections: Header Section, Title, Prologue, Links, Colorful Web Page, Comment Lines, Some Sample Html Documents. Designing the body Section: Heading Printing, Aligning the Headings, Horizontal Rule, Paragraph Tab Setting, Image and Pictures, Embedding PNG Format Images.


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UNIT – IV Ordered and Unordered Lists: Lists, Unordered Lists, Headings in a List, Ordered Lists, Nested List. Table Handling: Table, Table Creation in HTML, Width of the Table and Cells, Cells Spanning Multiple Rows/Columns, Coloring Cells, Columns Specification, Some Sample Tables. Dhtml and Style Sheets: Defining Styles, Elements of Styles, Linking a Styles Sheet to an HTML Document, In-Line Styles, External Styles Sheets, Multiple Styles. Frames: Frameset Definition, Frame Definition, Nested Framesets. A web Page Design Project: Frameset Definition, Animals, Birds, Fish. Forms: Action Attribute, Method Attribute, Enctype Attribute, Drop Down List, Sample Forms

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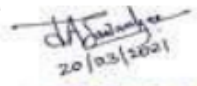
41 Practical List of E-Commerce & Web Designing

- A1.** Write a program in HTML to illustrate the use of Formatting tags => **I** **ITALIC**, **UNDERLINE**, **SUPERScript**, **SUBScript**, AND **STRIKETHROU**
- A2.** Write a paragraph centrally aligned and change the color of text to **BLU** Background to **YELLOW**. The size of the font should be 6.
- A3.** Write a program in HTML to illustrate the below given formats.
- The page should contain a paragraph which is centrally aligned.
 - FIRST line of the paragraph should be **BOLD** and **ITALIC**.
 - STRIKEOUT** the Second Line.
 - Underline and change the color to **RED**, of the third line.
 - Change the font size of the fourth Line to 5.
 - Change the color of the text to **GREEN**.
 - Two horizontal lines below the paragraph.
- A4.** Write a program in HTML to link two files.
The name of the first file is **LINK1.HTML** and that of second file is **LINK2.HT**
LINK2.HTML should contain a Back link also.
- A5.** Write a program in HTML to Design a Table containing 5 columns and 4
The name of the columns should be **ENO**, **NAME**, **DESIGNATION**, **SALAR**
CITY.
- A6.** Write a program in HTML to design a Table containing 5 columns and 4
The name of the columns should be **ENO**, **NAME**, **DESIGNATION**, **SALAR**
CITY. The table should also contain the below given specifications.
- Table should contain **BORDER**.
 - Background color of the Table should be **GREEN**.
 - Color of the Text should be **BLUE**.
 - Text should be centrally aligned in the cell.
- A7.** Write a program in HTML to Design a Table containing 5 columns and 4
The name of the columns should be **ENO**, **NAME**, **DESIGNATION**, **SALAR**
CITY. illustrate the usage of cell padding and cell spacing. Also align the T_a
the **CENTRE** of the page.
- A8.** Write a program in HTML to illustrate the usage of **ROWSPAN** in the below format.

CITY	TOWN
NAGPUR	SHANKAR NAGAR
	DHARAMPETH
	RAMDASPETH
BOMBAY	DADAR
	V.T.
	THANE

- A9.** Write a program in HTML to illustrate the usage of **COLUMN SPAN (COL**
in the below given format.

NAME	LIVING CITY	COMPANY CITY
SUJEET	CHHINDWARA	
TAPAN	NAGPUR	BOMBAY
RAM	BOMBAY	
MOHAN	BANGALORE	


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KRISHNA	PUNE	
MANGESH	BOMBAY	NAGPUR
AVINASH	DELHI	

- A10. Write a program in HTML to divide the screen horizontally into two sections.
- A11. Write a program in HTML to divide the screen vertically into two sections.
- A12. Write a program in HTML to divide the Screen into 4 sections.
- A13. Write a program in HTML to demonstrate the usage of Marquee text with the below given Specifications.
- Marquee text is INTERNATIONAL COLLEGE.
 - Color of text is BLUE.
 - Background color is YELLOW.
 - Size of Text is 7.
 - Direction is LEFT to RIGHT.
- A14. Write a program in HTML to demonstrate the use of the Marquee Text with the below given Specifications.
- Marquee Text is INTERNATIONAL COLLEGE.
 - Text color is BLUE.
 - Repeat the Marquee Text five Times.
 - Make use of SCROLLAMOUNT.
 - Make use of SCROLLDELAY.
- A15. Write a program in HTML to demonstrate the usage of Image file with the below given specification.
- Background color of page is GREEN.
 - The size of Image is 400 x 400 pixels.
 - The Image should contain a border.
 - Alternate text is "IMAGE NOT FOUND".
 - Image should appear on the centre of the page.
- A16. Write a program in HTML to Demonstrate the usage of Image file with the below given specifications.
- Background color is RED.
 - The size of Image is 300 x 300 pixels.
 - The image should contain a BORDER.
 - Alternate Text is "IMAGE is NOT FOUND".
 - Vertical space should be 100 pixels.
 - Horizontal space should be 350 pixels.
- A17. Write a program in Java Script which should prompt the user to enter the result of Question-"What is the result of 10+10?". The user will be given a chance to answer the question. If the answer is correct then the program should raise a message- "Congratulations". If the answer is wrong then the program should again ask the same question. If the answer is correct then the message should be –"Cleared in the second round" else another message should be generated specifying –" Sorry, try next time" and the program should exit. Note – Make use of if. Else.
- A18. Write a program in Java Script which should prompt the user to enter the result of question –" What is the Result of 10 +10?. At the most the user will get 5 chances to answer the question. If the user gives the correct answer during the attempts then the program should exit the loop by raising a message-"Congratulations ".

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Otherwise, whenever the answer is wrong the program should alert the user that the answer is wrong.

Even during the 5th attempt, if the answer is wrong then it should raise an alert message also specifying- "Sorry- Try Next Time". (Use Loop, Prompt, Alert).

- A19.** Write a program in Java Script which prompts the user to enter the Result. Question- "What is the Result of 10+10?".

The program should repeat the question in two cases-

- a. If the user is wrong.
- b. And he wants to continue.

The program should exit the loop in two cases-

- a) If the answer is correct.
- b) If the answer is wrong but the user doesn't want to continue.

(Use odd Looping, Prompt, Alert and Confirm Dialog Boxes).

- A20.** Write a program in Java Script which raises a Message:

"Welcome To Our Website" as soon as the Site is loaded. It should also display a message : -"Thank You " when the user switches over from the page.

- A21.** Write a program in Java Script to check the username. If the user name is correct, the program should give an alert message:- "Welcome" along with the name else the program should alert the user specifying that the user name is wrong. Use DOM and onchange event.

- A22.** Write a suitable program in Java Script which displays a message depending on the radio button being clicked using DOM and onclick event.

- A23.** Write a program in Java Script to count the number of elements in an array.

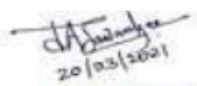
Check the number of elements returned against the number of form elements described between

between < Form> and </Form> tag in HTML page that is running in the browser. Recognize that number of elements in the array match the number of elements described

between <FORM> and </FORM> tag in HTML page exactly.

- A24.** Write a program in Java Script to check whether the form is filled or not. If any of the elements is not filled then display an alert message to fill the particular element using DOM and BUTTON.

- A25.** Write a program in Java Script to check whether the form is completely filled or not. If one of the elements is not filled then display an alert message to fill the particular element using DOM and onsubmit event.


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B.Com. (Computer Application) Part-II

42 Statistics and Quantitative Techniques

Unit I: Descriptive statistics – Definition, functions, scope and role of statistics in business, Importance of statistics, distrust and limitations of statistics.

Unit II: Presentation of statistical data – classification; tabulation; frequency distribution; diagrams & graphs. Statistical average - importance and requisites of a good statistical average; types of averages – arithmetic mean, median, mode, geometric mean and harmonic mean, weighted average, relationship amongst different averages.

Unit III: Dispersion - meaning and significance of dispersion; methods of measuring dispersion – range, quartile; mean deviation, standard deviation, Co-efficient of Skewness, Lorenz Curve. Correlation and Regression (Simple)- Types of correlation, Calculation of Co-efficient of Correlation for Simple Series, Calculation of Co-efficient of Correlation for Continuous Series; Regression Equation of X on Y, Regression Equation of Y on X

Unit IV: Quantitative Techniques – An introduction: Classifications of quantitative techniques; applications of quantitative techniques to business and industry; limitations of quantitative techniques.

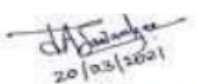
43 Business Economics

Unit I: Nature and fundamental concepts and basis techniques of Business economics - Analysis of Demand, Significance, estimation of demand; Elasticity of Demand, Techniques and Importance of Demand forecasting; Basic Mathematical Problems related to demand estimation and elasticity of demand.

Unit II: Production & Cost Analysis - Production & Production Function: Concept, Forms of production function, Law of variable Proportions, Returns to scale. Cost concept, Short term and long term cost output relationship, Cost curves, Economies of scale. Objectives & Equilibrium of the Firm - Market Structures- Perfect Competition, Monopoly, Monopolistic Competition & Oligopoly - kinked demand curve and cartels, Mathematical Problems on profit maximization and Price & Output determination under various market structures.

Unit III: National Income Accounting - Concept & measurement; Determination of Income & Employment; Concept of multiplier; Inflation and Deflation, types, causes and control of inflation.

Unit IV: Macroeconomic policy - Monetary and fiscal- objectives and Instruments; Effectiveness of Monetary & Fiscal Policy with respect to Indian Economy. Business cycles - Concept, Causes & Impact, Measures to control


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Business cycles.

44 Cost & Management Accounting

Unit I : Meaning, Definition, Scope, and Importance of Cost Accounting – Elements of Cost, Cost Classification, Preparation of Cost Sheets, Tenders, and Quotations. Methods of Cost Allocation and Absorption (Simple Problems on Operating Costing - Transportation only).

Unit II : Reconciliation of Profits Shown by Cost and Financial books. Marginal Costing - Break Even Analysis, Concept and Applications. Process Costing(Up to Abnormal Loss and Abnormal Effectiveness).

Unit-III: Meaning, objects, advantages, importance tools and techniques of management accounting. Distinction between Financial Accounting, Cost Accounting and Management Accounting. Ratio Analysis – Meaning, nature, analysis, significance & limitations of ratio analysis. Ratio as tools of interpretation of financial statements. Computation of ratios – Gross profit ratio, net profit, net profit ratio, operating net profit ratio, operating ratio, expenses ratio stock turn-over ratio, current ratio, liquidity ratio, debtors turn-over ratio, creditors turnover ratio, fixed assets turnover ratio, debt equity ratio, earning per share.

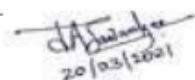
Unit-IV: Break even analysis – Meaning, need, importance & limitations.Computation – Profit volume ratio, breakeven point, margin of safety, estimated sales for required profit & estimated profit for given sales. Fund flow statement – Meaning, concepts, importance & limitations, preparation of fund flow statement, Business budgets and budgetary control – Types of budget and its utility, preparation of cash & flexible budgets.

45 Programming Skills ('C' Programming)

Unit –I: Programming Logic:Problem Analysis, Process Analysis, Conceptual Development of solution. Development Tools : Algorithm & Flowchart Translator : Interpreter, Compiler Introduction to C : History of C Language, C Character Set, Data Types, Constant & Variables, Type Casting, Type Modification, Operators in C, Input/Output Function in C.

Unit –II: Control Statement :If, If...Else, While, Do....While, for, goto, switch...case, break, continue, exit statement. Arrays : Array Definition, One dimensional array, two dimensional array, searching, sorting, inserting, deletion, process in arrays, Addition & Multiplication of two dimensional array, Storage Class : Automatic,Register, Static, External Storage Class.

Unit –III: String Handling:String library function. Structure and Union : —
Introduction to structure


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and union, Declaration, initializing structure, accessing structure elements, array of structure. Function :Library functions, user defined functions, function prototype, types of user defined function, function with arrays, function with structure.

Unit –IV: Pointers:Introduction to pointers, Arithmetic operations on pointer variables. Pointer with array.Pointer with structure, Function call value and call by reference. File Processing : Introduction, stream and files, opening and closing files, file opening modes, text mode, binary mode, more on file handling functions.

46. E-Commerce and Web Designing

Unit –I : E-Commerce: Introduction, Definition, Benefits of E-Commerce, Impact of E-Commerce on business models, Traditional Commerce Vs E-Commerce, Advantages and Disadvantages of ECommerce, Electronic Commerce and the Trade Cycle. Electronic Market : Usage, Advantages and Disadvantages and its future. Electronic Data Interchange (EDI) : Introduction, Benefits, Trade Cycle and Example. Internet Commerce :Introduction, Internet Trade Cycle and example, Internet Security : Secure Transaction, Privacy issues, computer crimes and its type, Security Issues : Security threats like damage to data, loss of data and unauthorized use of data, Security Procedure : Firewall, Encryption, Password, Access Control List, Digital Certificate.

Unit –II : Creating Static Web Pages with HTML: Introduction, Designing web site, Advantages and Disadvantages of HTML, Flow of Web Information, Role of Web Browser and Web Server, Process of Web Publishing,

Creating a Simple Static Web Page : About HTML, Basic elements : <html>, <head>, <title>, <p>,
, <h1> to <h6>, , , , <dl>, <pre>, <marquee>, <hr>, Physical and Logical tags **Path :** Relative and Absolute path, Comments, Special Characters, Text Formatting tags, <center>

Adding Links, Images, Background and Table : Hyperlinks <a href ...>, Cerating links to web pages and URLs, Creating links within the same page, various types of URLs that can be used in links, Image tag and their related attributes, Inline images, Links to (external) images, Using Inline images, Using images as hyperlinks, Popular images formats for internet and HTML.

Tables :Basic tabletags and their related attributes.

Unit –III : Frames and Embedding Multimedia: Frames, Image Map and Web Font Creator : Frames and their creation, the <Frame> and <Frameset> tags, Fram linking, Floating or Inline Frames, Image Maps <map> and <area> tags, Client – Side and Server – Side image maps.

Form designs, Form Controls, Text controls, password fields, radio buttons, checkboxes, reset and submit buttons, form control selection, option processing and textarea.

Embedding Multimedia : Introduction, Embedding Multimedia, Inserting sound/audio formats, video file formats.

Unit –IV : Cascading Style Sheets (CSS) and XML: CSS : Defining style sheets, features, adding style to document, Linking to a single sheet, Embedding style sheet, Using inline style, Style sheet properties, Font properties, Color and Backgournd properties, Text properties, Box properties.

XML : Introduction, XML and SGML, Design goals of XML, Application of XML: Document Application, Data Application, XML Software : Browsers, Editors, Parsers, Processor, XML tags, Structure of XML documents, XML element tags, Element markup, Attribute markup, HTML document, adding scripts, Data types in XML , XML Namespaces : Qualified name and Unqualified names, Namespace scope, default name space, working with text and font : Font, Font Size, font style, text alignment, text indent, line height, color and Background Properties : Foreground color, Background color, Border color, Background image, Working with DTD : Introduction, HTML and DTD, Benefits of the DTD, Structure of DTD, Declarations of variable in DTD : Eleme— Occurrence indicators, Connectors.

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47 MIS AND SYSTEM ANALYSIS

UNIT-I: System Concept, definition, system approach, characteristics, System Elements – Input, Output, Environment, Boundary Interface, feedback, Control. Types of systems, Business as system. Data vs information, information and decision making, Value of information, quality of information. Introduction to MIS, definition, need, objectives, benefits, functions, characteristics. Structure of MIS, information requirements at various levels of Management Activities. MIS vs data processing. Types of MIS: TPS, OAS, DSS, Expert system (organization, features & advantages) Functional MIS for marketing, finance, human resource, production & service industry.

UNIT –II : System development life cycle(SDLC) concept & stages. Need identification, determining user's information requirements. Information gathering - Sources & Methods (Interviews, questionnaires, observation, document analysis). System analysis, planning approach- elements, objectives, constraints , feasibility study, Tools of data recording, DFDs, data dictionary, decision tree, decision table, cost benefit analysis.

UNIT –III: Output input design, form design, process design, process specification, file design, program design, module integration, storage requirement ,selection of hardware and software, software controls, system flow chart, user view of processing, modeling input output data. Procedure design, design documentation, user feedback, Project planning& control.

UNIT –IV: Testing and Implementation Testing: Code testing, specification testing, types of tests, verification and validation systems security and privacy, control measures, disaster recovery plan, system audit, Documentation : user's, System , operations manual, Role and qualities of system analyst as a change agent. Implementation – Methods of change over, transition and conversion, change management, user training. Post implementation maintenance & review.

B.Com. (Computer Application) Part-III

48 Business Law

Unit I: Legal Framework for business entities- Introduction to legal aspects of Business in general; Need and importance of Business Laws. Indian Contract Act, 1872 – Definition of Contract, Agreement, Offer and Acceptance, Essentials of Valid Contract, Performance of Contract and Breach of Contract.


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Unit II: Indian Joint Stock Companies Act, 1956- Definition of a Joint Stock Company, Kinds of Companies, Formation of Company, Memorandum of Association, Articles of Association, Prospectus, Company Meetings, Liquidation of a Company.

Unit III : Indian Partnership Act, 1932- Definition of Partnership, Kinds of Partners, Partnership Deed, Registration of a Partnership Firm, Rights and Duties of Partners, Liabilities of Partners, Dissolution of a Partnership Firm.

Unit IV: Information Technology Act 2000 & Cyber Law - Scope, Provisions & overview, IT Act and E-mails, Strategy to Combat Cyber Crime Consumer Protection Act, 1986- Definitions, Category of the term Consumer, Rights of Consumer, Consumer protection Councils, Remedies & Relief available to the consumer.

