

**INSTITUTE OF ADVANCED STUDIES IN
EDUCATION (DEEMED UNIVERSITY)
GANDHI VIDYA MANDIR
SARDARSHAHR**

**DETAILED SYLLABUS
FOR DISTANCE EDUCATION**

Under Graduate Degree Programmes

**B.Sc. Hons.(IT)
(SEMESTER SYSTEM)**

COURSE TITLE : B.Sc. HONS. (INFORMATION TECHNOLOGY)

DURATION : 03 YEARS (Semester System)

TOTAL MARKS : 2400

FIRST SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
Introduction to IT	BIT-110	100	00	100
Mathematics	BIT-120	100	00	100
Programming in C	BIT-130/ BIT-130P	50	50	100
Business Communication Skills	BIT-140	100	00	100

SECOND SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
Data Base Management System	BIT-210/ BIT-210P	50	50	100
PC Software	BIT-220/ BIT-220P	50	50	100
Operating Systems	BIT-230	100	00	100
Data Structures	BIT-240	100	00	100

THIRD SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
Digital Electronics	BIT-310	100	00	100
OOPS with C++	BIT-320/ BIT-320P	50	50	100
Discrete Mathematics	BIT-330	100	00	100
Computer System Architecture	BIT-340/ BIT-340P	50	50	100

FOURTH SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
Internet & its Applications	BIT-410/ BIT-410P	50	50	100
System Analysis & Design	BIT-420	100	00	100
Visual Programming	BIT-430/ BIT-430P	50	50	100
Information System	BIT-440	100	00	100

FIFTH SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
Principles of Programming Languages	BIT-510/ BIT-510P	100	00	100
Java Programming	BIT-520/ BIT-520P	50	50	100
Computer Graphics	BIT-530/ BIT-530P	50	50	100
Numerical Methods & Statistical Methods	BIT-540	100	00	100

SIXTH SEMESTER

COURSE TITLE	PAPER CODE	MARKS		
		THEORY	PRACTICAL	TOTAL
Computer Networks	BIT-610	100	00	100
System Software	BIT-620/ BIT-620P	50	50	100
Software Engineering	BIT-630/ BIT-630P	50	50	100
Operation Research	BIT-640	100	00	100

Note:

Theory Paper : 30% Continuous Internal Assessment and
70% University examination.

Practical Paper : 30% Continuous Internal Assessment and
70% University examination

Continuous Internal Assessment:

- 1) Two or three tests out of which minimum two will be considered for Assessment **60% of Continuous Internal Assessment**
- 2) Seminars/Assignments/Quizzes **30% of Continuous Internal Assessment**
- 3) Attendance, class participation and behavior **10% of Continuous Internal Assessment**

FIRST SEMESTER

BIT 110

INTRODUCTION TO IT

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks: 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C, D. Sections A, B, C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B, C of the paper. They shall have to answer the entire section D.

SECTION A

Definition of Information Technology, Use of Information Technology, Definition of information system, need of information system, definition of knowledge, Range of application : Scientific, business, educational, weather forecasting, and remote sensing, planning, e-commerce, web publishing, management information, decision support system, inventory control, medical, industrial control, banks, railways, etc.

SECTION B

Computer Fundamentals: Block structure of computer, Characteristics of computers, Problem solving with computers, Generation of computers, Classification of computers.

Number System: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal system, Conversion from one system to the other, Error detecting codes, Representation of characters, Integers and fractions.

Binary Arithmetic: Addition, Subtraction and Multiplication.

SECTION C

Input and Output units: Their functional characteristics, Mouse, Monitor (CRT). Printer (Impact and Non-Impact), Light Pen, Joy Stick.

Memory: main memory, cache memory, Ram, Rom, Types of Rom.

Overview of storage devices – floppy disk, hard disk, compact disk, tapes.

Reference:-

1. D.H.Sanders, "Computers Today", McGraw Hill, 1988.
2. T.N. Trainer, "Computers", (4th Edition) McGraw Hill, 1994.
3. Kenneth C.Laudon, Jane P. Laudon "Management Information System", (7th Edition).
4. V. Rajaraman, "Fundamentals of Computers", (2nd Edition), Prentice Hall of India, New Delhi, 1996.

