BHARATHIAR UNIVERSITY: COIMBATORE-641 046

B.Sc. CS/IT/CT/SS/MMWT/CSA &BCA

(For the students admitted from the academic year **2018-2019** and onwards)

SCHEME OF EXAMINATION - CBCS PATTERN

Part	Study components	Course Title	Ins. Hrs/week	Examinations				Credit
				Dur. Hrs.	CIA	Ext.Marks	Total Marks	
	Semester I							
I	Language – I		6	3	25	75	100	4
II	English – I		6	3	25	75	100	4
III	Core 1: Computing Fundamentals and C Programming		4	3	25	75	100	4
III	Core 2: Digital Fundamentals and Computer Architecture		4	3	25	75	100	4
III	Core Lab 1: Programming Lab – C		3	3	40	60	100	4
III	Allied 1: &&		5	3	25	75	100	4
IV	Environmental Studies #		2	3	-	50	50	2
	Semester II							
I	Language – II		6	3	25	75	100	4
II	English – II		6	3	25	75	100	4
III	Core 3: C++ Programming		5	3	25	75	100	4
III	Core Lab 2: Programming Lab – C++		4	3	40	60	100	4
III	Core Lab 3: Internet Basics		2	3	20	30	50	2
III	Allied 2: &&		5	3	25	75	100	4
IV	Value Education – Human Rights #		2	3	-	50	50	2
	Semester III							
III	Core 4: Data Structures		6	3	25	75	100	4
III	Core 5: Java Programming		6	3	25	75	100	4
III	Core Lab 4: Programming Lab – Java		5	3	40	60	100	4
III	Allied 3: &&		6	3	25	75	100	4
IV	Skill based Subject 1 - &&		5	3	20	55	75	3
IV	Tamil @/ Advanced Tamil (OR) Non-major elective-1 (Yoga for Human Excellence)# / Women's Rights#		2	3	-	50	50	2
	Semester IV							
III	Core 6: System Software and Operating System		6	3	25	75	100	4
III	Core 7: Linux and Shell Programming		6	3	25	75	100	4
III	Core Lab 5: Linux and Shell Programming Lab		6	3	40	60	100	4

III	Allied 4: &&	6	3	25	75	100	4
IV	Skill based subject 2 (lab) &&	4	3	30	45	75	3
IV	Tamil @/ Advanced Tamil (OR) Non-major elective-II (General Awareness) #	2	3	-	50	50	2
	Semester V						
III	Core 8: RDBMS & Oracle	6	3	25	75	100	4
III	Core 9: Visual Basic	6	3	25	75	100	4
III	Core Lab 6: Programming Lab – VB & Oracle	6	3	40	60	100	4
III	Elective 1 &&	6	3	25	75	100	4
IV	Skill based Subject 3: &&	6	3	20	55	75	3
	Semester VI						
III	Core 10: Graphics & Multimedia	5	3	25	75	100	4
III	Core 11: Project Work Lab %%	5	3	-	200	200	8
III	Core Lab 7: Programming Lab – Graphics & Multimedia	6	3	40	60	100	4
III	Elective II &&	5	3	25	75	100	4
III	Elective III &&	5	3	25	75	100	4
IV	Skill based Subject 4 (lab) &&	4	3	30	45	75	3
V	Extension Activities	-	-	50	-	50	2
	Total					3500	140

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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%% **see Guidelines for Project Work.**

Note:

SKILL BASED SUBJECT- 4 SOFTWARE TESTING LAB for B.Sc. Computer Science degree course- papers for the candidates admitted during the academic year 2017-18 is also applicable to the students admitted in the academic year 2016-17.

The changes in Allied subjects are furnished below be followed and there is no change in the syllabi of remaining papers

BHARATHIAR UNIVERSITY: COIMBATORE-641 046
B.Sc. CS/IT/CT/SS/MM/CSA &BCA
(For the students admitted from the academic year **2018-2019** and onwards)
SCHEME OF EXAMINATION - CBCS PATTERN
List of Allied, Elective and Skill Based Subjects

Course / Subject	**B.Sc. COMPUTER SCIENCE**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques
Allied-4	Business Accounting
Elective- I	E-Learning / Computer Networks / Organizational Behavior
Elective- II	Network Security and Cryptography/ Artificial Intelligence and Expert Systems / Web Technology
Elective- III	Data Mining/ Open source software/Mastering LAN & Trouble Shooting
Skill-1	Software Engineering and Software Project Management
Skill-2 (lab)	Software Project Management- Lab
Skill-3	Software Testing
Skill-4 (lab)	Software Testing Lab