49 Computerised Accounting (TALLY)

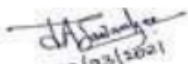
Unit – I: Introduction to Accounting, Advantages of Accounting, Books of accounts, Classification of Accounts, Financial Statements, Inventory management, Computerized Accounting, Advantages of Computerized Accounting, Manual Vs Computerized Accounting, Need of Computerized Accounting, Accounts Organization, Accounts group, Loans, Liabilities, Assets and Budget.

Unit – II: Accounting Software's, Introduction to Tally Software, Features of Tally, Tally Screen, Company Information, Creating new Company, Gateway, Selection of Company, Selection of Options, Buttons at Gateway, Working with multiple Companies, Company Features, Configuration – General, Numeric Symbols, Voucher Entry, Invoice Order Entry, Printing.

Unit – III: Accounts Info Menu, Account Groups – Create new group, creation of Primary group. Normal and Advance Information, Ledger Accounts, Cost Categories, Cost Centers. Creation of Budget, Types of Budget. Voucher – Voucher Entry, Creation of Voucher Screen, Types of Voucher, Selection of Voucher Types, Post Dated Voucher, Printing of Vouchers, Cheque Printing, advance Features of account Voucher.

Unit – IV: Inventory Info, Features of Inventory Info. Configure – Inventory Info, Balance Sheet, Audit trail, Ratio Analysis. Display – Accounting Report Display, Inventory report Display, and MIS Report Display. Printing Reports, Export of Data. Maintenance – Bank Reconciliation, House Keeping, Data Maintenance. Security – Users and Password, Security Controls, Types of Security, Creation New Security Levels and Tally Audit.

Practical: Tally Software - All Accounting Problems Viz. Balance Sheet, Profit & Loss, Cash Book, Loans, Cost Accounting, Vouchers, Budget, Sales and Purchase, Assets & Liabilities, Inventory Management, Financial Statements, Books of accounts, Ledger, etc.


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50. Software Product and Project Management

Unit-I: PROJECT MANAGEMENT 1. The Management Spectrum, The People, The Product, The Process, The Project 2. Project Manager – Role & Responsibilities 3. Project Estimation – Introduction, Decomposition Techniques – Software sizing, Problem Based Estimation, LOC Based, FP Based estimation 4. Project Scheduling – Basic Concepts, Project Scheduling, Basic Principles, The relationship between People & effort, Effort Distribution, Defining a task network – CPM/PERT, Gantt Chart.

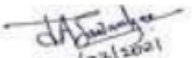
Unit-II: SOFTWARE TESTING STRATEGIES 1. A strategic approach to software testing – Verification & Validation, Organizing for software testing. 2. Test Strategies for conventional software – Unit Testing, Integration Testing. 3. Test Strategies for object-oriented software – Unit Testing, Integration Testing. 4. Validation Testing – Test Criteria, Configuration Review, Alpha & Beta Testing. 5. System Testing – Recovery, Security, Stress & Performance Testing. 6. The Art of Debugging – The debugging process, Psychological consideration, Debugging strategies, correcting the errors.

Unit-III: RISK MANAGEMENT 1. Introduction 2. Software Risks 3. Risk Identification – Assessing overall project risk, Risk Components & Drivers 4. Risk Projection – Developing a risk table, Assessing Risk Impact 5. Risk Refinement 6. Risk Mitigation, Monitoring and Management 7. The RMMM Plan

Unit-IV: QUALITY MANAGEMENT 1. Quality Concepts – Quality, Quality Control, Quality assurance, Cost of Quality. 2. Software Quality Assurance – Background issues, SQA Activities. 3. Formal Technical Reviews – The Review Meeting, Review reporting & record keeping, Review guideline 4. Statistical Software Quality Assurance – A generic example, Six sigma for software engineering. 5. Software Reliability – Measure of software reliability & Availability, Software safety. 6. ISO 9000 Quality Standard

51 Front End Development

Unit –I: Introduction to Visual Basic, Event driven programming, Programming constructs - Variables, Types of Variables, Data Types, Scope of Variables, Constants, system defined functions, Operators (Precedence and Associatively), Creating User Interface, VB Controls (Label, Text box, Command button, Frame, Check box, Option button, List box, Combo box, Timer, Drive list box, Directory list box, File list box, Horizontal and vertical scroll bars, Image, Picture box, Shape, Line, Data, OLE container), Microsoft windows common controls (Tab Strip, Tool bar, Status Bar, Progress Bar, Tree View, List View, Image List, Slider, Date Picker, Month View), adding controls to a form, adding controls at run time,


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Unit –II: Working with Procedure, Function and Modules (Form, Class, Standard Modules), Scope of Procedures, Calling Procedures, Calling Functions, Passing Arguments, Control Structures : If-Then, If-Then-Else, Select Case, Loops Structures : Do-While, While -Wend, For-Next, For-Each, With-End With. Arrays : Declaring an Array, Types of Array (Fixed arrays, Single-dimensional arrays, Multidimensional arrays, Dynamic arrays), Control Array. Menus : Creating Menus, Adding Menu Items, Adding Code for the Menus, Modifying menus at run time, Creating Pop-Up Menus.

Unit – III: Database Programming in Visual Basic: Use of data control, creating database using Visual data manager, validating data, data bound controls. Comparative study of Data Access Techniques: DAO, RDO, ADO, ODBC Data access object:DAO Architecture, Database connectivity through data access object. Types of recordset , setting properties and record editing & updating , searching records.

UNIT IV :Active X data object: ADO architecture, setting data source through Active X Data objects. Use of ADO control , connecting ADODC to bound controls. Use of different data bound Controls. Editing , Updating & searching through ADO. Data Reports, Data Environment designer adding connection & commands Data report controls creating & printing reports. Error handling: Types of errors, Debugging, tools for debugging, break mode,break points, watch window, immediate window, handling runtime errors

52 DBMS and Oracle

Unit –I: Database environment, Data processing, Traditional and DBMS environment, Database system, Types of databases - Centralize, distributed, Database management system, Components of DBMS, DBMS elements, Database Approach - Objectives, benefits, characteristics, Advantages of DBMS, The three tire architecture, Three level architecture, Database administration – Roles, Functions and responsibilities of DBA.

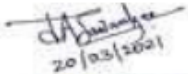
Unit-II: The E-R Model – Data models, Entities, attributes and relationship, Logical and Physical database design, Mapping Cardinalities, Database development process, Database development life cycle. Integrity constrains. Transforming ERR diagrams into relations, tree structure and hierarchical. Normalization, Codd's 12 rules, hierarchical database structure, Network database structure, Relational database structure.RDBMS.

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Unit-III: Introduction to ORACLE as RDBMS, History& standardization of SQL, Elements of SQL : Database objects, reserved words, Keywords, Variables, Data Types, Operators. Types of SQL : DDL, DML, DCL, Create table, Alter table, Create view, Drop table, grant, revoke, commit, delete, insert, lock table, rollback, save point, Update, Select statement, Where clause. Functions : Arithmetic & Characters comparison, Logical set, Like function, Group function, Date Functions.

Unit-IV: PL/SQL : Introduction to PL/SQL, Variables, Initialization of variables, Dynamic data types, Control loop statements, PL/SQL Cursor : Declare cursor, Fetch, Open cursor, Close cursor. Triggers :Concepts, Trigger definition, Trigger type, Enabling, Disabling & Dropping triggers.

PRACTICAL: Practical – I : Tally The Practical should be based on all the units of Computerised Accounting (Tally) Practical –II : VB & Oracle The Practical should be based on all the Units of Front End Development (VB) and Unit-III and UnitIV of DBCS & Oracle.


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53 Project

Project

The Project work constitutes a major component in most of the professional programmes and it is to be carried out with due care and executed with seriousness by the students.

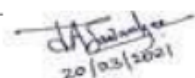
Types of Project

As majorities of the students are expected to work out a project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. Students are encouraged to work in the area listed at the end. The List of Applications Areas in which project must be - Financial/Marketing/Database Management System/ Relational Database Management System/E-Commerce/Internet/Manufacturing/web Designing etc.

Group Project may be allowed (Not more than THREE students in a group)

Indicative Project Report Formulation.

1. Title Page.
2. Certificate Page.
3. Declaration Page.
4. Acknowledgment Page.
5. Index or Content Page.
6. Documentation.
 - i. Introduction/Objectives.
 - ii. Preliminary System Analysis.
 - Identification of Need.
 - Preliminary Investigation.
 - Feasibility Study.
 - Need Of New System.
 - Flaws in Present System.
 - iii. Project Category.
 - iv. Software Requirement Specification.
 - v. Detailed System Analysis.
 - Data Flow Diagram.
 - Numbers of Modules and Process Logic.
 - Data Structures and Tables.
 - System Chart or Structure Chart.
 - Entity-Relationship Diagram.
 - vi. System Design.
 - Source Code.
 - Input screen & Output Screen.
 - vii. Validation Checks.
 - viii. Implementation, Evaluation and Maintenance.
 - ix. security Measures taken.
 - x. Reports.
 - xi. Future Scope of the project.
 - xii. Bibliography.


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Bachelor of Business Administration (BBA) Semester – I

54 English

Unit I: Basic Grammar – Tense, Forms of the Verb, Preposition, Articles, Punctuation, Single Word for a Group of Words, Sentence Construction, Comprehension.

Unit II: Business Letter Writing- Enquiries and replies, Placing and fulfilling orders, Complaints and follow-up letters, Sales letters, Circular letters, Application for employment and Resume.

Unit III: Business Manners- Body Language, Gestures, Telephone etiquette, E-mail etiquette. Textbook: 1) The Bet – Anton Chekov 2) Socrates and the Schoolmaster – F. L. Brayne

Unit IV: Textbook: 1) An Astrologer's Day – R. K. Narayan 2) The Gift of the Magi – O' Henry 3) With the Photographer – Stephen Leacock

55 – Fundamentals of Business Management

Unit I: Introduction -Nature, function, definition and importance of management, Definition, nature, purpose and scope of management, Functions of a manager, Is management a science or art? Development of Management Thought -Scientific management; Contribution of Taylor, Fayol, Mary Follet, Elton Mayo; Hawthorne experiments, Contingency approach.

Unit II: Management and Administration-Management and administration, Management as a profession, Professionalism of management in India, Management ethics and management culture, Skills required of manager, Classification of skills, Methods of skills development.

Unit III: Management Planning-Concept of planning, objectives, Nature, Types of plan, Stages involved in planning, Characteristics of a good plan, Importance, Limitations of planning, Making planning effective, Strategic planning in Indian Industry.

Unit VI: Decision Making-Concept, characteristics of decisions, Types of decisions, Steps involved in decision making, Importance of decision making, Methods of decision making, Committee Decision Making. Organisation -Concepts, Principle of organization, Importance, Features of good organization structure, Types of Organisation structure.

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56 Computer Applications for Business

Unit I: Introduction to Computers - Generation of Computers, Block Diagram, Working of Computer, Hardware and Software, Programming and Flow Charts concepts, Operating systems (MSDOS, Windows, UNIX, Linux), Networking concepts.

Unit II: Working with Computers - Introduction to Word, Excel, PowerPoint, Internet,. Lab Activity would be based on the following topics: a. MS Word b. MS Excel c. MS PowerPoint

Unit III: Introduction to e-Commerce, e-Learning and e-Business, M-Commerce. Introduction to Basic Web Page designing Language (HTML), using Tags: - Structural, Formatting, List tags and Table.

Unit IV: IT Consulting – Basic concepts of business, strategy and operation; Business / Strategic Consulting: Reengineering, BPR; Operations Consulting: domain knowledge concept, domain consulting. IT Enabled Services (ITES) – Processes, Outsourcing Function, Call Centres; BPO's: Captive BPO's (GE and Dell) and Third Party BPO's (Infosys BPO, Wipro BOP, Mphasis, Daksh and EXL etc).

57 – Cost Accounting

Unit –I: Introduction -Meaning of Cost, Costing and Cost Accounting, Features, Scope and Functions of Cost Accounting, Advantages and Limitations of Cost Accounting; Concept of Cost; Analysis and Classification of Costs; Elements of Cost; Preparation of Cost Sheet (Statement of Cost); Quotations and tender. Introduction and need for reconciliation between financial accounts and cost account, reasons for disagreement in Profit; Preparation of Reconciliation Statement.

Unit –II: Process Costing: Meaning, features and applicability, difference between process and job costing, wastage and by-products, normal and abnormal loss. Preparation of process accounts

Unit III: Operating Costing: Classification of costs, Features of operating costing: Transport costing (Standard charge, running and operating cost, maintenance charges and log sheet)

Unit IV Marginal Costing: Introduction, Application of Marginal costing in terms of cost control, level of activity planning- Break-even-analysis: Application of BEP for various business problems.

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Bachelor of Business Administration (BBA) Semester – II

58 Principles of Marketing Management

Unit I Marketing :Definition, nature, scope & importance, Marketing Management, Core concepts of marketing, selling concept, production concept, modern marketing concept.

Unit II Segmentation: Concept, basis of segmentation, Importance in marketing; Targeting : Concept Types, Importance; Positioning: Concept, Importance, Brand positioning, Repositioning.

Unit III Marketing Mix: Product : Product Mix, New Product development, levels of product, types of product, Product life cycle, Branding and packaging, different types of distribution channels.

Unit IV Price: Meaning, objective, factors influencing pricing, methods of pricing. Promotion : Promotional mix, tools, objectives, media selection & management. Process & Scope Marketing Information Systems : Meaning Importance and Scope Consumer Behaviour : Concept, Importance and Factors influencing consumer behaviour.

59 Financial & Management Accounting

Unit –I: Introduction - Meaning, Scope and importance of Financial Accounting. Financial Accounting - concepts and conventions, classification of accounts, Rules and principles governing Double Entry Book-keeping system (Preparation of Journal), Nature and function of financial Reporting, GAAP.

Unit –II: Final Accounts of Companies - Final Accounts of Joint Stock Companies – contents and preparation of Trading and Profit and Loss Account, Profit and Loss Appropriation Account and Balance sheet with adjustment, Closing Entries (Simple entries)

Unit III: Management Accounting - Meaning, Scope, Importance, and Limitations of Management Accounting, Difference between Financial Accounting and Management Accounting, Break even analysis, Analysis of Financial Statements (using ratio analysis-simple ratios)

Unit IV: Budgetary Control - Business budgets and budgetary control – Types of budget and its utility, preparation of cash & flexible budgets.

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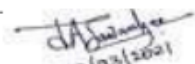
60 Micro-Economic Fundamentals

Unit I: Introduction to Micro Economics- Meaning, Definition, Importance of Micro Economics, Factors affecting Micro Economics. Difference between Micro-Economics & Macro Economics.

Unit-II Demand and Supply Analysis - Concept of Demand, Law of Demand-Meaning, Definition, Assumptions & Exceptions. Elasticity of Demand- Meaning, Types and Factors affecting Elasticity of Demand; The Indifference Curve Theory; Supply- Concept of Supply, Elasticity of Supply, Types and Factors affecting Elasticity of Supply.

Unit III: Production & Cost Analysis - Production & Production Function: Concept, Forms of Production function, Law of Variable Proportions, Returns to scale. Cost Concepts, Short term and Long term cost output relationship, The Isocost and Isoquant Approach, Economic Region and Economies & Diseconomies of scale.

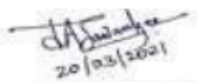
Unit IV: Market Structures- Characteristics and price determination in various market structures - Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly. Pricing: Meaning, Types of Pricing.

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61 English

1	Unit I	Basic Grammar & Vocabulary : • Subject-Verb-Agreement / Concord of Nouns, Pronouns and Possessive Adjectives • Spotting errors and rewriting sentences correctly. • Phrasal Verbs, Collocations and Idioms (based on the exercises at the end of the prescribed lessons from <i>Golden Harvest</i>) • Words Often Confused	Reference Books: 1. Macmillan Foundation English by R. K. Dwivedi and A. Kumar (Macmillan/Trinity) 2. Learners' English Grammar and Composition by N. D. V. Prasad Rao (S.Chand Publication) 3. Developing Communication Skills by Krishna Mohan and MeeraBanerji (Trinity)
2	UNIT II	Business Communication • Memorandum Writing • Notice, Agenda and Minutes • Writing Advertisements for: Rent, Sale, Situations Vacant	1. Developing Communication Skills by Krishna Mohan and MeeraBanerji (Trinity) 2. Write Right by SaritaManuja (Macmillan/Trinity)
3	UNIT III	Prose Items: • A Real Good Smile: Bill Naughton • What India Inc Wants: a. Our Muddled Generation: Dinesh Kumar b. Employers Look for Potential Employees, not	Prescribed text : <i>Golden Harvest</i> by Orient BlackSwan

		Exam Results: Manish Sabharwal • The Thief: Ruskin Bond	
4	UNIT IV	Prose Items: • A Simple Philosophy: Seathl • Go, Kiss the World: SubrotoBagchi • My Struggle for an Education: Booker T. Washington	Prescribed text : <i>Golden Harvest</i> by Orient BlackSwan


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Bachelor of Business Administration (BBA)-II Annual Pattern

62 Principles of Marketing Management

Unit-I: Concepts & Application - Core Concepts of Marketing, Company Orientation towards Market place, New Concepts – E Business, Relationship Marketing; Database Marketing, Functional areas of Marketing.

Unit-II: Marketing Plan - Steps in the Marketing Process, Nature and contents of a marketing plan, marketing mix.

Unit-III: Product Management - Meaning of product, product classification, product levels, product policies, Product life cycle and new product development, Branding & packaging.

Unit-IV: Pricing Strategies - Pricing objectives, methods and pricing policies; adopting the price; Initiating and responding to price changes.

Unit-V: Distribution Strategies - Channel design and management, Channel dynamics and market logistics, Channels of distribution, Types of channels, Importance of Retailing and wholesaling.