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Set Theory: Set notations, Operation on sets, Subsets, Venn diagrams, Method of proof for sets, Laws of set theory, Partition of sets, Duality principle. Relation: one-to-one, One-to-Many, Many-to-Many relations, onto relations, Inverse relations. Functions: Defining functions, range, domain, functions and relations, Inverse of a function. Combinatorics : Rules of products, Permutations, Combinations. Matrix:- Laws of matrix algebra, System of linear equations, Matrix inversion, Eigen Values, Eigen Vectors, Characteristic equation, Diagonalization.

SECTION B

Limit continuity, Differentiation :- Derivatives of Polynomial equations, Trigonometric function, Inverse Trigonometric function, Application of Derivatives, Tangent, Normal, Maxima, Minima, Rolle's Theorems, LMV Theorem, Introduction to Partial Derivative.

SECTION C

Integration of polynomial equation, Trigonometric function, Inverse Trigonometric function, Standard function, Definite Integral, Limit of Sum method, Area under the curve.

References:

1. B.S. Grewal & J.S. Grewal, "Higher Engineering Mathematics", Khanna Publishers.
2. R. D. Sharma, "Mathematics", 3rd revised edition, Dhanpat Rai Publications.

BIT -130**PPOGRAMMING IN C**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Constants, variables, Keywords, Decision Control Structure (if, If-else, Nested if-else, switch), Loop control Structures (While, Do-while, for), Continue, break. Storage classes (Automatic, Register, Static, External). Macro, Macros with arguments, macros versus functions.

SECTION B

Function Definition, Accessing function, function prototype, passing arguments to function (call by value, call by reference), processing as array, passing array to functions, multi-dimensional arrays, string functions (Strlen (), strcpy(), strcat(), strcmp() etc.)

SECTION C

Pointer declaration, Passing Pointer to functions, Dynamic memory allocation, operations on pointers, Array of pointers Defining and processing of structures and unions, structures versus unions.

References:

1. Kanetkar, "Let us C", BPB Publication.
2. E. Balaguru swami, "Programming in C", TMH.
3. Yashvant Kanetkar, "Let Us C", BPB Publications.

BIT-130 P**PROGRAMMING IN C**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-130.

BIT-140

BUSINESS COMMUNICATION SKILL

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C, D. Sections A, B, C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B, C of the paper. They shall have to answer the entire section D.

SECTION A

Basic Skills :- Listening, Speaking, Reading & Writing.

A Practical study of Grammatical Rules (Noun, Pronoun, Adjectives, Verb, Adverb)

Tenses :- Types of Tenses

SECTION B

Idioms & Phrases,

Confused words :- Paronyms, Homonyms

Synonyms, General Abbreviations,

One word Substitution

SECTION C

Simple present, progressive & present perfect, Simple past, progressive & Past perfect, Indication of Futurity, the passive (Present & Past, Present & Past Perfect).

Reported Speech :-

(I) Declarative Sentences (II) Imperative

(III) Interrogative (Question) (IV) Active, Passive

(V) Preposition (VI) Articles

Writing Skills :-

Paragraph Writing, Composition Writing, Report Writing, Application & Letter Writing, Essay Writing.

Reference:

1. Tandon, R.C. Seth, R. R. Agarwal, V.K. Maheshwari, "English Grammar and Composition", Ratan Prakashan Mandir.
2. Sidhu, Prem & Kapoor, "Collegiate English Grammar, Composition & Translation", Khosla Publishing House.

SECOND SEMESTER

BIT-210 DATA BASE MANAGEMENT SYSTEM

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Database V/s File system, Architecture of DBMS, Data Independence (Logical, Physical) DBA and his responsibility, DBMS structure (DDL Compiler, Data manager, File manager, Disk Manager, Query Processor)
Entity, Entity Set, Attribute Types (Simple & Composite, Single & Multi value, Derived), Relationship Sets, Mapping cardinalities, Keys (Primary, Secondary, Candidate, Super, Alternate), E-R- Diagram, Hierarchical Model, Relational Model, Network Model, Object oriented Model.

SECTION B

Anomalies in Design, Functional Dependency, Logical implications, Closure of FD Set, Canonical form, Full and Partial FD, Prime and Non-prime attributes, 1-NF, 2-NF, 3-NF, BCNF, Decompositions, lossless and Dependency preserving decomposition.