Course / Subject	**B.Sc. INFORMATION TECHNOLOGY**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Microprocessor & ALP
Allied-4	**Mastering LAN and Trouble Shooting**

Elective- I	Soft Computing / Animation Techniques / Business Intelligence
Elective- II	Network Security and Administration/ Mobile Computing / Internet Programming
Elective- III	E-Learning / Component Technology / E-Commerce
Skill-1	Introduction to web design & Applications
Skill-2 (lab)	HTML, XML and JavaScript Lab
Skill-3	Dot Net Programming
Skill-4 (lab)	Dot Net Lab

Course / Subject	**B.Sc. COMPUTER TECHNOLOGY**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	**E-Commerece**
Allied-4	**Business Accounting**
Elective- I	Mobile Computing / Distributed Computing / Digital Image processing
Elective- II	Middleware Technologies / Animation Techniques / Computer Installation & Servicing
Elective- III	Data Mining / Embedded Systems / Computer aided Design and Manufacturing
Skill-1	Data Communication & Networks
Skill-2 (lab)	Network Lab
Skill-3	Network Security & Management
Skill-4 (lab)	Network Security Lab

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Course / Subject	**B.Sc. SOFTWAE SYSTEMS**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	**Computer Based Optimization Techniques**
Allied-4	**Business Accounting**
Elective- I	E-Commerce / Design and analysis of Algorithms / Web Technology
Elective- II	Computer Networks / Software Quality Assurance / Management Information Systems
Elective- III	Wireless Mobile Communications / Component Technologies / Mastering LAN & Troubleshooting
Skill-1	WAP & XML
Skill-2 (lab)	XML Lab
Skill-3	ASP .NET
Skill-4 (lab)	ASP .NET Lab

Course / Subject	**B.Sc. MULTIMEDIA & WEB TECHNOLOGY**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	**Microprocessor & ALP**
Allied-4	**Mastering LAN & Trouble Shooting**
Elective- I	Web Technology / Software Engineering / CASE Tools Concepts and applications
Elective- II	Flash / Distributed Computing / Multimedia Systems
Elective- III	3DS MAX Animation / Software Project Management / Organizational Behaviour

Skill-1	Introduction to PHP Programming
Skill-2 (lab)	PHP Programming Lab
Skill-3	Animation Techniques
Skill-4 (lab)	Animation Lab - Flash

Course / Subject	**B.Sc. COMPUTER SCIENCE & APPLICATIONS**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Management Information Systems
Allied-4	Organizational Behaviour
Elective- I	Client/Server Computing / E-Commerce / Software Engineering
Elective- II	Network Security & Cryptography / Distributed Computing / Computer Networks
Elective- III	Mobile Computing / Web Technology / Software Testing
Skill-1	Internet Programming
Skill-2 (lab)	PHP Programming Lab
Skill-3	Web designing with ASP and ASP .NET
Skill-4 (lab)	ASP Lab

Course / Subject	**BCA**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques
Allied-4	Business Accounting
Elective- I	Introduction to Compiler Design / PHP & Scripting Language / Digital Image Processing
Elective- II	Computer Networks / Dot Net programming / Distributed Computing
Elective- III	E-Commerce / Web Services / Software Testing
Skill-1	Web Programming
Skill-2 (lab)	Web Programming Lab
Skill-3	CASE Tools Concepts and Applications
Skill-4 (lab)	CASE Tools Lab

ALLIED SUBJECTS

MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE

Subject Description: This subject deals with mathematical concepts like Matrices, Numerical analysis and Statistical methods for computer science and applications.

Goal: To learn about the mathematical structures for computer based applications

Objective: On successful completion of this subject the students should have

- Understood the concepts of mathematics
- Learnt applications of statistical and numerical methods for Computer Science.

UNIT I: Matrices – Introduction – Determination – Inverse of a matrix – Rank of a Matrix – Eigen value Problems

UNIT II: System of Simultaneous Linear algebraic Equation – Gauss elimination, Gauss Jordon, Gauss Seidal methods.

UNIT III: Numerical Differentiations – Newton‘s forward Difference - Backward Difference – Starling formula Numerical Integration – Trapezoidal Rule & Simpson‘s rule.