Unit-VI: Promotion Strategies- Promotion decisions and promotion mix, advertising, sales promotion, public relations personal selling, Channel management- selection, Emergence of new channels.

63 Human Resource Management

Unit I: The Strategic Role of HRM - Nature, scope, objectives, importance and functions, Human resource as an asset in organization, Evolution of the concept of HRM, Human resource management in India

Unit II: Job Analysis & Design - Job Analysis – Meaning, Uses, Process and methods of collecting data for job analysis, Competency approach to job analysis, Job Description, Job Specifications & Role Analysis, Factors affecting Job Design, Techniques of Job Design, Cases and Exercises in understanding Job Analysis.

Unit III: Human Resources Planning & Recruitment Policy - Human Resources Planning; Need for Human Resources Planning; Process of Human Resources Planning; Human Resource Planning System; Responsibility for Human Resource Planning.

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Unit IV: Selection, Induction & Placement - Selection Process, New tools /Methods of selection – Interviews, Tests and assessment of effectiveness of selection tools. Induction Programme, Problems in Induction, Requisites of effective Induction, Typical Induction Programme – Do's & Don'ts,.

Unit V: Employee Growth & Development Training - Introduction of Training; Objectives and Importance of Training; Training Needs Identification, Organization Analysis; Task Analysis; Man Analysis; Training Areas Identified by Trainers; Responsibility for Training; Types and Techniques of Training and Development.

Unit VI: Performance Appraisal - Nature, Objectives, limitations–various methods – Modern & Traditional, Multiple Person Evaluation Methods; Performance Tests & Field Review Techniques; Appraisal, Praise and Recognition; Rewards and Incentives; Promotions. HR Records, MIS HR Reports, HR Formats – Personnel Files, Attendance, Leave, Medical Records.

64 Management Accounting & Financial Management

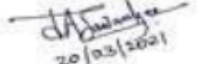
Unit I: Introduction - Management Accounting - Meaning, Scope, Importance, and Limitations of Management Accounting, Difference between Cost Accounting and Management Accounting, Role of Management Accountant.

Unit II: Sources of financing - LONG TERM: shares, debentures, term loans, lease & hire purchase, retained earnings, public deposits, bonds (Types, features & utility). (a) SHORT TERM: bank finance, commercial paper & trade credit & bills discounting. (b) INTERNAL: Retained earnings, Depreciation policies.

Unit III: Dividend policies - Concept, determinants and factors affecting, relevance and irrelevance concept, dividend valuation models – Gordon, Walter and Modigliani-Miller models.

Unit IV: Working capital - Concept, significance, types. Adequacy of working capital, Factors affecting working capital needs, Financing approaches for working capital, Methods of forecasting working capital requirements.

Unit V: Ratio Analysis – Introduction, Meaning of Ratio, Importance of Ratio Analysis, Limitations of Ratio analysis, Classification of Ratios: Ratios related to Trading and Profit and Loss Account, Current Ratio, Liquid Ratio, debtors Turnover Ratio, Creditors Turnover Ratio, Working Capital Turnover Ratio.

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Unit VI: Financial Analysis – Statement of Changes in Working Capital, Preparation of Funds Flow Statement.

65 Business and Industrial Laws

Unit I: Administration of law & legal system in India - Introduction to legal aspects of Business in general; Freedom of Trade, Profession and Occupation (Constitutional Provisions).

Unit II: The Companies Act (1956) - Definition & characteristics of a company, Company distinguished from partnership, Kinds of Companies, Provisions relating to incorporation, lifting the Corporate Veil.

Unit III: Memorandum of Association, Doctrine of ultra-vires, Articles of Association, Doctrine of indoor management & constructive notice, Concept of Prospectus.

Unit IV: Indian Contract Act (1872) - a) Definition (Sec.2) b) Essential elements of a valid contract c) Competency to enter in contracts (Sec. 11 & 12).d) Consent – Free consent, Coercion, undue influence, fraud, misrepresentation, mistake (sec 13-23).Void Agreement (sec 24-30) f) Consequences of breach of contract (sec73-75).

Unit V: Labour Legislations & ILO - Nature, Scope, character growth & development of labour legislation In India, Legislation & the constitution of India; Constitution, working & impact of ILO on Labour Legislations in India, ILO convention & recommendations

Unit VI: Normative Labour Legislations - Factories Act, 1948, Bombay shop & Establishment Act 1948, Wage Legislation - Minimum wages Act, Industrial Relations Legislations - Trade Union Act 1926, Industrial Dispute Act 1947.

66 Statistical Methods for Business

Unit I: Descriptive statistics – Definition, functions, scope and role of statistics in business, Importance of statistics, distrust and limitations of statistics.

Unit II: Presentation of statistical data – classification; tabulation; frequency distribution; diagrams & graphs.

Unit III: Statistical average - importance and requisites of a good statistical average; types of averages – arithmetic mean, median, mode, geometric mean and harmonic mean, weighted average, relationship amongst different averages.

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Unit IV: Dispersion - meaning and significance of dispersion; methods of measuring dispersion – range, quartile; mean deviation, standard deviation, Co-efficient of Skewness, Lorenz Curve.

Unit V: Correlation and Regression (Simple)- Types of correlation, Calculation of Co-efficient of Correlation for Simple Series, Calculation of Co-efficient of Correlation for Continuous Series; Regression Equation of X on Y, Regression Equation of Y on X Unit VI: Quantitative Techniques – An introduction: Classifications of quantitative techniques; applications of quantitative techniques to business and industry; limitations of quantitative techniques.

67 Research Methodology

Unit I: Introduction - Meaning, Objectives and Types of research, Research Approach, Research Process, Relevance & scope of research in management.

Unit II: Research Design - Features of good Design, Types of Research Design, Sampling Design - Steps in sample Design, Characteristics of a good sample Design, Probability & Non Probability sampling.

Unit III: Measurement & scaling techniques - Errors in measurement. Test of sound measurement, Scaling and scale construction technique.

Unit IV: Methods of data collection - Primary data – questionnaire and interviews; Collection of secondary data;

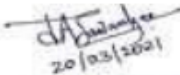
Unit V: Processing of data - Data coding; Editing and Tabulation. Use of computer and Information technology in data collection,

Unit VI: Interpretation of data - Techniques of Interpretation, Report writing, Layout of a project report, preparing research reports.

68 Environmental Management

Unit I: Introduction to Environment Management - Definition, Scope & importance, Need for public awareness- institution in environment, People in environment, Fundamentals– sustainable development, Unsustainable to sustainable development.

Unit II: Natural resources - Renewable and non renewable resources, and associated problems, Role of an individual in conservation of natural resources; equitable use of resources for sustainable life cycles; Preserving resources for future generation, the rights of animals.


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Unit III: Air Pollution:- Definition Air pollution, causes, effects & control, Green house effect, pollution: Vehicles, Industry households, Global warming, Ozone layer depletion, effects & remedies, Role of individual and institution in preventions of Air pollution.

Unit IV: Water and marine Pollution - Definition water pollution, causes, effects & control; Management of water: Hard & Soft water, contaminants, Acid Rains; Pollution by sewerage, industry runoff degradation due to biological changes; Sea water pollution & degradation of Marine; Role of individual and institution in preventions of water & marine pollution.

Unit V: Human population & environment - Global population growth, variations among nations. Population explosion, Family welfare Programmes-methods of sterilization; Urbanization, Environment & human health-climate and human health, infectious diseases, water related diseases, risk due to chemicals in food, Cancer and environment.

Unit VI: Social issues and environment - Construction of dams: problems and concerns of resettlement, rehabilitation of affected people; Conservation: energy, water, forest, soil, strategies for conservation; Environmental ethics– issues and possible solutions.

Bachelor of Business Administration (BBA)-III Annual Pattern

69 Entrepreneurship Development

Unit I: Entrepreneurship - Creativity and Innovation, Relationship with the Economic Development, Barriers to Entrepreneurship (Factors affecting Growth of Entrepreneurship), Theory of Achievement Motivation, McClelland's Experiments, Women Entrepreneur's.

Unit II: Entrepreneurship Trends - Strategic Management, Forms of Ownerships, Franchising, Mergers and Acquisitions, Types of Entrepreneurship.

Unit III: Business Idea - Identifying & Developing Entrepreneurial Potential, Business Ideas Generation Process, Evaluation of Business Idea.

Unit IV: Location and Layout Decisions - Location decisions for Manufacturing, Retail and Services Business, Layout and Design Considerations, Build, Buy or Lease Decisions.

Unit V: The Industry and Ancillarization Entrepreneurship & Industry, Ancillarization, Ancillarization in India, Ancillaries & Industrial Development, Ancillary Opportunities in different Economic Sectors: Agro Industries, Global Aspect of Entrepreneurship.

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Unit VI: Entrepreneurial behaviour - Techno economics innovation and entrepreneurship, Sociopsychological factors influencing entrepreneurship development.

70 Production and Operations Management

Unit I: Introduction- Nature, Scope, Importance and Functions Evolution from manufacturing to operations management - Evolution of the factory system - manufacturing systems–quality–mass customization, Contribution of Henry Ford, Deming, Crossby, Taguchi.

Unit II: Production Design- Definition, Importance, Factors affecting location & layout, Principles and Types of Facilities Layout, Layout and its objectives for manufacturing operations, warehouse operations, service operations, and office operations, principles and types of plant layouts – product layout, process layout, fixed position layout, cellular manufacturing layouts, hybrid layouts, Factors influencing layout changes.

Unit III: Production Planning and Control- Importance and Functions of Production Planning & Control. Capacity Planning : Concept and overview of aggregation demand and capacity options and strategies in production and services, capacity and value, financial impact of capacity decisions, aggregate planning types and procedure, capacity requirement planning.

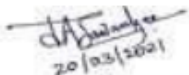
Unit IV: Material Management - Materials Planning Budgeting and Material Requirement Planning; Purchase Management; Stores Management- Functions, Centralized Vs Decentralized stores, role of codification; Maintenance Management concepts – factors affecting design of material handling system,

Unit V: Material Planning and Inventory Control- Objectives, basic concepts, p-system, q-system, EOQ, maxima, minima, reorder point, buffer stocks, selective inventory classification models,

Unit VI: Latest Concepts- Modern concepts in Production & Materials management and Japanese contribution to world class quality manufacturing like single piece flow, JIT, KANBAN, SMED, CAD, CAM, KAIZEN, POKA YOKE, Right First Time, Zero Defects.

71 Office Management

Unit I: Office Management - Meaning, Functions and importance of office management, principles of office management, Functions and relations of office with other departments. Poor and good organization Departments -Flow of Work -Organization Charts and manual.


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Unit II Office Managers: Qualifications and Qualities, authorities and responsibilities, meanings and types of secretaries, qualifications, qualities, duties of secretaries.

Unit III: Administrative arrangements and physical conditions - Centralization and Decentralization of Office services - Office Accommodation and Layout -Office Furniture - Meaning of Various terms - Basic pattern of work -Sub-division - Standardization and Standards - Work Measurement and control

Unit IV: Office equipments - Reproduction equipments - Typewriter - Duplicators - Photo Copier - Franking Machine - Communication Equipments - Dictaphone - Intercom - Telephone - Telex - Teleprinters - PABX - PBX - STD - Storage equipments - Filing Cabinets - Time Clocks - Use of Computers in Office Management

Unit V: Office System - Procedure - Routine - And methods - Paper work in office Filing functions - essentials of good filing systems - Central vs. Departmental Filing classification - Methods of filling Old and Modern - Micro filing - Indexing Types.

Unit-VI: Mail service and communication - Office Correspondence - Central vs. Departmental Correspondence - Handling Mail - Postal Services - Postbag and Post Box Numbers - Registered and Insured Posts - VPP Communications - Oral written - Internal and external communication - Records Management Types.

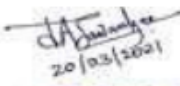
72 Business Ethics

Unit I: Ethics - An introduction, Concept of ethics, Values & Ethics – Meaning & Types of Values, Ethical Action–Morals, Morality, Moral development pyramid, Beliefs, Religiousness and Law.

Unit II: Ethical Decision Making - Normative Framework –Principle of personal benefit, Principle of Social Benefit, Principle of Neutralization, Categorical Imperative, Principle of Duty, Principle of Justice and Principle of Lawfulness.

Unit III: Business Ethics - Ethics in Business – Myth & Reality, The Indian Business scene, Ethical Concerns, LPG & Global trends in business ethics, Business ethics rating in India.

Unit IV: Organizational Ethics - Organizations& Organisation culture, Types of Organization, Corporate code of ethics – Formulating, Advantages, implementation Professionalism and professional ethics code.

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Unit V: Business & Society - Business & its stakeholders, Social Responsibility – Concept of CSR, Public Policy approach & role of NGO, Environmental Ethics – concerns and issues.

Unit VI: Corporate Governance - Objectives, issues, features, Corporate Governance codes – Cadbury report, CII recommendations, Corporate Governance for public sector, Corporate Governance & Investment – ethical investing, Insider trading

73 (Marketing Management-I)

Integrated Marketing Communication

Unit I: Marketing Communication - Introduction to Marketing Communication Concept; Elements of Marketing Communications; Unifying the Appeal and the Message across the promotion-mix components.

Unit II: Integrated Marketing Communication - Role of IMC in Marketing and Brand Management; How Marketing Communication Work; Setting IMC objectives.

Unit III: Communication and Branding - Marketing Communications Functions, Brands, and Integrated Marketing Communication, Integrated Marketing Communication Partners and Industry, Organisations; Using Advertising and Promotion to Build Brands; Brands and Stakeholder Relationships; Basic Marketing Communication Strategies for Building Brands; Integrating the Brand Communication Process; Customer Brand Decision Making.

Unit IV: Research Methods and Applications - Role and Relevance of Research in Communication; Types of Research and the Research Process; Advertising Research; Positioning Research, Target Market Research, Pre-test Research and Audience Research.

Unit V: Integrated Marketing Communication and Micro-Marketing - Segmenting, Targeting, and Positioning. Data-Driven Communication; fostering word-of-mouth; Opinion Leaders, Reference Groups

Unit VI: Creating, Sending, and Receiving Brand Messages-Integrated Marketing, Communication Creative Concept and Messages; Message Execution; Integrated Marketing Communication, Broadcast, Out-of-Home, Product Placement Media; Internet and e-Commerce Media; Integrated Marketing Communication Media Planning.

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74 (Marketing Management-II)

Retail Marketing Management

Unit I: Introduction to Retail Management - Retail & Retailing – definitions, Meaning of Retail Mix, Growth of Retail Industry, Factors responsible for changes in retailing, Challenges & Opportunities to Retail Industry.

Unit II: Store Retail Formats - Independent/ Stand alone outlet, Convenience Store, Supermarket, Discount Store, Off-price retailer, Department Store, Corporate chains, Consumer co-operatives, Shopping malls, Hypermarkets, Catalogue showroom, Franchising.

Unit III: Non-store Retail Formats - Multi-Level marketing, e-tailing, Tele-shopping, Automatic Vending Machines, Direct Mail Marketing.

Unit IV: Retail Planning - Retail Planning Process, Retail Finance, Location Selection Decision, Layout Planning.

Unit V: Studying Consumer Behaviour & Other Related Issues in Retailing -Understanding Consumer Behaviour, Cultural & Social Group influence on Consumer Purchase Behaviour, Consumerism & Ethics in Retailing.

Unit VI: Strategic Issues in Retailing - Development of Retail Brand, Implementation of CRM, Retail Pricing, Financial Implications of Retail Strategy, Retail Supply Chain.

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75 Project Work

Guidelines for Project Work

Objective

Every student will be assigned a project in BBA-III and it will be pursued by him/her under the supervision of an internal supervisor. The objective of the Project Course is to help the student develop his/her ability to apply multi-disciplinary concepts, tools and techniques to solve organizational problems and/or to evolve new/innovative theoretical frame work.

Type of Project

The Project may take any one of the following forms:

- i) Comprehensive case study (covering single organization/multifunctional area problem, formulation, analysis and recommendations)
- ii) Inter-organisational study aimed at inter-organisational comparison/ validation of theory/survey of management services.
- iii) Evolution of any new conceptual / theoretical framework.
- iv) Field study (Empirical study).
- v) Software analysis, Design and solutions for organisational achievement (Applicable to IT)

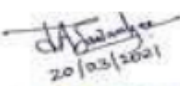
Selection of Project Topic:

- o Project topic has to be selected with respect to the programme of study and area elected by the student.
- o Title of the project should clearly specify the objective and scope of the study. It should be specific and neither too vague nor centralistic. The topics should be designed meticulously. It can be designed like "Employee Welfare Measures" – A case study of XYZ Ltd.
- o Project selection has to be made in consultation with the supervisor who will act as a Project guide for the student.

Scope of Work

The student is expected to carry out following activities in the project:

- 1) Prepare a synopsis and get it approved by the supervisor as assigned by the respective Institutes.
- 2) Undertake a detailed literature survey on the subject matter.
- 3) Make relevant data collection/observation.
- 4) Consult experts of the field.
- 5) Visit related organizations/institutions/industries.
- 6) Compile data in proper format.
- 7) Make proper conclusion/recommendations.


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- 8) Prepare a Project Report.
- 9) The volume of the project-report should be ranging from 60-80 pages.
- 10) Obtain approval of Project Report by project supervisor
- 11) Submit two hard bound copies of the Project Report at the Institute.
- 12) Submission of the Project Report shall be one month prior to the date of the commencement of the Examinations for BBA-III

General Format of the Report

The project report should preferably be written in the following format:

- a) Executive Summary
- b) Introduction to topic
- c) Research Methodology
- d) Analysis and Findings of the study
- e) Conclusions and Recommendations of the study
- f) Bibliography
- g) Appendices - to include questionnaire, if any

Examination and Evaluation

Project is to be treated as a paper of study of the BBA-III comprising of 100 marks. The external assessment shall be done on the basis of the project report and Viva Voce.