SECTION C

Integrity rules (Entity integrity, Referential Integrity) Union, Difference, Intersection, Cartesian product Division, Projection, Selection, Joins.
Relational calculus, Type calculus Formulae, Domain calculus, SQL Basic data retrieval, Data manipulation and table study comments, views, SQL queries.

References:

1. Bipin C. Desai, "An Introduction to Data Base Systems", Galgotia Publication.
2. Elmasri Navathe, "Fundamental of Database Systems", Pearson Edition.

BIT-210 P**DATA BASE MANAGEMENT SYSTEM**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-210.

BIT-220**PC SOFTWARE**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Definition of software, Type of software, Application Software, Definition of system software, Benefits of using software. Windows concepts, Features, windows structure, desktop, taskbar, start menu, user interface, GUI, CUI, My computer, Recycle bin, Window Accessories.

SECTION B

Word Processing: - Ms Word – Introduction to word processing, Interface, Toolbars, Ruler, Menus, Keyboards shortcuts, Editing a document, Formatting documents, Checking the grammars & spelling, Formatting via find and replace, Word Count, Mail merge, Template, macros, Table, Converting a word document into various formats.

SECTION C

Ms- Excel :- Creating worksheet, Entering data into sheets, handling data, text, data, alphanumeric, values, saving and quitting worksheet, opening and moving around in an existing worksheet, Toolbars and menus, Keyboard shortcuts, Working with single and multiple workbook, Working with formulas cell referencing, formatting of worksheet.

Introduction to Ms Access, Creating tables, Running queries, form Development.

References:

1. Ramesh Bangia, "Cyber Tech. Educational Services- Understanding Microsoft 2000", Cyber Tech.
2. Sanjay Saxena, "Ms-Office 2000 for every one", Vikas publishing House.

BIT-220 P**PC SOFTWARE**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-220.

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Introduction to operating system, its need and Operating system services, Definition, Early systems, Simple batch systems, Multiprogramming batched systems, Time sharing systems, Personal computer systems. Real time systems. Process Management: Process concept, process scheduling. Definition of context switching. CPU Scheduling: Scheduling criteria, Scheduling algorithms (FCFC, SIF, Priority, Multilevel queue with feed back).

SECTION B

Deadlocks: Deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery. Memory Management: Logical versus Physical address space, Swapping, Contiguous allocation, Paging, Segmentation, Segmentation with paging. Virtual Memory: Demand paging, Performance of demand paging, page replacement, page replacement algorithms, Thrashing.

SECTION C

File management: File system Structure, Allocation methods; Contiguous allocation, Linked allocation, Indexed allocation. Device Management: Disk structure, Disk scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK.

Reference:

1. Abraham Silberschatz, Peter B. Galvin, "Operating Systems Concepts", Addison Wesley Publishing Co., 4th Edition, 1994.
2. Brinch Hansen, "Operating System Principles", Prentice-Hall, 1984.
3. Brinch Hansen, "The Architecture of Concurrent Programs", PHI, 1978.

BIT – 240

DATA STRUCTURES

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Space and time complexity, Asymptotic notations (Ω , θ , O , ω , \circ)

Arrays, Searching Arrays, One Dimension and two Dimensional Arrays. Stack, Infix to Postfix, Conversion Postfix Evaluation of Queues, D-Queue, Priority Queue, Singly Link list, Comparison.

SECTION B

Basic concept of Trees, Tree representation by link list and by arrays, Tree reversals, Binary tree, Binary search tree (Insertion, Deletion, Traversals), AVL.

SECTION C

Graph concepts, Adjacency list and adjacency matrix representation, Path matrix, Hamiltonian and Euler's circuit, DFS, BFS, Dijkstra's algorithm, Prims & Kruskal's algorithm.

Linear search, Binary search, Bubble sort, selection sort, Insertion sort, Quick sort, Heap sort, Merge sort, Radix sort, Comparison in terms of space & time complexity.

Reference:

1. Schaum's outlines & Lipschutz, "Data structure", TMH.
2. G.S. Baliya, "Data structure".
3. Schaum's series, "Data structure Algorithms & Applications in C++", TMH.