UNIT IV: Measures of central tendency – Mean Median and Mode – Relationship among mean media and mode. Measures of dispersion – Range, quartile deviation and Standard deviation.

UNIT V: Regression and Correlation – Types of relationship – Linear regression – Correlation – Coefficient of correlation – Regression equation of variables.

TEXT BOOKS:

1. Engineering Mathematics, Volume II, Dr M.K. Venkataraman, National Publishing Company, Chennai. (Unit I)
2. Numerical Methods in Science & Engineering, M.K. Venkataraman, National Publishing Company, Chennai, Revised Edition -2005 (Unit II & III)
3. Business Statistics, S.P. Gupta & M.P. Gupta, Sultan Chand and Sons (Unit IV & V)

REFERENCE BOOKS:

1. Numerical Methods, E. Balagurusamy, Tata McGraw Hill.
2. Fundamental of Mathematical Statistics, S. C. Gupta, V. K. Kapoor, Sultan Chand & Sons

DISCRETE MATHEMATICS

Subject Description: This subject deals with discrete structures like set theory, mathematical logic, relations, languages, graphs and trees.

Goal: To learn about the discrete structures for computer based applications.

Objective: On successful completion of this subject the students should have: - Understanding the concepts of discrete mathematics - Learning applications of discrete structures in Computer Science.

UNIT I: Set theory-Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler Diagrams- Set operations & Laws of set theory-Fundamental products-partitions of sets-minsets- Algebra of sets and Duality-Inclusion and Exclusion principle

UNIT II: Mathematical logic – Introduction- prepositional calculus –Basic logical operations- Tautologies-Contradiction-Argument-Method o f proof- Predicate calculus.

UNIT III: Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.

UNIT IV: Languages – Operations on languages – Regular Expressions and regular languages – Grammar – Types of grammars – Finite state machine – Finite – State automata

UNIT V: Graph Theory – Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees – Properties of trees – Binary trees – traversing Binary trees – Computer Representation of general trees.

TEXT BOOKS:

1. Discrete Mathematics, J.K. Sharma, 2nd edition, 2005, Macmillan India Ltd. (UNIT I TO V)

REFERENCE BOOKS:

1. Discrete Mathematics Structures with Applications to Computer Science, J. P. Tremblay, R Manohar, McGraw Hill International Edition
2. Discrete Mathematics, M. K. Venkataraman, N.Sridharan, N.Chandarasekaran, National Publishing Company, Chennai

COMPUTER BASED OPTIMIZATION TECHNIQUES

Subject Description: This subject deals various optimization techniques for linear programming, Transportation, Assignment Problems, Game theory, PERT and CPM.

Goal: To learn about the managerial concepts like decision making, optimization, etc.

Objective: On successful completion of this subject the students should have:

- Understanding various mathematical applications in industries.
- Decision making for real time environment.

UNIT I: Linear Programming - Mathematical Model assumption of linear Programming – Graphical method - Principles of Simplex method, Big-M Method, Duality, Dual simplex method.

UNIT II: Transportation and Assignment problem - Integer Programming Branch and Round Techniques - Assignment and Traveling Salesman Problem.

UNIT III: Game Theory - Concept of Pure and Mixed Strategies – Solving 2 x 2 matrix with and without saddle point - n x 2 - 2 x m games. Replacement models - Elementary replacement models - present value - rate of return - depreciation - Individual replacement – Group replacement.

UNIT IV: ***(Derivations not included)*** Queuing Theory - definition of waiting line model - Queue discipline - traffic intensity - poison arrival – Birth death process - Problem from

single server: finite and infinite population model – Problems from multi server: finite and infinite population model.

UNIT V: PERT & CPM - Network representation - backward pass - Forward pass - computation - Pert Network - Probability factor – updating and Crashing.

TEXT BOOK:

1. Operations Research, Manmohan, P.K. Gupta, Kanthiswarup, S. Chand & Sons - 1997.

REFERENCE BOOKS:

1. Operations Research, Hamdy A Taha, Pearson Education, 7th edition, 2002
2. Problems in Operations Research, P.K. Gupta, D.S. Hira, S. Chand Publishers.

BUSINESS ACCOUNTING

UNIT I: Introduction-Accounting Principles-Branches of accounting-accounting rules-Journalising-Ledger-Subsidiary Book including cash books-Trial Balance.

UNIT II: Preparation of Final Accounts: Trading, Profit and Loss Account and Balance sheet with simple adjustments-Outstanding Expenses and Income, Prepaid Expenses, Pre received Income, Depreciation –Provision for bad debts.