The Project shall be evaluated by an External faculty for 100 marks and of which 50 marks will be allocated to the Written Report Content and Presentation and 50 marks for Viva Voce. **The Project work shall be evaluated by internal and external examiners approved in the list of the University for 100 marks (as mentioned above) at the respective institute / college as per the scheduled fixed by the university.**

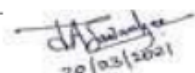
The evaluation shall be made by the examiner on the following criteria:

For Written Report:

- | | |
|---|-----|
| • Relevance of topic and the study undertaken | 30% |
| • Theoretical depth and support | 20% |
| • Quality of work undertaken | 30% |
| • Preparation of Project Report | 20% |

For Viva Voce:

- | | |
|-------------|-----|
| • Viva-Voce | 50% |
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Bachelor of Science (B.Sc. (IT)) Semester-I

76 English

Unit I - Prose Lessons

1. The House
2. The Boy Who Broke The Bank
3. Parveen
4. The Selfish Giant

Unit II - Poems

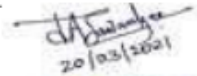
1. Eyes Immortal
2. Elegy Written in a Country Churchyard
3. Ulysses
4. Ecology

Unit III - Grammar

1. Tenses
2. Voice
3. Prepositions

Unit IV – Composition, Comprehension & Vocabulary

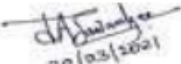
1. Letter Writing
2. Comprehension
3. Synonyms and Antonyms


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Syllabus

ss : B.S.C (IT), B.C.A. Ist SEM. Subject : MARATHI
शब्दगंध

Unit	Particulars	From	To
1.	वर्तमानकालीन सामाजिक, पर्यावरण विषयावर आधारित निबंध (दोन पैकी एक)	(12)	गुण
2.	गद्य विभाग 1) शेतकऱ्यांविकषी - म. जोतीबा फुले 2) स्टीमरमध्ये - म. गांधी 3) विज्ञान शाप की वरदान - द. के. केळकर 4) ज्ञान - साने गुरुजी 5) स्वदेशावचे संशोधन - भालचंद्र नेमाडे	(15)	गुण
3.	पद्य विभाग 1) दुरितांचे तिमिर जावो - संत ज्ञानेश्वर 2) वृक्षवल्ली आम्हां सोधरे - संत तुकाराम 3) आम्ही कोण ? - केशवभूत 4) कशाला पंढरी जातो ? - राष्ट्रसंत तुकडोजी महाराज 5) आहे बुद्धीशी इमान - वा. सी. मर्ढेकर	(15)	गुण
4.	1) मूलींचा अर्थ सांगून वाक्यात उपयोग करा 2) सारांश 3) कार्यालयीन पत्र 4) इंग्रजीच्या उताऱ्याचे मराठीत भाषांतर करा 5) शुद्धलेखन	(03) (04) (04) (04) (04)	गुण गुण गुण गुण गुण


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78 Hindi

बी.एस.सी.प्रथम वर्ष
पाठ्यक्रम हिन्दी (प्रथम सेमिस्टर)
(बी.सी.ए/ बी.एस.सी.आईटी)

समय. 03घण्टे

पूर्णांक : 60

निर्धारित पाठ्यपुस्तक

साहित्य सरीता
सम्पादक -जोगेन्द्रसिंह बिसेन
प्रकाशक-ओरियंट ब्लैकस्वॉन

प्रथम इकाई : (अ) निबंध :- समसामायिक विषय
(ब) मुहावरे

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द्वितीय इकाई : गद्य (1) ईदगाह
(2) गुण्डा
(3) परदा
(4) जिंदगी और जोंक
(5) मैं हार गई

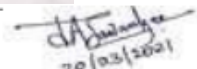
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तृतीय इकाई : पद्य (1) तोडती पत्थर
(2) कालीदास से
(3) कहों तो तय था चिरागों
(4) रोटी और संसद
(5) मारे जायेंगे

15

चतुर्थ इकाई : पत्राचार (पत्रों के प्रकार)
(अ) (1) कार्यालयीन पत्र
(2) व्यावसायिक पत्र
(3) व्यावहारिक पत्र
(4) आवेदन पत्र
(ब) नौकरी हेतु आवेदन पत्र

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79 Supplementary English

Unit I : Prescribed Text: Understanding India Edited by B. Keralavarma (Macmillan)

The following essays from the prescribed Text:

1. Brother Abdul Rahman – Amarlal Hingorani
2. Gandhi and the Western World - Louis Fischer
3. The Cow of the Barricades – Raja Rao
4. The Smaller Gandhis – Mohinder Singh Sarna

Unit II : The Old Man and the Sea by Ernest Hemingway (Duttsons)

Unit III: Vocabulary Expansion

(Some Common Foreign Words Used in English, One Word for a Group of Words, Idioms and Phrases)

Unit IV: a) Expansion of an Idea

b) Word-formation Rules

(Noun Forms of Some Adjectives, Noun Forms of Some Verbs)

c) Precis Writing

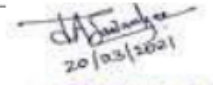
80 Fundamentals of Information Technology

UNIT - I : Basic Components of Digital Computers: Block Diagram. CPU: Functions of Each Unit: Primary Memory, ALU and CU, Instruction format. Bus: Data, Control and Address Bus Number Systems: Binary, Octal, Decimal, HexaDecimal, Their Conversions, Binary Arithmetic. ASCII, BCD, EBCDIC. Language Evolution : Generation of Languages : Machine, Assembly, High Level Languages. Characteristics of Good Language Translators : Compiler, Interpreter and Assembler. Source and Object Program.

UNIT - II : Memory: Static & dynamic, RAM, ROM, PROM, EPROM, EEPROM, flash and Cache. Storage Devices: Hard Disk, Zip Disk and Optical Disk. Pen Drive, Blue Ray

UNIT - III : Input Devices: Keyboard, Mouse, Light Pen, Touch Screen, Voice Input , MICR, OCR, OMR, Barcode Reader and Flatbed Scanner. Output Devices: VDU, Printers: Dot Matrix, Laser and Inkjet. Plotters: Drum, Flat-Bed and Inkjet.

UNIT - IV : Network: Network terminology, Topologies : Linear, Circular, Tree and Mesh. Types of Networks: LAN, WAN, MAN. Repeaters, Bridge, Routers, Brouters and Gateway. Modem for Communication between pc's, wi-fi network, Introduction of Bluetooth and Infrared devices. Network protocols. Architecture : Peer-to-Peer, Client/Server.


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81 Programming Methodology in C

UNIT- I : Programming Structure : Sequence, Selection, Iteration and Modular. Problem Solving techniques: Development Tools: Algorithm, Flowcharts and Pseudo code (Definition and its characteristics) Developing Algorithm and Drawing flowcharts

UNIT- II : C Character set, Tokens, Identifier, Keywords, Variables, Data types, Qualifiers. Operators and Expressions: Arithmetic, Relational, Logical, Bit-Wise, Increment, Decrement, Conditional and Special operators. typedef, Type Conversion, Constants, Declaring Symbolic Constants, Character Strings, Enumerated Data Types, Operator Precedence and Associativity. Library functions. : Maths, string handling Functions. Control Structure: Compound Statement, Selection Statement: if, if-else, Nested if, switch. Iteration statement: for, while, do..while, Nested loops, Jump statement: break, continue, goto. (Special emphasis on problem solving)

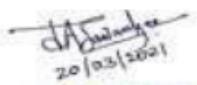
UNIT- III : Arrays: Need, Types: Single and Two Dimensional Array. Strings: Strings Manipulation, Arrays of Strings, Evaluation order Function: Function Components, Return Data type, Parameter Passing, Return by Reference, Default Arguments, Recursive Functions, Arrays with Functions, Storage Classes. (Special emphasis on problem Solving)

UNIT- IV: Structure: Declaration, Definition, Accessing structure members, Initialization, Nesting of Structures. Union: Unions, Differences between Structure and Union Pointer: Introduction, Address Operator (&), Pointer variables, Void pointers, Pointer Arithmetic, Pointers to Pointers. File handling: Hierarchy of File Stream Classes, Opening & closing a file, Testing for errors, File Modes, File pointers and their manipulations, Sequential Access, Random Access, Command Line arguments.

82 System Analysis and Design

UNIT - I : Introduction : System, Subsystems, Components of Computerized Information System, Systems Analysts, SDLC, Prototyping. Feasibility Study and Analysis: Identifying Problems, Organizing Feasibility Analysis: Economic, Financial, Organizational and Technological. Feasibility Decision, Choice of a solution. Data Collection: Interviews, Brain Storming, Questionnaires, Document Search, Observation.

UNIT - II : Structured tools and techniques of Data analysis : Structured English, Process Charts, SOP, Decision Tables and Decision Trees, Data Flow Diagram, Data Dictionary. (Special emphasis on problem solving) System Design : Input design: Input Validation, Human factor


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Consideration, Messages, System Tolerance. Output design: Categories of output, Design Principles, Control of Output. Forms: Principles of Form Design, Ways to ensure Quality Forms. Codes: Types, Physical Representation of Codes, Principle of Code Design.

UNIT - III : Implementation: Training, Operational Training and Related Activities, Planning to Implement Change, Change Strategies. Testing: Preparation for Testing, Test Execution: Levels of Testing, Component, Function, Subsystem, System, Test Evaluation, Acceptance. Conversion: Cold Turkey, Parallel, Pilot, Modular and Sequential Methods. Conversion Period Length. System Evaluation.

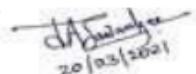
UNIT - IV : Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Scheduling: Work Breakdown Structure, Activity Networks and CPM, Gantt Charts, PERT Charts, Project Monitoring and Control. Risk Management, Software Configuration Management: Necessity, Configuring Management Activities Software Reliability and Quality Management: Software Reliability, Software Quality, ISO 9000. Software Maintenance: Characteristics of Software Maintenance, Maintenance Process Models, Estimation of Maintenance Cost. Software Reuse: What can be reused, Why no reuse so far, Basic Issues.

83 Web Technologies

UNIT I Introduction to Internet, Requirement for connecting to internet, Basic internet term, Introduction to World Wide Web (WWW), Evaluation of world wide web, basic features of www, web browsers, web server. Internet Security: Secure Transaction, Privacy issues, computer crimes and its type. Security Issues: Security threats like damage to data, loss of data and unauthorized use of data. Security Procedure: Firewall, Encryption, Password, Access Control List, Digital Certificate.

UNIT – II

Introduction to HTML, Features of HTML , Advantage and Disadvantage of HTML, Basic structure of HTML documents. Creating web pages with HTML Tags : <HTML>, <HEAD>, <TITLE>,<BODY>,Heading tags, Paragraph tags, Alignment, Font tag and its attributes, line break, Preformatted text tag, list element (Unordered lists, ordered list, Definition list, Marquee tags and its attribute. Character formatting tags: Logical versus physical style, logical and physical tags.Changing the colors of the fonts. Linking :Relative pathnames versus absolute pathnames, URLs,Linking within a web page, linking to a different web page, linking to external web page, linking to an image by image, linking to document located in different directory, types of URLs .


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UNIT – III

Images: IMG element and its attributes, Images as a Hyperlink, Image map, Image Formats, Frames. Tables: TABLE element and its attributes, Creating simple tables, Row element, Data element, Spanning rows and columns. Form designs: Form Controls, Text controls, password fields, radio buttons, checkboxes, reset and submit buttons, select element, option, Image and textarea. Embedding Multimedia: Introduction, Embedding Multimedia, Inserting sound/audio formats, video file formats. DHTML: using DHTML in internet explorer, heading and horizontal line, hidden message, the message at the center of the page, moving boxes, changeable box.

UNIT – IV

Cascading Style Sheets (CSS): advantage of CSS, Disadvantage of CSS, Defining a Style, Inline style sheet, Embedded Style sheet, External style sheets. Style sheet Properties: Font, color, background, creating group, text, Box properties, span tag. Scripting Language: JAVA SCRIPT – Introduction, Advantages, Disadvantages, Working of JavaScript, Structure of JavaScript program, Variable, Data types, Operators & Expression, Decision Making- if—else, switch, loops(for, for...in, while, do...while), break & continue, , Arrays

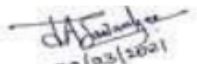
84 Multimedia Application Development

Unit I Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.

Unit II Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

Unit III Action Script I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class. Action Script II: Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions.

Unit IV Application Development: Application Frame work, Using Components with ActionScript MovieClip Subclasses. Multimedia data compression: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, WaveletBased Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).


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85 Applied Mathematics-I

UNIT- I: Propositional Calculus: Connectives, Negation, conjunction, Disjunction, statement formulas and truth tables, conditional and Bi-conditional, well formed formulas, Tautologies, Equivalence of formulas, duality law, Tautologies implications, Functionally complete set of, other connectives,

UNIT- II: Disjunctive normal forms, connective normal forms, Principal disjunctive normal form, Principal conjunctive normal form.

UNIT- III: Predicate Calculus: The theory of Inference for statement Calculus, validity using truth tables, Rules of inference, consistency of premises and indirect method of Proof

UNIT- IV: The statement function, variables and quantifier, Predicate formulas, Free and Bound variables, The universe of Discourse, Theory of inference for predicate calculus.

86 Practical-I Practical-I Based on Paper I &II

87 Practical-II Practical-II Based on Paper III &IV

88 Practical-III Practical-III Based on Paper V &VI

Bachelor of Science (B.Sc. (IT)) Semester-II

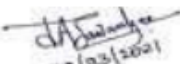
89 English

Unit I - Prose Lessons

1. Maintaining Democracy
2. The Verger
3. Two Gentlemen of Verona
4. Freedom at Midnight

Unit II - Poems

1. Where the Mind is without Fear
2. My Last Duchess
3. Up Hill
4. The Village Schoolmaster

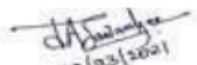

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Unit III - Grammar

1. Subject-Verb Agreement
2. Transformation of Sentences
(Interchange of Degrees of Comparison, Affirmative and Negative Sentences, Interrogative and Assertive Sentences, Exclamatory and Assertive Sentences)
3. Exercises on Common Errors

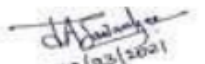
Unit IV – Comprehension & Composition

1. Comprehension
2. Curriculum Vitae
3. Make sentences of your own from the words given.


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90 Marathi

II ND IV TH Sem		Syllabus		Subject : Marathi	
Class : B.Sc.(IT), B.Com-II		Particulars		From	To
Unit					
1	निबंध (200 शब्दांत) ① विज्ञानावर आधारित ② कल्पकतेवर - 11 -			(12)	
2.	गद्य विभाग ⑥ सत्य कुणीही शोधू शकते - श्याम मनोहर ⑦ ज्ञानदेव रचिला पाया - सदानंद मोरे ⑧ विवेकवादी आणि विद्वाननिष्ठ : संत तुकाराम - किशोर शानप ⑨ स्त्री - पुरुष स्वातंत्र्याची गोष्ट - अरुणा सवने ⑩ गाव तिथं शाळा - रमेश इंगळे - उन्नादकर			(15)	
3.	पद्य विभाग ⑥ आणि पुढील ह्यू येते - सुधाकर गायधनी ⑦ शब्द - श. गो. चवरे ⑧ एकविसाव्या शतकाच्या उंबरठ्यावर ⑨ गाव जुन्या शेणा-मातीचे - जयशम खेडेकर ⑩ जन्म-मरणाच्या वेणा - संजीवनी तडेगावकर			(15)	
4.	① वाक्प्रचाराचा अर्थ सांगून वाक्यात उपयोग करा. ⑧ ② शुद्धलेखन ③ सारांश ④ पत्र ⑤ माहितीचा अधिकार			③ ④ ④ ④ ④	
				= (18)	


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91. Hindi

BSc/BEd निर्धारित पाठ्यपुस्तक : III Sem	साहित्य सरीता सम्पादक - जोगेन्द्रसिंह बिसेन प्रकाशक - ओरियंट ब्लैकस्वॉन
प्रथम इकाई : (अ) निबंध :- (1) विज्ञान 2) कल्पानाशील विषय (ब) लोकोक्ति	12 03
द्वितीय इकाई : गद्य (1) दाई आखर प्रेम का (2) वापसी (3) इमाम साहब (4) सलाम (5) छप्पन तोले का करघन	15
तृतीय इकाई : पद्य (1) जागो फिर एक बार (2) यह तुम थी (3) हो गई है पीर पर्वत सी (4) बीस साल बाद (5) प्रजापति	15
चतुर्थ इकाई : 1) पारिभाषिक शब्दावलीका अर्थ हिन्दी से अंग्रेजी पारिभाषिक शब्द अंग्रेजी से हिन्दी पारिभाषिक शब्द 2) शब्दों का शुद्धीकरण	15

92. Supplementary English

Unit I : Text prescribed : Understanding India Edited by B.Keralavarma (Macmillan)

The following essays from the prescribed Text:

1. The Idea of India : India's Mosaic of Multiplicities – Shashi Tharoor
2. Roots – Ismat Chughtai
3. A Gandhian in Garhwal – Ramchandra Guha
4. The End of Living and the Beginning of Survival – Chief Seattle

Unit II : The Mayor of Casterbridge by Thomas Hardy (Macmillan, Stories to Remember)

Unit III : a) Writing Advertisements (For sale of vehicle(s)/property, For Rent, Situation Vacant, Situation Wanted)

b) Newspaper Reports (about accident, fire, functions/events)

c) Precis Writing

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93 Fundamentals of Digital Electronics

Unit – I Data and Information: Features of Digital Systems, Number Systems: Decimal, Binary, Octal, Hexadecimal & their inter conversions, Representation of Data: Signed Magnitude, one's complement & two's complement, Binary Arithmetic, Fixed point representation and Floating point representation of numbers. Codes: BCD, XS-3, Gray code, hamming code, alphanumeric codes (ASCII, EBCDIC, UNICODE), Error detecting and error correcting codes.