THIRD SEMESTER

BIT-310

DIGITAL ELECTRONICS

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C, D. Sections A, B, C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for paper-setters

The students shall need to answer one question each from sections A, B, C of the paper. They shall have to answer the entire section D.

SECTION A

Fundamental Concepts: Digital signal, NAND, NOR and Exclusive –OR operation, Boolean Algebra.

Number system and Codes: Binary, Octal, and Hexadecimal, Signed numbers unsigned numbers, hamming codes.

Combinational Logic Design: K-map representation of logical functions and simplification using K-map of 4 and 5 variables, McClusky's method.

SECTION B

Multiplexers, Demultiplexers, Adders and Subtractrs, multipliers, Comparators, Parity generators and checkers, code converters, Priority Encoders, Decoders, hazards, and asynchronous behaviour.

SECTION C

Flip-Flops: Clocked RS flip flop, D-type flip flop T-type flip-flop, J-K flip-flop, Excitation table of flip flop, Edge triggered flip flop, Clocked flip flop design.

Sequential Logic Designs: Registers, Shift registers, Asynchronous counters, synchronous counters, RAM, ROM

Reference:

1. Malvino, "Digital Principles and Applications" Tata Mc Graw Hill, 4th Edition.
2. R.P. Jain, "Modern Digital Electronics", Third Edition, PHI.
3. M. M. Mano "Computer system architecture: Prentice Hall of India, 1983.

BIT –320

OOPS WITH C++

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

OOP paradigm, Advantage of OOP, Differentiate between functional programming and OOP approach, characteristics of object oriented language object, Definition of class, object, Inheritance, Abstraction, Encapsulation, Dynamic Binding, Message passing, Polymorphism.

SECTION B

Introduction to C++, Identifier and Keywords, Constants, C++ operator, Type conversion, Variable declaration, Statements, expression, conditional expression, Loop structure (for, while, dowhile), break, continue statement.
Array:- Definition of Array, Programming with single dimensional array, 2-D array, multidimensional array, function :- Function declaration, prototyping calling, Friend function, Inline function, Virtual function, call by value, call by reference.

SECTION C

Classes, and object in C++, member function, Objects, nested classes, Inheritance, Function overloading, operator overloading virtual function, files stream, binary file operation, opening & closing file.

References:

1. Kanetkar, "Let us C++", BPB Publication.
2. Robert Lafore, "Object Oriented Programming in Turbo C++", Galgotia Pub.

BIT-320 P

OOPS WITH C++

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-320.

BIT- 330

DISCRETE MATHEMATICS

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Sets and subsets, operations on sets.(union, Intersection, complement, Difference, Symmetric Difference) Cartesian products, Relations and Digraphs, Properties of Relation, Equivalence relation, Transitive closure matrices, operations on matrices, determinants.

SECTION B

Propositional and logical operations compound statements quantifiers, conditional statements, mathematical induction, permutation, and multiplication principle of counting. Combinations. Pigeonhole Principle.

SECTION C

Poset, Extremal elements of poset, lattice Boolean algebras, groups, semi-groups, product and quotients of groups and semi groups., Graphs euler path & circuits, Hamiltonian path and circuits, Graph coloring, Trees, labeled trees, tree searching, Binary tree, Minimum spanning trees.

Reference:-

1. Bounard kolman, Robert C.Busby, Sharon Rose, "Discrete Mathematics Structures"3rd edition PHI NE. Ltd.
2. Narsing Deo, "Graph Theory with Applications to Engineering and Computer Science", PHI.

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks: 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

System buses: Computer components, Computer function, Interconnection, Interconnection Structures, Bus Interconnection, PCI
Internal Memory: Computer Memory System Overview, Semiconductor Main Memory, Cache Memory, Advanced DRAM Organisation
Input/ Output: External Devices, Programmed I/O, Interrupt Driven I/O, Direct Memory Access, I/O Channels.

SECTION B

Computer Arithmetic: The Arithmetic and Logical Unit (ALU), Integer Arithmetic, Floating Point Representation, Floating Point Arithmetic.
The Control Unit: Micro-Operations, Control Unit, Hardwired Implementation, Microprogrammed Controller, Basic Concepts, Microinstructions, Sequencing, Microinstruction Execution.