UNIT III: Cost Account-Meaning elements of cost-Preparation of cost sheet with simple adjustments.

UNIT IV: Material cost: Stores Ledger-FIFO-LIFO-weighted average, simple average method. Management Account-Meaning –Objectives- Management account with financial Account.

UNIT V: Budget and Budgetary control-Preparation of various budgets-Flexible Budget-Production Budget-Cash Budget – Sales Budget.

Note: **Distribution of Marks between Problems and Theory shall be 60% and 40%.**

TEXT BOOK:

1. Accounting for Management, N.P.Srinivasan and M.Sakthivel Murugan, S.Chand & Company Ltd., New Delhi.

REFERENCE BOOKS:

1. Double entry book Keeping, T.S Grewal, Sultan Chand & Sons, New Delhi.
2. Management Accounting, Sharma and Gupta, Kalyani Publishers, New Delhi.

MICROPROCESSOR AND ALP

UNIT I: Introduction to microprocessors : Evolution of microprocessors – Single-chip Microcomputer – Embedded Microprocessors – Bit- Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086

UNIT II: 8086 Instruction Set – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions Assembly Language Programs for 8086: Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending order – Block Move or Relocation – Block Move using REP instruction – Sum of a series – Multibyte Addition

UNIT III: Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Managament Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration

UNIT IV: Input devices – Output devices – Memory and I/O addressing – 8086 Addressing and Address Decoding – Programmable I/O Ports – DMA Data Transfer. Other Microprocessors – PowerPC Microprocessors – Pentium Microprocessors – Pentium Pro

microprocessor – Alpha Microprocessor – Cyrix Microprocessor – MIPS Microprocessor – AMD Microprocessor

UNIT V: MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040 Interfacing of A/D Converter and Applications: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities

TEXT BOOK:

1. Badri Ram, Advanced Microprocessors and Interfacing, Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint, 2007

REFERENCE BOOK:

1. A.K. Ray, K.M. Bhurchandi, Advanced Microprocessors and Peripherals, Tata McGraw-Hill Publishing Company Limited, Second Edition, 2007

E-COMMERCE

Subject Description: This Subject deals with the E-Commerce

Goal: To learn about E-Commerce

Objective: On successful completion of this subject the students should have thorough understanding of: E-Commerce , E-Market , EDI , Business Strategies etc.

UNIT I: Introduction to E-Commerce: The Scope of E-Commerce – Definition-E-Commerce & the Trade Cycle – Electronic Market – Electronic Data Interchange – The Internet Commerce – The E-Commerce in Perspective. Business Strategy: The Value Chain – Supply Chains – Porter's Value Chain Model – The Inter Organizational Value Chain.

UNIT II: The Introduction to Business Strategy – Strategic Implications of IT – Technology – Business Environment – Business Capability – Existing Business Strategy – Strategy Formulation & Implementation Planning – e-Commerce Implementation -Commerce Evaluation. The Inter Organizational Transactions – The Credit Transaction Trade Cycle. A Variety of Transactions – Pens & Things.

UNIT III: E-Markets: Markets – E-Markets-Usage of E-Markets-Advantages & Disadvantages of E-Markets. EDI: Introduction – Definition - Benefits of EDI – EDI Standards – EDI Communication EDI Implementation – EDI Agreement – EDI Security.

UNIT IV: The Internet : The Internet – The Development of the Internet – TCP/IP – Internet Components – Uses of the Internet – A Page on the Web: HTML Basics – Introduction to HTML – Further HTML – Client Side Scripting – Server Side Scripting – HTML Editors & Editing – The Elements of E-Commerce : Elements – e-Visibility – The e-Shop – On line Payments - Delivering the Goods – Internet e-Commerce Security .

UNIT V: E-Business: Introduction - The Internet Bookshops – Grocery Supplies - Software Supplies and Support – Electronic Newspapers – The Internet Banking - The Virtual Auctions – Online Share Dealing – Gambling on the Net – e-Diversity.

TEXT BOOK:

1. David Whiteley, E-Commerce – Strategy, Technology & Applications, Tata McGraw-Hill.

MANAGEMENT INFORMATION SYSTEMS

UNIT I: Introduction: MIS Concept – MIS Definition – Role of the MIS – Impact of the MIS – MIS and Computer. Role and Importance of Management – Introduction Approaches to Management – Functions of the Manager – Management as a Control System – Process of Management

UNIT II: Organization Structure and Theory – Strategic Management of Business: Basics of Management Information Systems: Decision Making – Information Systems.