Unit- II Boolean Algebra: Basic gates (AND, OR, NOT gates), Universal gates (NAND and NOR gates), other gates (XOR, XNOR gates). Boolean identities, De Morgan Laws. Karnaugh maps: SOP and POS forms, Quine McClusky method.

Unit –III Combinational Circuits: Half adder, full adder, code converters, combinational circuit design, Multiplexers and demultiplexers, encoders, decoders, Combinational design using mux and demux. Sequential Circuit Design: Flip flops (RS, Clocked RS, D, JK, JK Master Slave, T, Counters, Shift registers and their types, Counters: Synchronous and Asynchronous counters.

Unit- IV Computers: Basic Organization, Memory: ROM, RAM, PROM, EPROM, EEPROM, Secondary Memory: Hard Disk & optical Disk, Cache Memory, I/O devices

94 Object Oriented Programming Using 'C++'

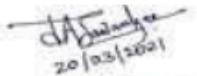
UNIT - I : Object Oriented Methodology: Elements of Object Oriented programming, Objects, Classes, OOPs features. Classes & Objects: Specifying a Class, Creating Objects, Accessing Class members, Defining member function, Outside Member Functions as inline, Accessing Member Functions within the class, Static data member, Access Specifiers: Private, Protected and Public Members.

UNIT - II : CONSTRUCTORS & DESTRUCTORS: Introduction, Parameterized Constructors, Constructor Overloading, Constructors with Default Arguments, Copy Constructor, Destructor, Order of Construction and Destruction, Static data members with Constructor and Destructors. OPERATOR OVERLOADING: Definition, Overloadable Operators, Unary Operator Overloading, Unary & Binary overloading, Rules for Operators Overloading.

UNIT - III : DYNAMIC OBJECTS: Pointers to Objects, Creating and Deleting Dynamic Objects: New and Delete operators, Array of Objects, Array of Pointers to Objects, Pointers to Object Members, this Pointer. INHERITANCE: Defining, Abstract classes, Single, Multilevel, Multiple, Hierarchical, Hybrid Inheritance, Constructor and Destructor in Derived Classes.

UNIT - IV : VIRTUAL FUNCTIONS: Need for Virtual Functions, definition, — Pure Virtual Functions, Abstract Classes, Rules for Virtual Functions.

EXCEPTION HANDLING: Exception


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Handling Model, List of Exceptions, Handling Uncaught Exceptions, Fault Tolerant Design Techniques, Memory Allocation Failure Exception, Rules for Handling Exception Successfully.

95 Operating System

UNIT - I: Structure of Operating System, Operating System functions, Characteristics of Modern OS. Process Management: Process states, Creation, Termination, Operations on Process, Concurrent process, Processes Threads, Multithreading, Micro Kernels CPU Scheduling: Schedulers, Scheduling Methodology, CPU Scheduling Algorithm: FCFS, SJF, RR, Priority Scheduling.

UNIT – II: Performance comparison : Deterministic Modeling , Queuing analysis, Simulators. Deadlock and Starvation: Resource Allocation Graph, Conditions for Dead Lock, Dead Lock Prevention, Dead Lock Detection, Recovery from Deadlock.

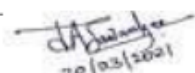
UNIT - III: Memory Management: Logical Vs. Physical Address Space, Swapping, Memory Management Requirement, Dynamic Loading and Dynamic Linking, Memory Allocation Method: Single Partition allocation, Multiple Partitions, Compaction, paging, segmentation, Segmentation with paging. Protection.

UNIT - IV: I/O Management: I/O hardware, I/O Buffering, Disk I/O, Raid, Disk Cache. File Management: File Management system, File Accessing Methods, File Directories, File Allocation Methods, File Space Management, Disk Space Management, Record blocking. Protection Mechanisms: Cryptography, Digital Signature, User Authentication.

96 Web Programming

Unit I Internet, Internet users and working, Information on Internet, Requirements for connecting to Internet, Basic Internet Terms, Introduction to world wide web, Evaluation of world wide web, basic features, web browsers, popular web browsers, web servers, HTTP, URL, Search Engines, Search Engines categories, how to use Search Engines, Searching criterion, Introduction to browsers, Working with e-mail, Parts of e-mail text, working with messages.

Unit II Java Script -Introduction , values and variables, operators, loops and various statements in java script, Date object, Math object, string object, window events, working with forms, document object, screen object, navigator object, images and animation, java script objects Declaration, definition, and referencing. Identifiers scope rules. Recursion. Arrays; declaration,


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allocation & accessing, sorting of arrays, JavaScript objects : Math, String, Date, Number and Boolean. Documents, forms, Statements, Functions, Objects in Java scripts, events and event handling, arrays, FORMS, Buttons, Checkboxes, Text fields and text areas.

Unit-III Introduction to active server pages (ASP) : working of ASP, setup, ASP objects, file system object, session tracking & cookies. Accessing databases using ASP. XML: Introduction, Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

Unit IV XML displaying an XML Document, Data interchange with an XML Document, advantages of integrating ASP & XML. Introduction to Java Server Pages (JSP): scripting standard actions, Directives. Custom tag libraries. JSP & XML case study: advantages of integrating JSP & XML.

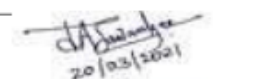
97 Database Management System

UNIT- I : DBMS : Definition: Databases, DBMS, Problems with traditional file processing system, Objectives of the database systems, Three level architectures of DBMS, Component of DBMS, Database Administrator, Database Users, Data model, Different types of data models, Concepts of Hierarchical, Network Models.

UNIT-II : E-R Models : Basic Concepts, Entity, Attributes, Relation Ship, Mapping, Keys, Weak and Strong Entity Set, Problems on E-R Diagrams, Extended E-R Features: Specialization, Generalization, Aggregation, Problems on Reduction of an E-R Schema to Tables, Tabular representation of Strong, Weak entity Sets and Relationship Sets.

UNIT-III : Relational Model: Structure, Relational Algebra, Fundamental Operations, Set – Intersection, Natural Join, Division and Assignment Operation. Extended Relational Algebra Operations, Aggregate Functions.

UNIT-IV : Functional Dependency: Functional Dependency, Fully Functional Dependency, Partial Dependency, Transitive Dependency, Multi Valued Dependency. Normalization, Normal Forms (1NF, 2NF, 3NF, BCNF, 4NF, 5NF). Problems on Normal forms.


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98 Applied Mathematics-II

UNIT - I : Set Theory: Set, Subsets operations on set, Venn diagram, algebra on sets, Cartesian product of sets, Binary relations, Properties of binary relation, Relation matrix and the graph of relation, Partial order relations, Equivalence relations, Equivalence Classes, Composition of relations.

UNIT - II : Functions - definition, types of function, Invertible functions composition of functions. Counting - Permutation, Combinations, The pigeonhole principle, recurrence relation, Mathematical Induction.

UNIT - III : Algebraic Structures Semi groups & groups: Binary operations, Semi groups, isomorphism and Homomorphism, Product and Quotient of semi groups, Groups, subgroups, products and Quotient of groups. Lattices: - Lattice concepts, isomorphic Lattices, Properties of lattices, Finite Boolean algebras.

UNIT - IV : Graph Theory: Basic concepts, types of graphs, Representation of graph in memory, Euler path and circuits, Hamiltonian Path and circuits. Trees:- Basic concepts, Libeled trees, Undirected trees.

99 Practical-I Practical-I Based on Paper I &II

100 Practical-II Practical-II Based on Paper III &IV

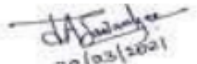
101 Practical-III Practical-III Based on Paper V &VI

Bachelor of Science (B.Sc. (IT)) Semester-III

102 Microprocessor and ALP

UNIT-I An over view of 8085, Architecture of 8086 Microprocessor. Special functions of General purpose registers. 8086 flag register and function of 8086 Flags. Addressing modes of 8086. Instruction set of 8086. Assembler directives, simple programs, procedures, and macros. Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-II Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory interfacing to 8086 (Static RAM & EPROM). Need for DMA. DMA data transfer Method. Interfacing with 8237/8257. 8255 PPI – various modes of operation and interfacing to 8086. Interfacing Keyboard, Displays, 8279 Stepper Motor and actuators. D/A and A/D converter interfacing.


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UNIT-III Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance. Serial data transfer schemes. Asynchronous and Synchronous data transfer schemes. 8251 USART architecture and interfacing. TTL to RS 232C and RS232C to TTL conversion. Sample program of serial data transfer. Introduction to High-speed serial communications standards, USB.

UNIT-IV Advanced Micro Processors - Introduction to 80286, Salient Features of 80386, Real and Protected Mode Segmentation & Paging, Salient Features of Pentium, Branch Prediction, Overview of RISC Processors.

103 Data Structures

UNIT - I : LINKED LIST : Linked List, Representation of Single, Double, Header, Circular Single and Double Linked list, All possible operations on Single and Double linked List using Dynamic representation, Polynomial Representation and its Manipulation.

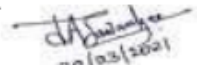
UNIT - II : STACKS : Stacks terminology, Representation of Stacks in Memory, Operation on Stacks, Polish Notations, Translation of infix to postfix & prefix expression, Infix to Postfix Conversion, Evaluation of Postfix Expression, Recursion, Problems on Recursion, Quick Sort and Tower of Hanoi Problem.

UNIT - III : QUEUE : Representation of Queues in Memory, Circular Queue. Dequeue and Priority Queue. Operations of above Structure using Array and Linked Representation. SORTING AND SEARCHING: Selection Sort, Insertion Sort, Merge Sort, Efficiency of Sorting Methods, Big-O Notations. Hash Tables, Hashing Technique, Collision Resolution Technique.

UNIT - IV : TREES : Basic Terminologies, Representation of Binary Trees in Memory, Traversing of Binary tree, Binary Search Tree, Operation on Binary Search Tree, Heap Tree, Operation on Heap Tree, Heap Sort Method GRAPHS : Basic Terminologies, Definition and Representation of Graphs in Memory: Linked List and Matrix Representation. Traversing graphs : BSF, DFS Method.

104 Data Communication & Network-I

Unit-I:- Introduction to data communications and Networking:- Introduction, history, data communication and network architecture, protocols and standards, standards organization , layered network architecture, open systems interconnection , data communications circuits, serial and parallel data transmission, circuit arrangements and data communication networks , alternate


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protocol suite. Signal , Noise , Modulation and Demodulation:- Introduction, signal analysis, Electrical Noise and Signal to Noise ratio, analog modulation systems , Information capacity, bits, Bit rate, Baud and Mary Encoding , digital modulation.

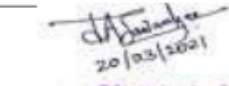
Unit –II: Transmission Media:- Introduction , Metallic cable Metallic transmission lines, transverse electromagnetic waves, characteristics , transmission line classifications, M.T line types, M.T. line equivalent circuit , Wave propagation on metallic transmission lines , metallic transmission line losses. Optical fiber Transmission media:- Introduction, Advantages and Disadvantages of optical fiber cables , Electromagnetic spectrum , O.F. Communication system block diagram, Optical fiber Construction , the physics of light, velocity of propagation, propagation of light through an Optical fiber cable, Optical fiber modes and classifications , O.F. Comparison , losses in optical fiber cables, light sources, light detectors , lasers Digital transmission:- Introduction, Pulse modulation, pulse code modulation, dynamic range, Signal Voltage-to-quantization Noise Voltage Ratio, Linear Versus Nonlinear PCM Codes, Companding, PCM Line Speed, Delta Modulation PCM & Differential PCM.

Unit –III Wireless Communication Systems:- Introduction, Electromagnetic Polarization, Rays & Wavefronts, Electromagnetic Radiation, Spherical wavefronts & the Inverse Square law, Wave Attenuation & Absorption, Optical Properties of Radio Waves, Terrestrial Propagation of Electromagnetic Waves, Skip Distance, free-Space Pathloss, Microwave Communication Systems, Satellite Communication Systems. Data Communication Codes, Error Control & data Formats:- Introduction, Data Communication Character Codes, Barcodes, Error Control, Error Detection, Error Correction, Character Synchronization. Data Communication Hardware, Data Communications Circuit, Line Control Unit, serial Interfaces.

Unit – IV Network Topologies & Connectivity Devices:- Introduction, Transmission Formats, Topologies, Collision & Broadcast Domains, Connectivity Devices, Standard Connectivity Device Logic Symbols Local Area Networks:- Introduction, IEEE Project 802, Access Control Methodologies, Medium access Control, LAN Data Link Layer, Logic Link Control Sublayer, MAC Sublayer, Ethernet.

105 Linux Operating System

UNIT - I : Logging In and Logging Out, Anatomy of Linux OS, Directory Structure, /usr Directory, File Types: User datafiles, System data files, Executable files. Naming files and directories, Spawning Processes. Shell: Creating User Account, Shell Program, bash shell, Changing shell prompt. Commands: Basic Syntax for a command, Exploring the Home Directory, ls, mkdir, rmdir, stat, cat, rm, mv, cp


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UNIT - II : Editor: Vi editor. Hooking up Hardware Devices: Formatting a Floppy Disk, Gathering important system information. Backing Up and restoring the File System: Simple Backup, gzip, gunzip, tar. Printing files: Print Spool directory, Sending files to Printer.

UNIT - III : Sharing Files with other Users: Maintaining User Accounts, Changing Password, Creating Group Accounts, Granting Access to files, Changing File Ownership, Protecting Files, Making a File ReadOnly. Working with Processes: Types of processes, ps Command, Creating process, killing process, free command and top utility.

UNIT - IV : Managing Disk Space: df, du commands, Creating Additional Free Disk Space, Locating Unused Files, Setting System Clock. Communication Utilities: who, who am i, finger, mesg, write, wall, talk, Creating a message of the day. X Window System, Graphical User Interfaces: KDE and GNOME Desktop Environment.

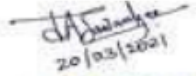
106 E-Commerce

UNIT - I : Introduction to e-Commerce, Scope of electronic commerce, definition, e-Commerce and Trade Cycle, e- Markets, Internet e-Commerce in perspective. Value chain, Supply chain, Porters value chain model, Inter organizational value chains.

UNIT - II : Business strategy in electronic age: Competitive advantages, Strategy, Porters model, First Movers advantages, Advantages using e-Commerce. Introduction to business strategy, Strategic implications of IT, Technology, Business environment, Business capability, Existing business strategy, Strategy formulation and implementation planning, e-Commerce implementation, e-Commerce evaluation.

UNIT - III : Business to Business e-Commerce: Inter organizational transactions, The credit transaction trade cycle, A variety of transaction, Pens and things, Electronics Market, Usage of e-Market, Advantages and disadvantages of e-Market, Future of e-Market, EDI, introduction, EDI and Business.

UNIT - IV : Business to Consumer Electronic Commerce: Consumer trade transaction, Internet e-Commerce, eShop, Other e-Commerce technologies, Advantages and disadvantages of consumer e-Commerce. Elements of e-Commerce: elements, e-Visibility, e-Shop, Online payments, Internet e-Commerce security.


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107 Statistical Methods

UNIT- I: Introduction - Definition of Statistics, Importance and scope of Statistics, Limitations of statistics, Distrust of Statistics. Statistical Data Collection - Primary and Secondary data, Methods of Collecting Primary data, Sources and Secondary Data, Census and Sample Investigation. Presentation of statistical Data - Classification, Tabulation, Frequency Distribution, Diagrams and Graphs. Frequency Distributions and

UNIT- II : Measures of Central Tendency - Frequency Distribution, Continuous Frequency Distribution, Graphic Representation of a Frequency Distribution Average or Measures of Central Tendency or Measures of Locations, Requisites for an ideal Measure of Central Tendency Arithmetic: Mean Median, Mode, Geometric Mean and Harmonic Mean, Weighted Average, Relationship amongst different Averages.

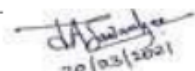
UNIT- III: Measures of Dispersion, Skewness and Kurtosis - Meaning and Significance of Dispersion, Methods of Measuring Dispersion - Range, Quartile, Mean Deviation, Standard Deviation, Coefficient of Skewness, Kurtosis, Coefficient of Dispersion, Coefficient of Variation.

UNIT- IV: Correlation and Regression - Definition of Correlation, . Scatter Diagram, Karl Pearson Coefficient of Correlation, Limits for Correlation Coefficient, Definition of Regression, Lines of Regression, Regression Curves, Regression coefficients, properties of Regression coefficients, Correlation Analysis vs. Regression Analysis.

108 Practical-I Based on Paper I &II

109 Practical-II Practical-II Based on Paper III &IV

110 Practical-III Practical-III Based on Paper V &VI


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Bachelor of Science (B.Sc. (IT)) Semester-IV

111 Software Engineering

Unit I Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths. A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Unit II Process models : The waterfall model, Incremental process models, Evolutionary process models, The Unified process. Software Requirements : Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

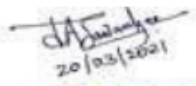
Unit III Requirements engineering process : Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models : Context Models, Behavioral models, Data models, Object models, structured methods.

Unit IV Design Engineering : Design process and Design quality, Design concepts, the design model

112 Java Programming

UNIT - I : Introduction to Java: -History of Java, features of Java, getting started with Java. Java programs:- Introduction of Application & Applets. Variables: -Variable naming, variable initialization, assign values, Rules of variables, Scope of variable. Operators: -Arithmetic, Assignment, Unary, Comparison, Shift, BitWise, Logical, Conditional, New, Special, Relational. Data types:-Integers, Char, String, Float etc. Typecasting: Tokens: -Java tokens Order of precedence of operators Streams: - Input and output.