SECTION C

Instruction Sets: Characteristics and Function, Machine Instruction Characteristics, Types of Operands, Types of Operations, Addressing Modes and Formats, Register Organisation, The Instruction Cycle, Instruction Pipelining. Basic Assembly Programming in 8086

References:

1. M. Mano, "Computer System Architecture", Prentice Hall India
1. Harry, Jordan, "Computer System Design & Architecture", Edition, Addison Wesley.
2. Kai Hwang, "Advanced Computer Architecture", TMH

BIT-340P COMPUTER SYSTEM ARCHITECTURE

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of C section of the same course i.e. BIT-340.

FOURTH SEMESTER

BIT-410 INTERNET & ITS APPLICATION

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks: 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Client Server Model, IP Addresses, IPv6, Internet Congestion, Telnet & Remote Login. FTP vs. TFTP, HTTP, ARCHIE & GOPHER. Newsgroup Terminology Model & Hierarchies, Three Tier Architecture.

SECTION B

Definition of Networks, Types of Network, Topologies, PSTN, PSDN,VAN, ISDN, PDNs, Wide Area Network, Introduction to search engines (Mozilla, Netscape) WWW, E-mail, Encryption Schemes- Private & Public Key Cryptography.

SECTION C

Introduction to HTML, Tag, Types of Tags, Forms, Tables, Images insertion in web page, Introduction about DMTL, CGI, Introduction to XML.

Reference:

1. Green stein, Fein man, "Electronic Commerce", TMH.
2. David Whitley, "Electronic Strategy Technologies & Applications", TMH.
3. Ellen Hepp, Raymond Greenlaw, "Fundamentals of Internet and the WWW", TMH.
4. Daniel Minoli, Emma Minoli, "Web Commerce Technology Handbook" TMH.
5. Jain, "Internet and Web page Designing", PHI.

BIT-410 P INTERNET & ITS APPLICATION

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-410.

BIT-420 SYSTEMS ANALYSIS AND DESIGN

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Definition of System, Role of Information System in the organization, system development life cycle, Role of the System analyst, Project Management.

Project Selection: sources of project requests, Managing project review and selection Preliminary investigation.

Feasibility Study- Technical and economical feasibility, Cost and benefit analysis.

SECTION B

System Analysis: Different methods of investigations, Objectives, Recording of Investigation, Use of procedures, Flowcharts, Decision tables, Data flow Diagrams (DFD), Analysing user requirements, Logical system Definition, Data dictionaries, Decision analysis.

SECTION C

System Design: Form design, Code Design, Designing user procedures, Batch processing versus on-line system, Output Report Design, Modularization, Module specifications, File design, System development involving databases.

Implementation planning & Control, System Testing, User Training, Conversion and Operation Plans, Maintenance, Documentation, Project Report.

Reference:

1. Sefley A. Holta, "Modern System Analysis & Design", Addison Wesley.
2. Bentley, "System Analysis and Design", TMH.
3. Rajaraman, "Analysis and Design of Information Systems", PHI.
4. I.T. Hawryszkiewicz, "Introduction to system Analysis and Design", PHI.

BIT-430**VISUAL PROGRAMMING**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Introduction to Visual Basic: - Creating User Interfaces with Windows Common Controls, Creating Menus for your Programs, Advance Design Features, Working with Collections, Creating Classes in a Program, Working with Active Data Objects(ADO).

SECTION B

Creating Database Applications: - Accessing Data with Data Control
Communicating with Other Programs: - Using ActiveX Server, Creating ActiveX Client Applications

SECTION C

Extending the Capabilities of Visual Basic: - Declaring and using External Functions, Creating ActiveX Control with Visual Basic
Integrating Visual Basic with the Internet: - Writing Internet Application with Visual Basic

Reference :

1. "Visual Basic 6.0", BPB Publication.
2. "Mastering Visual basic 6.0", BPB Publications.
3. Silver & Spots, "Special Edition using Visual Basic 6.0", PHI.

BIT-430 P**VISUAL PROGRAMMING**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-430.

BIT-440

INFORMATION SYSTEM

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Organisation, Management and Network Enterprises :- Information system in enterprises, Information system, Organisation, Management and Strategy : The changing role of Information system in organization, Decision making, Business strategy.