UNIT III: System Analysis and Design – Development of MIS – Choice of Information Technology – Applications of Management Information System – Decision Support Systems

UNIT IV: Enterprise Management Systems – Technology of Information Systems – Database Management Systems – Object Oriented Technology (OOT): Conceptual Presentation – Client Server Architecture.

UNIT V: Networks – Business Process Re-Engineering (BPR) – Data Warehouse: Architecture to Implementation – Electronic Business Technology.

TEXT BOOK:

W.S.Jawadekar, Management Information Systems, 2nd Edition, Tata McGraw Hill

REFERENCE BOOK:

Robert Schultheis, Mary Sumner, Management Information System, 4th Edition, TMH

ORGANIZATIONAL BEHAVIOR

UNIT I: Introduction to Organizational Behavior –Related Disciplines – Theoretical Framework – Organizational Approaches – Modern Organizational Scenario: Impact of Globalization

UNIT II: Individual Behavior – Perception – Process – Changes - Personality and Attitudes – Job Satisfaction

UNIT III: Motivation: Needs, Content and Process: Motivation: Content Theories -ghh– Process Theories – Contemporary Theories – Motivation Applied – Job Design and Goal setting. Leadership – Background – Process- Styles – Activities – Skills

UNIT IV: Group Dynamics – The nature of Informal Organizations – Formal Groups – Interactive conflict: Interpersonal conflict – Inter-group behavior and conflict – Negotiation Skills: Going beyond conflict management – Traditional Negotiation Approaches - Contemporary negotiation skills.

UNIT V: Communication – Role and background – Interpersonal communication – Informal communication- The Decision Making process – Participative Decision making techniques – Organization design – culture – Organization change and development

TEXT BOOKS:

1. Fred Luthans, Organizational Behavior, 9th Edition, McGraw Hill Irwin, 2002.
2. John W. Newstorm and Keith Davis, Organizational Behavior, 10th Edition.

MASTERING LAN AND TROUBLESHOOTING

Subject Description This Course presents the details of Local Area Networks.

Goals To enable the students to learn about the internal organization of a PC

Objective On successful completion of the course the students should have understood types of faults and how to solve the problems

UNIT I: PC- Hardware overview Introduction to computer organization-Memory-PC family-PC hardware-interconnections between Boxes-Inside the boxes:-motherboard, daughter boards, floppy disk drive, HDD, speaker, mode switch, front panel indicators & Control-mother board logic-memory space-I/O port address-wait state-interrupts -I/O data transfer-DMA channels-POST sequence.

UNIT II: PERIPHERAL DEVICES Floppy drive controller-Overview-Disk format-FDC system interface-FDD interface Hard Disk controller-overview-Disk Drives and interface-controller post description Hard disk card-Hard disk format. **Display Adapter**:-CRT display-CRT controller principle -CRT controller 6845 **Printer controller**:-Centronics interface-programming sequence -Hardware overview-printer-sub assemblers.

UNIT III: MOTHERBOARD CIRCUITS Mother board functions-functional units and inter communications:-Reset logic -CPU nucleus logic-DMA logic-Wait state logic-NM logic-speaker logic-keyboard interface-SMPS.

UNIT IV: INSTALLATION AND MAINTENANCE Introduction-pre installation planning - installation practice-routine checks-special configuration memory up gradation - HD up gradation - DOS command(Internal and external).Preventive maintenance-system usage.

UNIT V: TROUBLESHOOTING Computer faults-nature of faults -types of faults - diagnostic programs and tools-fault elimination-systematic trouble shooting procedure mother board problem-serial port problems-FDC, HDC, display problems- display adapter-printer problem -monitor problems, HDC,FDC problems.

REFERENCE BOOKS:

1. B.Govindarajulu, "IBM PC and Clones", Tata McGraw Hill Co.1995.
2. Robert C Brenner, "IBM PC Troubleshooting and Repair Guide", BPB publications.
3. Winn & Rosch, "Hardware Bible", TechMedia.
4. Ray Duncan, "DOS Programming".
5. Zacker, Upgrading & Troubleshooting Networks – The Complete Reference, Tata McGraw Hill edition.
6. Meyers, Introduction to PC Hardware and Troubleshooting, Tata McGraw Hill edition.