UNIT - II : Creating a class & subclass: -Declaring a class, Naming class, Rules to assign Class & Subclass, Creating a new object, Class of an object. Data members: -Declaring data member, Naming variables, using class members. Methods: -Using data members, Invoke a method, passing arguments to a method, calling method. Access Specifier & Modifiers: -Public, Private, Protected, Static & Final. Overloading: -Method overloading, Constructor overloading. Java class library: - Different types of classes. Decision making & loops:-If-then-else, Switch,? : operator, While-loop, do-while loop, for. Array: -Creating an array, onedimensional array, two-dimensional array. String: -String array, string methods. Inheritance: -Single & multiple inheritances Interfaces: -Defining interfaces, extending interfaces, implementing interfaces.


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UNIT - III : Packages: -Java API packages, creating packages, accessing packages, adding a class to packages. Import statement: - Introduction & implementation of import statement. Applets:-Introduction to Applets & Application, how applets application are different creating An applet. Applets life cycle, designing a web page, creating an executable applet, running the applet, applet tags, passing a parameter to applet, HTML tag, Converting applet to application. Threads:-Overview of threads, single & multiple threads, life cycle of threads, stopping & blocking threads, working with threads, priority to thread, synchronization. Exceptions & Errors:-Introduction, types of error, exception, syntax of exception, handling techniques, exception for Debugging.

UNIT - IV : Event: -Event driven programming, handling an (AWT) events. Graphic class:- Introduction, the graphic classes, drawing & filling of lines, rectangle, circle & ellipse, arcs, polygons, text & fonts, creating a font class, font objects, text, coloring object. Streams:- Introduction, Abstract stream classes, file input & output. AWT Applications: -Creating a GUI using AWT toolkit, using component class, frames. Components & Control: -Textfield, textarea class, label, button, choice, list, checkbox, class, and combo. Menus: -Creating a popup menus. Image: - Type of image, Properties of an image, Displaying an image. Layouts: -Using Window Listener interface, Different types of Layout, Layout manager, Flow manager, Grid manager. Container: -Different types of container (Frame, Dialog, Panel)

113 Data Communication & Network-II

Unit-I Communication Architecture, Protocols & Architecture: Protocols, The Layers Approach, OSI Model, TCP/IP protocol suite, System Network Architecture. Internetworking: Principles of Internetworking, Bridges, Routers, Repeaters, Gateways, Connection Oriented Internetworking, Connectionless Internetworking, Connectionless Internetwork Protocol, Router-level protocol.

Unit II Transport Protocols- Transport services, Protocol Mechanism, Network services, ISO Transport Standards, TCP, UDP, TCP and UDP Packet format, Lightweight Transport Protocol.

Unit III Session Services & Protocols- Session Characteristics, OSI Session Services, Definition, OSI Session Protocol definition. DNS, FTP, HTTP.

Unit IV Digital Network, ISDN & Broadband ISDN : Overview of ISDN, Architecture and Interfaces of ISDN, Transmission structure, User Access, ISDN protocols, — Broadband ISDN(B-ISDN).

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114 Oracle

Unit I Introduction to Oracle - Relational database management system (RDBMS), Codd's Rules for RDBMS, Oracle as multiuser system, Logging and Logging out of Oracle, Database Administrator (DBA) and its Role, Creation of user and Password. Introduction to Structured Query language (SQL) – History and standardization of SQL, benefits of SQL, elements of SQL, Languages, Database objects, Reserve words, Keywords. Data types – Char, Varchar, Date, Number, Long, Raw and Long raw.

Unit II SQL Command – DDL command, DML command, DRL command, Aggregate function, Clauses, Set operator, Predicates, Join, Sub queries, Views. Simple reports commands. PL/SQL - Introduction to PL/SQL, Advantages of PL/SQL, PL/SQL block structure, Character Set, Literals, PL/SQL data type, Variables, Control and loop statements, Loops and Labels.

Unit III Cursor – PL/SQL Cursor, Explicit Cursors, Implicit Cursors. Exception Management - User defined, predefined exceptions, subprograms and packages - procedures, functions, package specification, body, calling sub programs, advantages of packages, cursors in packages.

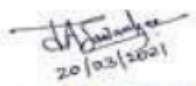
Unit IV Database Triggers & Built in Packages - Database triggers-syntax, parts, statement, body, restriction, types. Built in packages – DBMS standard. DBMS OUTPUT - Collection, member functions and procedures, PL/SQL table and records, declaration, referring, maintaining row count, insertions, deletions, nested tables, varying, arrays, initialization, declaration, varrays, member functions and procedures.

115 Compiler Construction

UNIT - I : Compilers and translators, need, the structure of a compiler, Lexical Analysis, Syntax analysis, Intermediate code Generation, Optimization, Code Generation, Book keeping, Error Handling

UNIT - II : High Level programming languages, Definitions of programming languages, The lexical and syntactic structure of a language, Data elements, structures, Operators, Assignment Statements, Data Environments, Parameter transmission, Storage management.

UNIT - III : The role of the lexical analyzer, Approach to the design of lexical analyzer, Implementation of lexical analyzer, Context free grammars, Derivations and parse trees, Ambiguous grammar.


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UNIT - IV : Parsers, Shift-reduce parsing, Operator precedence parsing, Top-down parsing, predictive parsers, Symbol Table , Code Optimization: The principal source optimization, Loop optimization, The DAG representation of basic blocks, Code Generation : A machine model, a simple code generator, Register Allocation and assignment.

116 Numerical Methods

UNIT - I : Roots of Non-Linear Equations : Algebraic equation, Polynomial equation, Transcendental equation, Iterative method, Starting & Stopping Iterative method, Bisection Method, False Position method, Newton Raphson Method: Secant Method, Determining all possible roots, Multiple roots of polynomial, Complex Roots using Muller's Method.

UNIT - II : Solution to Linear Equations Existence of solution, Gauss Elimination Method, Gauss elimination with pivoting, Gauss Jordan Method, Round off errors and refinement, m Conditioned system, Matrix inversion method.

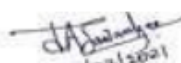
UNIT - III : Linear interpolation, Lagrange Interpolation, Spline Interpolation, Interpolation with equidistant points, Least Square regression Fitting, Transcendental equations, Multiple linear regression, m conditioning in Least square

UNIT - IV : Integration & Differentiation : Trapezoidal Rule, Simpson 1/3 Rule, Simpson 3/8 rule, Gaussian Integration, Solution to differential equation (using Runge-Kutta second and fourth order methods, Multistep method for differential equations (Milne-Simpson method, Adams-bashforth

117 Practical-I Practical-I Based on Paper I &II

118 Practical-II Practical-II Based on Paper III &IV

119 Practical-III Practical-III Based on Paper V &VI

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Bachelor of Science (B.Sc. (IT)) Semester-V

120 Software Project Management

Unit I Managing Software Project: Process & Project Management, Project Management and the CMM, Project Management at Infosys, Introduction to CMMI, PCMM, The Project Planning Infrastructure: The process data base, process capability Baseline, Process Assets and the Body of Knowledge System.

Unit II Process Planning: The Information System Development Process, Requirement Analysis, Requirement Change Management, Effort Estimation & Scheduling: Estimation and Scheduling Concepts, Effort – Estimation, Scheduling.

Unit III Quality Planning: Quality Concepts, Quantitative quality Management Planning, Defect Prevention Planning. Risk Management: Concepts of Risks and Risk Management, Risk Assessment, Risk Control.

Unit IV Measurement and Planning: Concepts in measurement, Measurements, Project tracking. Project Management Plan: Team Management, Customer Communication and Issue Resolution, Structure of the Project Management Plan.

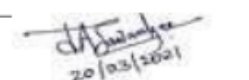
121 Dot Net Framework and C#

Unit-1 The .Net framework: Introduction, The Origin of .Net Technology, Common Language Runtime (CLR), Common Type System (CTS), Common Language Specification (CLS), Microsoft Intermediate Language (MSIL), Just-In –Time Compilation, Framework Base Classes.

Unit-II C -Sharp Language (C#): Introduction, Data Types, Identifiers, Variables, Constants, Literals, Array and Strings, Object and Classes, Inheritance and Polymorphism, Operator Overloading, Interfaces, Delegates and Events. Type conversion.

Unit-III C# Using Libraries: Namespace- System, Input-Output, Multi-Threading, Networking and sockets, Managing Console I/O Operations, Windows Forms, Error Handling.

Unit-IV Advanced Features Using C#: Web Services, Window Services, Asp.net Web Form Controls, ADO.Net. Distributed Application in C#, Unsafe Mode, Graphical Device interface with C#. .Net Assemblies and Attribute: .Net Assemblies features and structure, private and share assemblies, Built-In attribute and custom attribute. Introduction about generic.


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122 Network Security

Unit I Introduction, Security Concepts, Threats and Risks, Attacks – Passive and Active, Security Services, Confidentiality, Authentication, Non-Repudiation, Integrity, Access Control, Availability, Model for Internetwork Security, Internet Standards and RFCs Access Control Mechanisms ,Access Matrix, HRU, TAM, ACL and capabilities

Unit II Access Control Models, Chinese Wall, Clark-Wilson, Bell-LaPadula, Non- Interference and Role Base Model. Cryptography, Secret Key and Public Key Cryptosystems, Symmetric Ciphers, Block Ciphers and Stream Ciphers, DES, IDEA and Key Escrow, RSA and ElGamal.

Unit III Secure Hash and Key management, Digital Signature and Non-repudiation, cryptanalysis. Network Security, Objectives and Architectures, Internet Security Protocols, IP encapsulating Security Protocol, Network and Transport Layer Security.

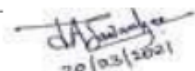
Unit IV Network Security Applications, Authentication Mechanisms: a) Passwords, b) Cryptographic authentication protocol, c) Smart Card, d) Biometrics,e) Digital Signatures and seals, f) Kerberos, g) X.509 LDAP Directory. Web Security : a) SSL Encryption b) TLS, SET, E-mail Security, PGP's / MIME, IP Security, Access and System Security , Intruders, Intrusion Detection and Prevention , Firewall a) Hardware Firewall b) Software Firewall c) Application Firewall d) Packet Filtering. e). Packet Analysis, Proxy Servers, Firewall setting in Proxy, ACL in Proxy

123 Data Warehousing

Unit I Introduction, Definition, Components, Warehousing databases, Users, Advantages, Features, Data Granularity, Information Flow Mechanism, Metadata, Classes of Data, Lifecycle of Data, Data Flow. Architecture of Data Warehouse, characteristics, Goals, Data Marts, Building Data Marts, Pushing and Pulling Data,

Unit II Data Warehousing Schema, Dimensional Modeling, Star Schema, Snowflake Schema, Aggregate Tables, Fact Constellation Schema, Data Modeling, Dimensional Modeling: Dimension Table, Fact Tables, Fatless Fact Tables, Updates to Dimension Tables, other types of dimension table, Performance of Data Warehouse. ETL Process: Data Extraction, Data Transformation, Data Loading, Data Quality

Unit III Data warehousing design Review, Developing data warehouse, Testing, Monitoring, Tuning, Feedback Loops. OLAP in Data warehouse: OLAP, ROLAP, HOLAP, — Multidimensional Analysis, OLAP Functions, OLAP Application's, OLAP Models, OLAP


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Considerations, Tools and Products, Data Design, Administration and Performance, OLAP Platforms

Unit IV Building Data Warehouse: Problem Definition, Success Factors, Requirement Analysis, Planning, Design Stage, Building and Implementation of Data Marts, Building Data Warehousing, Backup and Recovery, quality Frameworks, Operating warehouse, Recipe for Successful Warehouse, Pitfalls, factor,

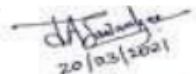
124 VB Programming

UNIT-I : Working with Visual Basic Window Components: Menu Bar, Tool Bar, Project Explorer Window, Form Layout Window, properties Window, Toolbox, Code Editor Window Working with Forms: Properties, Events, Methods Working with Basic Controls: Label, CommandButton, TextBox, OptionButton, Frame, CheckBox, ListBox, ComboBox, Image, Scroll, Picture, Timer, DriveListBox, DirListBox, FileListBox and Shape Controls. Basic Programming Fundamentals: Variables, Data types, Constant, Conversion Function. Scope of Variable: Public, Private Static. Operators: Logical, Arithmetic, Concatenation, Comparison. Decision Structure: If.. Then, If..Then..Else, Select Case.. End Case. Loop Structure: Do..While, While.. Wend, For.. Next, With..EndWith. DoEvents()

UNIT-II : Arrays: Dynamic Array, Preserve and Control arrays. Procedure: General procedure, General Methods for Passing Arguments to a Procedure, Functions: User-Interaction, String, Math, Date, Conversion Functions. Modules: Form, Standard.

UNIT-III : Menus: Creating, Adding Menu Items, Creating Shortcut, Adding Separators Bars, Submenus, Code for Menus. Creating Popup Menu: System, Custom. Database Handling: Database Concepts, Creating and Accessing Database, Using Data Control. Using DAO: Creating Search Programs, Numeric Search and Complex Search Programs.

UNIT-IV : Using ADO Data Control, Data Link, ODBC Data Source name, Using Connection String, Creating Navigating buttons. Working with Advanced Data Controls : DataList Control, DataCombo Control, DataGrid Control and Msflexgrid Control. Handling Errors : Run Time, Trapping and Handling Error, ERR Object. Data Environment and Data Reports.


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125 Graph Theory

Unit 1 : Graphs and operations on graphs Definition and elementary results, Types of graphs, Isomorphism, Matrix representation of graphs: Adjacency matrix and incidence matrix, Subgraphs and induced graphs, Complement of a graph, Self complementary graphs, Union, intersection of graphs, Ring sum of two graphs.

Unit 2 Connected Graphs Definitions: walk, trail, tour, path and circuit, Definitions of connected, disconnected graphs, Dijkstra's shortest path algorithm, Connectivity: cut-vertex, vertex connectivity.

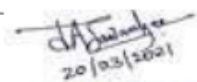
Unit 3 : Tree Graphs Tree : Definition, Theorem : A tree with n vertices has $n - 1$ edges, Theorem : A connected graph G with n vertices and $n - 1$ edges is a tree, Theorem : A graph with n vertices is a tree if and only if it is circuit free and has $n - 1$ edges, Theorem : A graph G is a tree if and only if it is minimally connected, Center of a tree, Spanning tree: Definition and examples, Fundamental circuit and cut – set : Definition, Binary trees and elementary results, Kruskal's algorithm.

Unit 4 : Directed Graphs Definition, types of directed graphs, Directed (rooted) trees, arborescence and Polish notation, Isomorphism of digraphs, Connectedness in digraphs, Euler digraph, Network and flows: Definition, examples, Maximal flow algorithm.

126 Practical-I Practical-I Based on Paper I &II

127 Practical-II Practical-II Based on Paper III &IV

128 Practical-III Practical-III Based on Paper V &VI

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Bachelor of Science (B.Sc. (IT)) Semester-VI

129 Enterprise Resource Planning

Unit I INTRODUCTION Business needs and ERP, ERP as an overview, entries as an overview, Benefits of ERP, ERP and related technologies, ERP architecture, business process reengineering, data warehousing, data mining, on line analytical processing supply choice management.

Unit II ERP: Client server architecture and ERP, ERP implementation life cycle, implementation methodologies, ERP implementation – The hidden cost, organizing implementations, vendors, consultants and users, contracts with vendors, consultants and employees, project management and monitoring. After ERP implementation.

Unit III THE BUSINESS MODULE : Business models in an ERP package, finance, manufacturing human resource, plant maintenance, materials management, quality management sales and distribution.

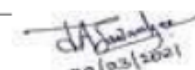
Unit IV Selection of ERP, SWOT analysis of various ERP products supply chain enabled ERP. ERP and Electronic Data Interchange (EDI) integration, ERP in manufacturing and non manufacturing industries.

130 Advance Java Programming

Unit I Core Java: Introduction, Operators, Data types, Variables, Arrays, Control Statements, Methods & Classes, Inheritance, Package and Interface, Applets Java swing: Creating a swing Applet and Application, Programming using Panes, Pluggable Look and feel, Labels, Text fields, Buttons, Toggle Buttons, Checkboxes, Radio Buttons, View Ports, Scroll Panes, Scroll Bars, List, Combo Box, Progress bars, Menus and Toolbars, Layered Panes, Tabbed Panes, Split Panes, Layouts, Windows, Dialog Boxes, Inner frame.

Unit II JDBC: The connectivity Model, JDBC/ODBC Bridge, Java.sql package, connectivity to remote database, navigating through multiple rows retrieved from a database.

Unit III Java Beans: Application Builder tools, The bean developer kit(BDK), JAR files, Introduction, Developing a simple bean, using bound properties, The java Beans API, Session Beans, Entity Beans, Introduction to Enterprise Java Beans(EJB), Introduction to RMI(Remote Method Invocation): A simple client-server application using RMI.


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Unit IV Java Servlets: Servlet basic, Servlet API basic, Life cycle of a Servlet, Running Servlet, Debugging Servlet, Thread-safe Servlet, HTTP Redirects, Cookies, Introduction to Java server pages(JSP).