SECTION B

Information technology Infrastructure: Computer hardware & Information technology infrastructure, Storage input and output technology, Categories of computer and Computer system, what is software, System software telecommunication and Networks.

SECTION C

Managing knowledge : Knowledge management in organization, Information and knowledge work system. Enhancing management decision making: Decision support system (MIS & DSS, Types of DSS, DSS application and Digital term), Group discussion support system (GBSS) What is GDSS, Characteristics of GDSS.
Managing international information system: The growth of international information system, Organising international information system managing global system.

Reference:-

1. Kenneth C., Laudon Jone & P. Laudon, "Management Information System (7th Edition).

FIFTH SEMESTER

BIT-510

PRINCIPAL OF PROGRAMMING LANGUAGE

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for paper-setters

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Overview of the declarative style programming versus the imperative style
Functional paradigm: Introduction to value-oriented programming in the functional style in the context of a language such as ML, local definitions and scope, block structure, principle of qualification.

SECTION B

Functions, Principle of abstraction; Call-by-name and call-by-value parameter passing mechanisms; principles of correspondence, recursive functions and their implementation, type-checking, type constructions such as products sums (tagged unions), function types (higher-order functions), lists and user defined data types, parametric polymorphism (ML-style) and simple programs using higher-order functions, lists and other user defined types.

Relational paradigm: Introduction to logic programming using a Language such as Prolog.

SECTION C

Imperative paradigm: Variable declarations and allocation of space, implementation of simple control constructs such as sequencing, conditionals and loops, block structure, parameter-passing mechanisms (call-by-value, call-by-name), implementation of recursive procedures in a block structured language (call stacks and display records)

Object-oriented paradigm; Data abstraction, classes, inheritance, dynamic dispatch, derived classes, friend classes, virtual functions, operator overloading, templates.

Object-oriented design Methodologies; object-oriented software architecture; Introduction to UML.

Reference:-

1. Ghezzi, M. Jazayeri, "Programming Language Concepts," John Wiley
2. Appleby, J.Vandekopple, "Programming Languages: Paradigm and practice", Tata McGraw Hill.

3. R.Sethi, "Programming Languages, Concepts and constructs", Addison Wesley.

BIT-520

JAVA PROGRAMMING

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Introduction to Java: Features of Java, difference between Java and C++, data types, variables, arrays, operators-arithmetic, bitwise, relational, Boolean, various control statements.

Introduction to Classes: Class fundamentals, declaring objects, methods, constructors, garbage collection, passing parameters to methods, recursion, access control, static, final and finally method, Array One dimensional array, Two Dimensional array multidimensional arrays, Function, Functions Overloading.

SECTION B

Inheritance, super, multilevel hierarchy, abstract methods and classes. Packages and interfaces, importing packages, exception handling. Exception types, try, catch, finally, throw and throws, creating exception subclasses. Multithread programming, thread priorities, synchronization, messaging, creating multiple threads, inter thread communication.

SECTION C

Input/Output, streams, reading and writing console input/output, reading and writing files, applet fundamentals. Networking, socket overview, client/server, reserved sockets, proxy servers, Internet addressing, Java and the Net, TCP/IP client sockets. An introduction to AWT, GUI graphics, fonts, colours.

References:

1. Patrick Naughton and Herbert Schildt, "The Complete Reference Java 2", Tata McGraw Hill, 1999.
2. E. Balaguru Swami, "Java Programming", TMH.

BIT-520 P**JAVA PROGRAMMING**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-520.

BIT-530**COMPUTER GRAPHICS**

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Input Output device - Keyboard, Touch Panel, Light pens, Graphic tablets, Joysticks, Touch balls, Image scanner, Mouse.

Handy copy device :- Zero impact and Non impact printers, Dot matrix, Laser printer, Inkjet printer, Dectrostate, flatted and drum platters.

Video display devices :- Cathod ray tube, Resistance, Resolution, aspect ratio vertical and horizontal, colour CRT monitors, Direct view storage tube, Flat panel displays, LCD, virtual reality, Faster scan system, random scan system.