131 Cloud Computing

Unit I Introduction to Cloud Computing, The Evolution of Cloud Computing, Hardware Evolution, Internet Software Evolution, Server Virtualization, Web Services Deliver from the Cloud, Communication-as-a-Service, Infrastructure-as-a-Service, Monitoring-as-a-Service, Platform-as-a-Service, Software-as-a-Service, Building Cloud Network

Unit II Federation in the Cloud, Presence in the Cloud, Privacy and its Relation to Cloud-Based Information Systems, Security in the Cloud, Common Standards in the Cloud, End-User Access to the Cloud Computing

Unit III Introduction, Advancing towards a Utility Model, Evolving IT infrastructure, Evolving Software Applications, Continuum of Utilities, Standards and Working Groups, Standards Bodies and Working Groups, Service Oriented Architecture, Business Process Execution Language, Interoperability Standards for Data Center Management, Utility Computing Technology, Virtualization, Hyper Threading, Blade Servers, Automated Provisioning, Policy Based Automation, Application Management, Evaluating Utility Management Technology, Virtual Test and development Environment, Data Center Challenges and Solutions, Automating the Data Center

Unit IV Software Utility Application Architecture, Characteristics of an SaaS, Software Utility Applications, Cost Versus Value, Software Application Services Framework, Common Enablers, Conceptual view to Reality, Business Profits, - Implementing Database Systems for Multitenant Architecture

132 Data Mining

Unit I Data Mining: Introduction, Definitions, KDD Vs Data Mining, DBMA Vs Data Mining, Data Mining Problems, Data Models, OLAP, User Perspectives, Issues, Challenges, Trends, Application Areas and Applications Frequent Pattern Mining: Basic Problem Definition, Association Rule, Mining Association Rule, Applications, Variations, Interestingness, Methods of Discovering Association Rule, Priori Algorithm, Frequent Itemset Mining (FIM) Algorithm, Comparison of FIM Algorithm, Optimal FIM Algorithm, Incremental Mining, Conciseness of Results, Sequential Rule


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Unit II Classification, Definition, Applications, Evaluations of Classifiers, Issues, Classification Techniques, Optimal Classification Algorithm, Regression Decision Tree, Tree Construction Principal, Best Split, Splitting Indices, Splitting Criteria, Decision Tree Construction Algorithm

Unit III Clustering, Definition, Applications, Measurement of Simplicity, Evaluation of Clustering Algorithm, Classification of Clustering Algorithm, Partition Method, Hierarchical Method, Density Base Method, Grid Base Method, Outlier Detection,

Unit IV Partition Discovery, Relational Data, Transactional Data, Distributed Data, Spatial Data, Data Stream, Time Series Data, Text and Web Data, Multidimensional Data

133 Animation Techniques

Unit I What is mean by Animation, Why we need Animation, of Animation, Uses of Animation, Types of Animation, Principles of Animation, Some Techniques of Animation, Animation on the WEB, 3D Animation, Special Effects, Creating Animation.

Unit II Creating Animation in Flash: Introduction to Flash Animation, Introduction to Flash, Working with the Timeline and Frame-based Animation, Working with the Timeline and Tween-based Animation, Understanding Layers, Actionscript.

Unit III 3D Animation & its Concepts, Types of 3D Animation, Skeleton & Kinetic 3D Animation – Texturing & Lighting of 3D Animation, 3D Camera Tracking, Applications & Software of 3D Animation.

Unit IV Motion Caption, Formats, Methods, Usages, Expression, Motion Capture software's, Script Animation Usage – Different Language of Script Animation Among the Software. Concept Development, Story Developing, Audio & Video, Color Model, Device Independent Color Model, Gamma and Gamma Correction, Production Budgets, 3D Animated Movies.

134 Operation Research

Unit 1 Overview of operations Research: OR models, OR Techniques Linear Programming : Introduction, Graphical solution; Graphical sensitivity analysis, The standard form of linear programming problems, Basic feasible solutions, unrestricted variables, simplex algorithm , artificial variables, Big M and two phase method, Degeneracy, alternative optima, unbounded solutions, infeasible solutions.

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Unit 2 Dual problems: Relation between primal and dual problems – Dual simplex method
Transportation model: starting solutions. North West corner Rule, lowest cost method, Vogels approximation method – Transportation algorithms – Assignment problem – Hungarian Method.

Unit 3 Network Models: Definitions, CPM and PERT, Their Algorithms Integer Programming :
Branch and Bound Algorithms cutting plan algorithm. Dynamic Programming: Recursive nature of dynamic programming, Forward and Backward Recursion.

Unit 4 Assignment Problem – Zero-One Programming Model for Assignment Problem, Types of Assignment Problem, Hungarian Method, Branch and Bound Technique for Assignment Problem

135 Practical-I Practical-I Based on Paper I &II

136 Practical-II Practical-II Based on Paper III &IV

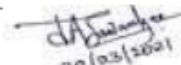
137 Practical-III Practical-III Based on Paper V &VI

Master in Computer Science (M.Sc. (Comp. Science)) Semester-I

138 Discrete Mathematical Structure

Unit-1 : Fundamental – Sets and Subsets, operations on sets, sequence, Division in the integer, Matrices, Mathematics Structures. Logic-Proposition and Logical Operation Conditional Statements, Methods of Proof, Mathematical Induction, Mathematics Logic- Statements and Notation, Connectives ,Normal Forms ,The Theory of Interface for the statement Calculus ,Inference Theory of the Predicate Calculus,

Unit-2 : Counting- Permutation, Combination, The pigeonhole Principle, Recurrence Relations. Relational and Digraphs- Product sets and Partitions, Relations and Digraphs, Paths in Relations and Digraphs Properties of Relations, Equivalence Relations, Computer Representation of Relations and Digraph, Manipulation of Relations, Transitive Closure and Warshall's Algorithms. Functions-Definition and Introduction, Function for Computer Science, Permutation Functions, Growth of Functions.

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Unit-3 : Graph Theory : Basic Concept of Graph Theory, Euler Paths and Circuits, Hamiltonian Paths and Circuits. Other relations and Structure- Partially Ordered Sets, Lattices Finite Boolean-Algebra, Functions of Boolean Algebra's, Boolean function as Boolean Polynomials. Tree-Introduction Unidirected Tree, Minimal Spanning Trees.

Unit-4 : Semigroups and Groups: Binary Operations Revisited, Semigroups, Products and Quotations of Groups. Introduction to computability –Languages Finite –State Machines, Semigroup, Machines and Language.

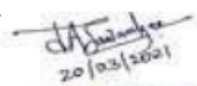
139 Programming in Java

Unit-1 : Java and Internet, Features of java: security, portability, multithreading, etc, Bytecode, Datatypes, variables and Arrays, Operators, Classes : declaring objects, methods, constructor, overloading constructor, garbage collection, finalize() method, static variable and method, final variable, command line argument. Inheritance: super keyword, final with inheritance. Packages and Interfaces. Exception handling : Overview, types, Uncaught exception, try -catch block, multiple catch, nested try, throw, throws, finally, built-in and user- defined exception. Multithreading : Life Cycle, Thread class and Runnable Interface, isAlive(), join(), Priorities, Synchronization : sleep() , run(). Interthread communication : wait(), notify(), notifyAll(), deadlock. String Handling.

Unit-2: Wrapper classes, Applet: Applet Class, Architecture, Life Cycle, Display methods, HTML APPLET Tag, Passing parameter to Applet AWT : working with Windows, Controls, Layout Manager, Menus. Swings. Event handling.

Unit-3: JDBC : Architecture, JDBC-ODBC bridge driver, SQL Package, ResultSet and its methods. Networking : Socket, Reserve socket, Internet Addressing, InetAddress, TCP/IP client socket, TCP/IP server socket, URL, URL Connection, Datagram. RMI : Introduction, Architecture, Remote Interface, java.rmi. server package, class naming, creating Rmi server and client ,transmitting files using rmi, client side callback, RMISecurityManager class, RMI Exception, Stub and Skeleton.

Unit-4: Servlet : Life Cycle, Tomcat, javax. servlet package, reading servlet parameter, javax.servlet.http package, handling http request and response with HTTPGET and HTTPPOST, cookies,session tracking. JSP : Introduction, Types of JSP tags, Application using JSP and Servlet. JavaBeans : Advantages of Beans, JDK, JAR files, Introspection, Developing Beans using JDK

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140 Digital Electronics and Microprocessor

Unit-1 : Number System and Data Representation Number System : Binary, Octal, Decimal and Hexadecimal number system and their inter conversion. Binary Codes : BCD, Excess3 , Parity, Gray, ASCII, EBCDIC codes and their advantages and disadvantages. Data Representation : Positive , negative ,maximum and minimum number representation (related to 8 bit number), real number representation, underflow, overflow , range and accuracy. Binary Arithmetic : Binary addition, decimal subtraction using 9's and 10's compliment, binary subtraction using 1's and 2's compliment, multiplication and division. Logic gates: Truth table, properties and symbolic representation of NOT, AND, OR, NOR , NAND, EXOR, EXNOR gates. NOR and NAND gates as a universal gates .

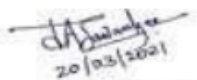
Unit-2 : Boolean Algebra: Laws and Identities of Boolean algebra, DeMorgan's Theorem , use of Boolean Algebra for simplification of logic expression, K-Map for 2,3,4 variables, simplification of SOP and POS logic expression using K-Map. Combinational circuits: Half adder, Full Adder, Parallel adder, Half subtractor, Full Subtractor, 4-bit binary adder subtractor, Multiplexer, Demultiplexer, Decoder, Encoder, Parity detector.

Unit 3 : Sequential Circuits : Flip-Flops : Construction and working of RSFF, JKRSFF, DFF, TFF, JKFF, and JKMSFF . Counters : Construction and working of asynchronous, synchronous, up-down counter, shift registers and their types, Ring counter, Johnson counter with their time diagram.

Unit-4 : Architecture of 8086 and Assembly Language Programming Block diagram of 8086, Pin diagram of 8086, Addressing modes, Instruction set: Data transfer, Arithmetic, Logical, String manipulations, Control Transfer, Unconditional branch, Conditional branch, Flag, Processor control. Assembler directives and operators, simple assembly programs.

141 Advanced DBMS and Administration

Unit-1 : Relational Database design: Functional dependencies, and Normalization Normal forms based on primary keys (1 NF, 2 NF, 3 NF, BCNF, 4 NF, 5 NF) Loss less joins and dependency preserving decomposition Query Processing: Query Processing Stages, Query Interpretation, Equivalence of Expressions, Query Resource Utilization, Query Execution Statistics, Query Execution Plan, Estimation of Query Processing Cost, Table Scan, Sample Index Access, Fill Factor, Multiple Index Access, Methods for Joining Tables (Nested Loop, Merge Join, Hybrid Join, Multiple Join) Structure of a Query Optimizer


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Unit-2 : Transaction Processing & Concurrency Control: Concept and definition of transaction, ACID properties, serializability, Prioritization, states of transaction, Types of failure, desirable properties of transaction schedules and recoverability, serial usability of schedules, levels of transaction consistency, deadlocks, long duration transactions, transaction performance, transaction processing as implemented in contemporary database, management system. Concurrency Control, locking techniques, techniques based on time-stamp ordering, multiple granularity. Crash Recovery: failure classification, recovery concepts, database backup, recovery concepts based on deferred update and on immediate update. Shadow paging, check points, on-line backup during database updates, crash recovery techniques. Client/Server database: Evolution of client concept, Client/Server environment, characterization of Client/Server computing. Functions of clients server , application partitioning, the two-layer and threelayer architectures, communication between clients and servers.

Unit-3 : Oracle Database Architecture and Administration: Oracle database architecture, Design, Creation, Migration and Management of Oracle Databases and related database schemes, Data Dictionary views and standard package Maintaining the control, Redo Log files, Managing Tablespace and Data Files, Storage structure and relationships, Managing rollback segment, Managing tables, Indexes, Managing data Integrity, Managing password security and resources, Managing users, Privileges, roles. Oracle Backup and Recovery Strategies: Backup and recovery considerations, Oracle recovery structure and processes, Oracle backup and recovery configuration, Physical backup, Complete recovery of an Oracle database, Incomplete recovery of an Oracle database with Archiving, Oracle Export / Import utilities, Oracle standby database.

Unit-4 : Oracle Tuning and Troubleshooting: Oracle performance tuning methodology, Oracle alert and trace files, Tuning the shared pool, Buffer Cache, Redo Log buffer, Database configuration and I/O issues, Using Oracle Blocks efficiently, Optimizing sort operations, Rollback segment tuning, Monitoring and detecting lock contention, SQL issues and tuning considerations for different application. Integrity, Security: Need for Database Integrity, Integrity Constraints, Non-Procedural and Procedural Integrity Constraints Specifications in SQL, Introduction to Database Security issues, Authorization and use.

142 Practical 1 based on theory paper-1 and 2

143 Practical 2 based on theory paper-3 and 4

144 Seminar 1

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Master in Computer Science (M.Sc. (Comp. Science)) Semester-II

145 Windows Programming using VC++

Unit-1 : Windows, Visual C++, Application Frameworks Fundamentals and MFC Libraries View Class. Introduction, MFC, ATL and WFC, Windows Programming Model, Components, Application Framework, MFC Library, Event Handling, Mapping Modes and Scrolling Views, Graphic Device Interface, Colors and Fonts, Modal Dialog and Windows Common Control, Modeless Dialog and Windows Common Dialog, ActiveX Controls and Internet Explorer Common Controls, Win32 Memory Management, Bitmaps, Message Processing and Multithreaded Programming.

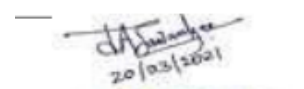
Unit-2 : Document View Architecture : Menus, Keyboard Accelerators, Rich Edit Control and Property Sheets, Tool bar and Status Bars, Reusable Frame Window Base Class, Separating the Documents from its View, Reading and Writing Documents- SDI applications, MDI applications, Printing and Print Preview, Splitter Windows and Multiple Views, Context-Sensitive Help, DLL's, MFC Programs without Documents or View Classes

Unit-3 : Active X: COM, Automation and OLE : Component Object Model, Automation, Uniform Data Transfer- Clipboard Transfer and OLE, Drag and Drop, Structured Storage, OLE Embedded Components and Containers, Introducing the Active Template Library, ATL and ActiveX Controls.

Unit-4 : Database Management: Database Management with Microsoft ODBC, Database Management with Microsoft Data Access Objects, OLE DB Templates. Programming for the Internet: TCP/IP, Winsock, WinInet, Programming the Microsoft Internet Information Server, ActiveX document Servers and the Internet, Introducing the Dynamic HTML, Visual C++ for Windows CE.

146 Theory of Computation and Compiler Construction

Unit-1 : Finite Automation and Regular Expression : Finite State systems, Basic Definitions, Non - deterministic finite Automata, Finite Automata with moves, Regular Expressions, Two way finite automata, Finite automata with output, Application on Finite Automata. Properties of Regular Sets : The pumping lemma for Regular Sets, Close properties of Regular sets, Decision

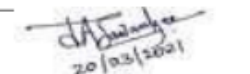

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Algorithms for Regular Sets. Context Free Grammars : Motivation and Introduction, Context Free Grammar, Derivation Tree, Simplification of context Free Grammars, Chomsky Normal form, Greibach normal form, The existence of inherently ambiguous context free languages. Properties of Context free languages : The pumping lemma for CFL's , Closure properties of CFL's, Decision Algorithm for CFL's

Unit-2 : Push Down Automata : Informal description, Definitions, Push – Down Automata & Context free languages. Turing Machine : Introduction, The Turing Machine Model, Computable languages and functions , Techniques Turing Machine construction, Modification of Turing Machines, Church's Hypothesis, Turing Machine as enumerators, Restricted Turing Machine equivalent to the basic model. Undecidability : Problems, properties of recursive and recursively enumerable problem, Turing Machine and undecidable problem, Rice theorem, Tool for proving CFL undecidable, Greibach's Theorem. The Chomsky : Regular Grammars, Unrestricted Grammars, Context – Sensitive languages, Relation between classes of languages.

Unit-3 : Introduction to Compilers : Compilers and translators, need, the structure of a compiler, Lexical Analysis, Syntax analysis, Intermediate code Generation, Optimization, Code Generation, Book keeping, Error Handling, Compiler writing tools. Basic parsing Techniques: Parsers, Shift-reduce parsing, Operator precedence parsing, Top-down parsing, predictive parsers, automatic construction of efficient parsers : LR parsers the canonical collection of LR (O) items, constructing SLR parsing tables, constructing LALR parsing tables, Ambiguous grammar.

Unit-4 : Syntax directed translation : syntax directed translation schemes, implementation, intermediate code, postfix notation, parse tree and syntax trees, tree- address code, quadruple, triple, translation of Symbol Table: Data Structure, Representation of Scope Information, Code Optimization: The principal source optimization, Loop optimization, The DAG Representation of basic blocks, Value number and algebraic laws, Global data-flow analysis. Code Generation : Object Programmers Problems in code generation, A machine model, a simple code generator, Register Allocation and assignment, Code Generation from DAG's Peephole Optimization.


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147 Computer Architecture and Organization

Unit-1 : Principle of computer design : Software, hardware interaction, layers in computer architecture, central processing and machine language instruction, addressing modes, instruction types, instruction set selection, instruction and execution cycle.

Unit-2 : Control Unit : Data path and control path design, microprogramming v/s hardwired control, pipelining in CPU design, RISC v/s CISC, superscalar processors.

Unit-3 : Memory subsystem : Storage technologies, memory array organization, memory hierarchy, interleaving , cache memory and virtual memory including architectural aids to implement these.

Unit-4 : Input/ Output Processing : Bus Interface, Data transfer techniques, I/O interrupts and channels,. Performance evaluation : SPECmarks , Transaction Processing Benchmarks.

148 Computer Graphics

Unit-1 : Introduction of computer Graphics and its applications, Overview of Graphics systems, Video display devices, Raster scan display, Raster scan systems, video controller, Raster scan display processor, Random scan display, random scan systems, color CRT monitor, Flat panel display, Interactive input devices, Logical classification of input devices, Keyboard, mouse, Trackball and spaceball, Joysticks, Image scanner, Light pens, Graphics software, Coordinates representations, Graphics functions.