Memory device :- Memory (RAM,ROM), CD, Floppy Disk, Magnetic tapes, Magnetic disks.

SECTION B

Scan conversion algorithm for line (DDA, Bresenham's algorithm) midpoint circle, ellipse, two-dimensional graphics, Geometric transformation (translation, scaling, relation).

Three-dimensional graphics: - Geometric transformation (translation, scaling, rotation) 2-D & 3-D viewing transformation and clipping.

SECTION C

Visible Surface Detection: Back face Detection, Depth Buffer method, A-Buffer method, Scan Line method, and Depth-sorting method. Viewing pipeline, viewing coordinates, projections, dipping.

Reference:-

1. Hearn and Baker, "Computer Graphics" 2nd edition, PHI
2. J.D. Foley, "Introduction to computer Graphics" Addison Wesley

BIT-530 P**COMPUTER GRAPHICS**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-530.

BIT-540 NUMERICAL METHODS & STATISTICAL METHODS

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Solution of transcendental equation: Bisection method, Regular falsi method, Newton Raphson method, and secant method.

System of simultaneously non-linear and algebraic equation: - Gauss elimination method, Gauss seidel alternative method, Gauss Jordan's method, Jacobi's Iteration.

SECTION B

Operation, E , Δ , ∇ , Algebraic properties of E and Δ , Relation between operators, differences table, Forward Difference, Backward Difference, Central difference factorial Notation, Divided Differences, Langrange's Interpolation formula for unequal intervals.

Numerical Integration: - The trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 waddle's rule.

Numerical Relation of ordinary differential equation: Euler's method, Taylor's series, and Runge-kutta method.

SECTION C

Introduction to statistics: - Scope of statistics, Mean, Mode, Median, Standard Deviation, and Variance.

Correlation, Karl's person coefficient, Rank correlation Numerical based on fitting of regression lines (using least square method)

Reference:-

1. A. R. Vasishtha, "Numerical Analysis", Publisher John wiley & sons
2. B.S. Grewal, "Engineering Methodic", Khanna publishing House
3. S.S Sastry, "Numerical Methods", Third Edition, PHI

SIXTH SEMESTER**BIT-610****COMPUTER NETWORKS**

Maximum Time : 3 Hrs. University Examination : 70 Marks
Total Marks : 100 Continuous Internal Assessment : 30 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Uses of Computer Network, Network Hardware, Network Software, Goals and Applications of Computer networks, Computer Network Structure and Architecture. Reference Models: OSI Reference Model, TCP/IP reference Model, Comparison of OSI and TCP Reference Model, Introduction to Novell Network, ARPANET.

SECTION B

Local Area Network: IEEE standards 802 for LAN's and MAN's (802.2, 802.3, 802.4, 802.5, 802.6). Bridges from 802.x to 802.y, transparent bridges, source routing bridges, remote bridges, comparison of 802 bridges, High speed LANs – FDDI, Fast Ethernet, HIPPI, Fibre channel, Satellite network Polling, ALOHA, FDM, TDM, CDM.

SECTION C

The Internet Protocol - Introduction to Internetworking, The IP protocol, IP Addresses, Subnets, Internet Control Protocol, Interior and Exterior gateway routing protocol., internet multicasting mobile IP, CIDR, IPv6.

The Transport Protocol – Elements of transport protocol, A simple transport protocol, TCP-Service model, TCP protocol, Segment header, Connection management, Transmission policy, Congestion control, timer management, UDP.

References:

1. A.S. Tannenbaum, "Computer Networks", Third Edition, PHI Publications, 1999.
2. D.E. Corner, "Computer Networks and Internets", 2nd Edition, Addison-Wesley Publication, 2000.

3. D.E. Comer and D.L. Stevens, "Inter-networking with TCP_IP : Design, Implementation and Internals", Vol. II, Prentice Hall, 1990.
4. D. Bertsekas and R. Gallager, "Data Networks", 2nd Edition, Prentice Hall, 1992.
5. Stevens W.R. "UNIX Network Programming," Prentice Hall, 1990.

BIT-610 P

COMPUTER NETWORKS

Maximum Time	: 3 Hrs.	University Examination	: 35 Marks
Total Marks	: 50	Continuous Internal Assessment	: 15 Marks
Minimum Pass Marks	: 40%		

BIT-620

SYSTEM SOFTWARE

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Language Processor

Introduction, Language Processing activities, Fundamentals of Language processing fundamentals of language specification.