Unit-2 : Line drawing algorithms, DDA, Bresenham's, Circle generating, Mid-point circle algorithm, Ellipse generating, Polygon , Scan-line polygon fill, Boundary fill.

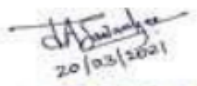
Unit-3 : Basic transformation's, Translation, Rotation, Scaling, Matrix representation's & homogeneous coordinates, Composite transformation's, Reflection, Two dimensional viewing, Two dimensional clipping, Line, Polygon, Curve, Text. 3D-transformation, Projection, Viewing, Clipping. Spline representation, Cubic spline, Bezier curve, Bezier surfaces, Beta spline, B-spline surfaces, Bspline curve, Hidden surfaces, Hidden lines, Z-buffer.

Unit-4 : Fractal's geometry Fractal generation procedure, Classification of Fractal, Fractal dimension, Fractal construction methods. Color models, XYZ, RGB, YIQ, CMY & HSV, Shading algorithms, Shading model, Illumination model, Gouraud shading, Phong shading.

149 Practical 3 based on theory paper-5 and 6

150 Practical 4 based on theory

151 Seminar 2


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Master in Computer Science (M.Sc. (Comp. Science)) Semester-III

152 Data Communication and Network

Unit-1 : Introduction: Network structure and architectures and services OSI reference model. The Physical Layer: theoretical basis for data communication, transmission media. Analog Transmission, Digital Transmission, Transmission and Switching, ISDN. The Data Link Layer: Design issues, Error detection and correction, Elementary data link protocols, sliding window protocol, protocols performance, protocols specification and verification. Examples of the Data link layer. Network Layer: Design issues, routing algorithms, Congestion control algorithms, Internet working, Examples of the network layer.

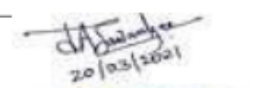
Unit-2 : The Transport Layer: Design issues, Connection Management. The session layer: Design issues and remote procedure call. The Presentation Layer: Design issues, data compression techniques, cryptography. The Application Layer: Design issues, file transfer, access and management, virtual terminals.

Unit-3 : Network Security Fundamentals: Introduction, security Vulnerabilities and Threats, Classification of Security Services. Cryptography: Encryption principles, Conventional Encryption DES, IDEA, Algorithms, CBC, Location of Encryption Devices key Distribution.

Unit-4 : Message Digests and Checksums, Message Authentication, Message Digests, Hash Functions and SHA, CRCs. Public key Systems: RSA Diffie-Hellman, DSS, Key Management. Intruders: Intrusion Techniques, Intrusion Detection, Authentication, Password- Based Authentication, Address- Based Authentication, Certificates, Authentication Services, Email Security, Firewalls, Design Principles, Packet Filtering, Access Control, Trusted Systems, Monitoring and Management.

153 Software Engineering

Unit-1 : Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths. A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models. Process models : The waterfall model, Incremental process models, Evolutionary process models, The Unified process. Software Requirements : Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.


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Unit-2 : Requirements engineering process : Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models : Context Models, Behavioral models, Data models, Object models, structured methods. Modeling with UML . Design Engineering : Design process and Design quality, Design concepts, the design model. Creating an architectural design : Software architecture, Data design, Architectural styles and patterns, Architectural Design.

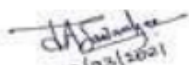
Unit-3 : Object-Oriented Design : Objects and object classes, An Object-Oriented design process, Design evolution. Performing User interface design : Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation. Testing Strategies : A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics : Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Unit-4 : Metrics for Process and Products : Software Measurement, Metrics for software quality. Risk management : Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan. Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

154 Neural Network

Unit-1 : Introduction: Feedforward Neural Networks: Artificial Neurons, Neural Networks and Architectures: Neuron Abstraction, Neuron Signal Functions, Mathematical Preliminaries, Neural Networks Defined, Architectures: Feed forward and Feedback, Salient Properties and Application Domains of Neural Network Geometry of Binary Threshold Neurons and Their Network: Patterns Recognition and Data Classification, Convex Sets, Convex Hulls and Linear Separability, Space of Boolean Functions, Binary Neurons are pattern Dichotomizes, Non-linearly separable Problems, Capacity of a simple Threshold Logic Neuron, Revisiting the XOR Problem, Multilayer Networks.

Unit-2 : Supervised Learning I: Perceptrons and LMS: Learning and Memory, From Synapses to Behaviour: The Case of Aplysia, Learning Algorithms, Error Correction and Gradient Descent Rules, The Learning Objective for TLNs, Pattern space and Weight Space, Perceptron Learning

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Algorithm, Perceptron Convergence Theorem, Perceptron learning and Non-separable Sets, Handling Linearly Non-Separable sets, α -Least Mean Square Learning, MSE Error Surface and its Geometry, Steepest Descent Search with Exact Gradient Information, λ -LMS: Approximate Gradient Descent, Application of LMS to Noise Cancellation

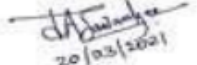
Unit-3 : Supervised Learning II: Backpropagation and Beyond: Multilayered Network Architectures, Backpropagation Learning Algorithm, Structure Growing Algorithms, Fast Relatives of Backpropagation, Universal Function Approximation and Neural Networks, Applications of Feedforward Neural Networks, Reinforcement Learning

Unit-4 : Neural Networks: A Statistical Pattern Recognition Perspective: Introduction, Bayes Theorem, Classification Decisions With Bayes Theorem, Probabilistic Interpretation Of A Neuron Discriminant Function, Interpreting Neuron Signals As Probabilities, Multilayered Networks, Error Functions And Posterior Probabilities, Error Functions For Classification Problems Generalization: Support Vector Machines and Radial Basis Function Networks: Learning from Examples and Generalization, Statistical Learning Theory Briefer, Support Vector Machines, Radial Basis Function Networks, Regularization Theory Route to RRBFNs, Generalized Radial Basis Function Network, Learning In RRBFNs, Image Classification Application, Other Models for Valid Generalization

155 ASP.Net

Unit-1 : ASP.NET programming model: Introduction, event driven programming over http, http protocol, structure of ASP.NET page, ASP.NET component model, ASP.NET Provider model, Anatomy of ASP.Net Page: Invoking page, Page class, Page Life cycle. ASP.NET Core Server controls: Generalities of Server Controls, Properties, events and methods of Control class, HTML controls: Generalities of HTML controls, HTML Containers, HTML input controls.

Unit-2 : Web controls: Generalities of Web Control, core web control, misc web control, Validation controls: Generalities of validation controls, Gallery of controls, Programming with Web forms; HtmlFrom Class, Multiple forms, cross page postings, Page errors, Page Personalization. Ritch Page Composition: Working with master page, working with themes, working with wizards, ADO.NET data Providers, Connecting to data sources: connection strings, connection pooling, Executing commands: ADO Data Readers, Data Adapters, working with transactions, procedures etc. Data container objects: Data sets, Data tables, Data Relations, Data binding models: expressions and components.


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Unit-3 : Creating bindable grid of data: DataGrid Control, GridView control, Managing list of records: ListView control and Managing views of records: DetailView Control, FromView Control, Initialization of Application: HttpApplicationClass, Application module, methods and events of HttpApplication Class, The global.asax file, HttpContext Class, Server Object, HttpResponse Object, HttpRequest Object.

Unit-4 : ASP.NET state management: Application state, Session State: working with session state, customizing session state, view state of page. ASP.NET caching: Caching Application data, the Cache Class, ASP.NET Security: Using Form authentication, membership and role management API, Security related controls, AJAX Enabled web services: Web services as application specific services, remote call via web services,

156 Practical I based on theory paper-1 and 2

157 Practical II based on paper 3 and paper4

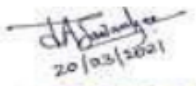
158 Seminar 3

Master in Computer Science (M.Sc. (Comp. Science)) Semester-IV

159 Data Mining

Unit-1 : Introduction to Data Mining: Why Mine Data? Commercial Viewpoint, Scientific Viewpoint Motivation, Definitions, Origins of Data Mining, Data Mining Tasks, Classification, Clustering, Association Rule Discovery, Sequential Pattern Discovery, Regression, Challenges of Data Mining, Data Mining-Data: What is Data? Attribute Values, Measurement of Length, Types and Properties of Attributes, Discrete and Continuous Attributes, Types of data sets, Data Quality, Data Preprocessing, Aggregation, Sampling, Dimensionality Reduction, Feature subset selection, Feature creation, Discretization and Binarization, Attribute Transformation, Density.

Unit-2 : Data Mining: Exploring Data: Data Exploration Techniques, Summary Statistics, Frequency and Mode, Percentiles, Measures of Location: Mean and Median, Measures of Spread: Range and Variance, Visualization, Representation, Arrangement, Selection, Visualization Techniques: Histograms, , Box Plots, Scatter Plots, Contour Plots, Matrix Plots, Parallel Coordinates, Other Visualization Techniques, OLAP : OLAP Operations, Data Mining Classification: Basic Concepts, Decision Trees, and Model Evaluation: Classification: Definition, Classification Techniques, Tree Induction, Measures of Node Impurity, Practical Issues of Classification, ROC curve, Confidence Interval for Accuracy, Comparing — Performance of Two Models, Comparing Performance of Two Algorithms.


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Unit-3 : Data Mining Classification: Alternative Techniques: Rule-Based Classifier, Rule Ordering Schemes, Building Classification Rules, Instance-Based Classifiers, Nearest Neighbor Classifiers, Bayes Classifier, Naive Bayes Classifier, Artificial Neural Networks (ANN), Support Vector Machines. Data Mining Association Analysis: Basic Concepts and Algorithms: Association Rule Mining, Frequent Itemset Generation, Association Rule Discovery : Hash tree, Factors Affecting Complexity, Maximal Frequent Horrible Closed Itemset, Alternative Methods for Frequent Itemset Generation, FPGrowth Algorithm, Tree Projection, Rule Generation, Pattern Evaluation, Statistical Independence, Properties of A Good Measure, Support-based Pruning, Subjective Interestingness Measure.

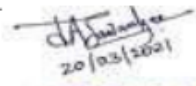
Unit-4 : Data Mining Cluster Analysis: Basic Concepts and Algorithms: Applications of Cluster Analysis, Types of Clusters, Clustering Algorithms: 'K-means and its variants, Hierarchical clustering, Density based clustering. Graph-Based Clustering, Limitations of Current Merging Schemes, Characteristics of Spatial Data Sets, Shared Near Neighbor Approach, ROCK (RObust Clustering using linKs), Jarvis Patrick Clustering, SNN Clustering Algorithm, Data Mining Anomaly Detection: Anomaly jOutlier Detection, Importance, Anomaly Detection Schemes, Density-based: LOF approach

160 Artificial Intelligence & Expert System

Unit-1 : AI problems, AI Techniques, Tic-tac-toe, Question Answering, Problem as a state space search, A water jug problem, production system, Control strategies, Heuristic Search, Problem Characteristics, Production system characteristics, Design of search programs AI Search techniques :- Depth-first, Breadth-first search, Generate-and-test, Hill climbing, Best-first search, Constraint satisfaction, Mean-ends-analysis, A* Algorithm, AO* algorithm.

Unit-2 : Knowledge Representation:- Representations and mappings, Knowledge Representations, Issues in Knowledge Representation, Predicate Logic:- Representing Instance and Isa Relationships, Computable Functions and predicates, Resolution, Natural Deduction, Logic programming, Forward versus Backward Reasoning, Matching, Control knowledge, Expert System.

Unit-3 : Games playing : Minimax search procedure , adding alpha-beta cutoffs, additional refinements, Planning :- Component of a planning system, Goal task planning, Nonlinear planning, Hierarchical Planning.


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Unit-4 : Understanding, Understanding as Constraint satisfaction, Natural Language Processing, Syntactic Processing, Unification grammars, Semantic Analysis, Introduction to pattern recognition, Parallel and Distributed AI, Psychological Modeling, Distributed Reasoning Systems,

161 Design and Analysis of Algorithm

Unit-1 : Elementary Algorithmics: Introduction- Problems and Instances- The Efficiency of algorithms- Average and worst case Analysis. Asymptotic Notation: A notation for the order of – Other asymptotic notation Conditional asymptotic notation- Asymptotic notation with several parameters- Operations on asymptotic notation. Analysis of Algorithms: Introduction- Analyzing control structures- Average case analysis- Amortized Analysis- Solving recurrences.

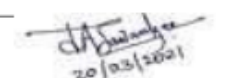
Unit-2 : Greedy Algorithms: Making change- General Characteristics of Greedy algorithms- Minimum spanning trees and shortest paths- Knapsack Problems- Scheduling. Divide and Conquer: Introduction- Multiplying large numbers- The general template- binary search sorting- Finding the median- Matrix multiplication- Introduction to cryptography.

Unit-3 : Dynamic Programming: The Principle of Optimality- making change the knapsack problem- shortest paths- Chained matrix multiplication- approaches using recursion- Memory functions.

Unit-4 : Back tracking & Branch Bound: Traversing trees- Depth first search of directed and undirected graph Breadth first search- Back tracking- Branch and bound- The minimax principle, Introduction to NP Completeness; Classes P and NP- Polynomial reductions- NP- Complete Problems NP- Hard problems Non- Deterministic algorithms.

162 Embedded System

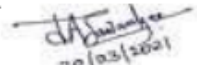
Unit-1 : Introduction to Embedded Systems: Embedded Systems, Processor Embedded into a System, Embedded Hardware Units and Devices in a System, Embedded Software in a System, Examples of Embedded Systems, Embedded System-on-chip (Soc) and Use of VLSI Circuit Design Technology, Complex Systems Design and Processors, Design Process in Embedded System, Formalization of System Design, Design Process and Design Examples, Classification of Embedded Systems, Skills Required for an Embedded System Designer 8051 and Advanced Processor Architectures, Memory Organization and Realworld Interfacing: 8051 architecture,


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Real World Interfacing, Introduction to Advanced Architectures, Processor and Memory Organization, Instruction-Level Parallelism, Performance Metrics, Memory-Types, Memory-Maps and Addresses, Processor Selection, Memory Selection, Devices and Communication Buses for Devices Network :Types and Examples, Serial Communication Devices, Parallel Device Ports, Sophisticated Interfacing Features in Device Ports, Wireless Devices, Timer and Counting Devices, Watchdog Timer, Real Time Clock, Networked Embedded Systems, Serial Bus Communication Protocols, Parallel Bus Device Protocols-Parallel Communication Network Using ISA, PCI, PCI-X and Advanced Buses, Internet Enabled Systems-Network Protocols, Wireless and Mobile System Protocols

Unit-2 : Device Drivers and Interrupts Service Mechanism: Programmed-I/O Busy-wait Approach without Interrupt Service Mechanism, ISR Concept, Interrupt Sources, Interrupt Servicing (Handling) Mechanism, Multiple Interrupts, Context and the Periods for Context Switching, Interrupt Latency and Deadline, Classification of Processors Interrupt Service Mechanism from Context-Saving Angle, Direct Memory Access, Device Driver Programming, Programming Concepts and Embedded Programming in C, C++ and Java: Software Programming in Assembly Language (ALP) and in High-Level Language 'C' 235 , C Program Elements: Header and Source Files and Preprocessor Directives, Program Elements: Macros and Functions, Program Elements: Data Types, Data Structures, Modifiers, Statements, Loops and Pointers, Object-Oriented Programming, Embedded Programming in C++, Embedded Programming in Java, Program Modeling Concepts: Program Models, DFG Models, State Machine Programming Models for Event-controlled Program Flow, Modeling of Multiprocessor Systems, UML Modelling

Unit-3 : Interprocess Communication and Synchronization of Processes, Threads and Tasks: Multiple Processes in an Application, Multiple Threads in an Application, Tasks, Task States, Task and Data, Clearcut Distinction between Functions, ISRS and Tasks by their Characteristics, Concept of Semaphores, Shared Data, Interprocess Communication, Signal Function, Semaphore Functions, Message Queue Functions, Mailbox Functions, Pipe Functions, Socket Functions, RPC Functions, Real Time Operating Systems : OS Services, Process Management, Timer Functions, Event Functions, 28 Memory Management, Device, File and 10 Subsystems Management, Interrupt Routines in RTOS Environment and Handling of Interrupt Source Calls, Real-time Operating Systems, Basic Design Using an RTOS, Rtos Task Scheduling Models, Interrupt Latency and Response of the Tasks as Performance Metrics, OS Security Issues,

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Unit-4 : Real time Operating System ProgrammingI: MicrodOS-II and VxWorks, Basic Functions and Types of RTOSes, RTOS mCOS-II, RTOS VxWorks, Realtime Operating System ProgrammingII: Windows CE, OSEK and Real-time Linux Functions, Windows CE, OSEK, Linux 2.6.x and RTLinux, Design Examples and Case Studies of Program Modeling and Programming with RTOS I: Case Study of Embedded System Design and Coding for an Automatic, Chocolate Vending Machine (ACYM) Using Mucos RTOS, Case Study of Digital Camera Hardware and Software Architecture, Case Study of Coding for Sending Application Layer Byte Streams on a TCP/IP Network Using RTOS Vxworks Design Examples and Case Studies of Program Modeling and Programming with RTOS 2: Case Study of Communication Between Orchestra Robots, Embedded Systems in Automobile, Case Study of an Embedded System for an Adaptive Cruise Control (ACC) System in a Car, Case Study of an Embedded System for a Smart Card, Case Study of a Mobile Phone Software for Key Inputs, Embedded Software Development Process and Tools: Introduction to Embedded Software Development Process and Tools, Host and Target Machines, Linking and Locating Software, Getting Embedded Software into the Target System, Issues in Hardware-Software Design and Co-design, Testing, Simulation and Debugging Techniques and Tools: Testing on Host Machine: Simulators, Laboratory Tools

163 Practical based on theory paper-1 to 4

164 Project

165 Seminar

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