Data structure for language processing, Search Data Structure of assembler, design of two pass assembler.

SECTION B

Phases of compiler, Lexical analyses tokens parser, parse tree, Syntax analysis, Intermediate code generation, and Code generation, code optimization Techniques.

SECTION C

Macro definition and cell, macro expansion, method macro cell, compiler and interpreters aspects of compilation, Memory allocation, completion of Extensions, Compilation of control structures.

Linkers :- Relocation and linking concepts, Design of Linker, Self Relocation program.

Software Tool :- Software Tool for program development, Editors, Debug, Monitors.

References:

1. D M Dhamdhere, "System Programming and Operating System", (2nd Edition), TMH.
2. Donovan, "System Programming", TMH 1991
3. Aho and Ullman, "Principal of compilers", Naroja Publishing House.

BIT-620 P**SYSTEM SOFTWARE**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-620

BIT-630**SOFTWARE ENGINEERING**

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Introduction to Software Engineering: Software myths, Definitions and Goals of software engineering, Comparison with traditional Engineering disciplines, Software myths.

Software development: Phases, Error distribution, Effort distribution, S/W development life cycle: Waterfall and prototype models, RAD, Spiral model of development.

SECTION B

Planning a software project: Team structure (Democratic, Chief programmes and Hierarchical). Software requirement specification: Characteristics & Components of a SRS. Problem Analysis: Structuring Information, DFD's & Data dictionary.

SECTION C

Software Design: Design objectives and principles, Design concepts - Abstraction, Information hiding, Concurrency, Structure: Module level concepts: Coupling, Cohesion. Structured design methodology.

Coding: Programming practices-Top down and Bottom up, Structured programming, Programming style, Internal documentation.

Testing and Testing Fundamentals: Error, Fault, Failure, Reliability, Levels of testing, Test case & Testing criteria, unit testing, functional testing, system testing, user acceptance testing, α and β testing.

References:

1. R.E. Fairley, "Software Engineering Concepts", McGraw-Hill, 1985.

2. P. Jalota, "An Integrated Approach to Software Engineering", Narosa Publishing House, 1992
3. M. Shooman, "Software Engineering", McGraw-Hill, 1983.
4. Boris Beizer, "Software Testing Techniques", Second Edition, Van Nostrand Reinhold, 1990.
5. Roger. S. Pressman, "Software Engineering - A Practitioner's Approach", Third Edition, McGraw Hill, 1992
6. Rajib Mal, "Software Engineering'.

BIT-630 P

SOFTWARE ENGINEERING

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. BIT-630.

Maximum Time : 3 Hrs. University Examination : 35 Marks
Total Marks : 50 Continuous Internal Assessment : 15 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of 4 sections A, B, C & D. Sections A, B & C will have 2 questions from the respective sections of the syllabi and will carry 20% marks each. Section D will have 10-15 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

The students shall need to answer one question each from sections A, B & C of the Paper. They shall have to answer the entire section D.

SECTION A

Introduction to Operational Research: Phases of an Operational Research study, various types of operational research models.

Linear Programming Models: Graphical solution, Simplex method, Charnes M-technique, Two-Phase method, Revised simplex method, Duality and sensitivity in linear programming

Transportation and Assignment problems.

SECTION B

Game Theory: Rectangular games, Methods of solution(Graphical and algebraic techniques), solution by Linear Programming technique

Concepts of PERT and CPM.

SECTION C

Basic concepts of Dynamic Programming, Bellman's Principle of Optimality and its applications.

Queuing Models: Basic structure of queuing models, breadth -depth queuing models and its steady state solution, M/M/1 and M/M/C models with infinite/finite waiting space.

Non-linear Programming: Wolf's Method, Kuhn-Tucker condition.

Reference:

- 1 H. A. Taha, "Operation Research", 7th Edition, Macmillan.
- 2 R. L. Radin, "Optimization in Operations Research", Prentice Hall.
- 3 A. Ravindran, "D.T. Phillips, J.S. Solberg, "Operation Research", 2nd Edition, John Wiley.