

Scheme of Examination
B.Sc. (Honours) Computer Science
(Semester Scheme)

Paper Code	Title of Paper	Period Per Week	Max. Marks	Internal Assessment	Exam Duration Hours.
<u>FIRST SEMESTER</u>					
BSC-101	Computer Fundamentals and Programming	4	75	25	3
BSC-102	Mathematics-I	4	75	25	3
BSC-103	Mathematics-II	4	75	25	3
BSC-104	Analog Electronics	4	75	25	3
BSC-105	Behavioural and Communication Skills	4	75	25	3
BSC-106	Practicals- Software Lab. (based on Paper BSC-101 and Software Tools)	8	75	25	4
BSC-107	Practicals- Software Lab. (based on Paper BSC-104)	8	75	25	4
<u>SECOND SEMESTER</u>					
BSC-108	Data and File Structure	4	75	25	3
BSC-109	Structured Systems Analysis & Design	4	75	25	3
BSC-110	Mathematical Foundations of Computer Science	4	75	25	3
BSC-111	Digital Electronics	4	75	25	3
BSC-112	Electromagnetics and Magnetism	4	75	25	3
BSC-113	Practicals- Software Lab. (based on Paper BSC-108)	8	75	25	4
BSC-114	Practicals- Software Lab. (based on Paper BSC-111)	8	75	25	4
<u>THIRD SEMESTER</u>					
BSC-201	Computer System Architecture	4	75	25	3
BSC-202	Algorithms & Advanced Data Structure	4	75	25	3
BSC-203	Micro-processors-I	4	75	25	3

BSC-204	Data Base Systems	4	75	25	3
BSC-205	Practical-Software Lab (based on paper BSC-202 and BSC-204)	8	75	25	4
BSC-206	Practical-Microprocessor Programming & Interfacing Lab (based on paper BSC-203)	8	75	25	4

FOURTH SEMESTER

BSC-207	Operating Systems Organisation and UNIX	4	75	25	3
BSC-208	Software Engineering	4	75	25	3
BSC-209	Object Oriented Design and Programming	4	75	25	3
BSC-210	Theory Computation	4	75	25	3
BSC-211	Practical-Software Lab (based on paper BSC-207)	8	75	25	4
BSC-212	Practical-Software Lab (based on paper BSC-208 & 209)	8	75	25	4

FIFTH SEMESTER

BSC-301	Data Communication and Networks	4	75	25	3
BSC-302	Computer Graphics	4	75	25	3
BSC-303	Principles of Visual and Windows Programming	4	75	25	3
BSC-304	Micro-processors-II	4	75	25	3
BSC-305	Practical-Software Lab (based on paper BSC-302 & 303)	8	75	25	4
BSC-306	Practical-Computer and Communication Lab (based on paper BSC-301 & 304)	8	75	25	4
BSC-307	Summer Training/Project	-	75	25	-

SIXTH SEMESTER

BSC-308	Network & Internet Technologies and Applications	4	75	25	3
BSC-309	Scientific and Statistical Computing.	4	75	25	3
BSC-310	Multimedia and Applications	4	75	25	3
BSC-311	Entrepreneurship	4	5	25	3
BSC-312	Practical-Software Lab (based on paper BSC-308 & 309)	8	75	25	4
BSC-313	Practical-Software Lab (based on paper BSC-310)	8	75	25	4

FIRST SEMESTER

BSC-101: Computer Fundamentals and Programming

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Computer Fundamentals:

Number system - decimal; octal . binary and hexadecimal Representation of integers, Fixed and Floating point ,characters, representation : ASCH ; EBSDIC .Functional units of computer I/O devices; primary and secondary memories.

Programming Fundamentals:

Algorithm Development: Techniques of problem solving. Flowcharting, step wise refinement; algorithms for searching. Sorting (exchange and insertion) ,merging of ordered list.

Programming: Representation of integers , characters, reals.

Data types: constants and variables ; arithmetic expression , Assignment statements, Logical expression, Sequencing , Alteration and iteration , Arrays String processing;
Sub programs , Recursion, files and pointer . Structured programming concepts, Recursion , Files and pointer . Structured programming concepts ; Top down Design .Development of efficient programs;
Program Correctness; Debugging and testing of programs

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC –102: Mathematics-1

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Differentiation and partial differentiation of vector functions, Derivative of sum, dot product and cross product of two vectors, gradient, divergence and curl system of circles, standard equations and properties of parabola , Ellips and hyperbola.

General equations of second degree in two variables ,tracing of conic section Sphere.

Successive differentiation, Leibnitz theorem, partial differentiation , Curvature ,Asymptoreu, Singular points concavity , points of inflexion and tracing of Cartesian curves Integration of irrational functions, Reduction formulae, Rectification, Quadrature Volume and surfaces or revolution, Differential equation of first order. Groups, Rings, fields, Vector spaces.

Note:

1. *Emphasis should be on Computer Applications*
2. *The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.*

BSC-103: Mathematics-II

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

The real number system as a complete ordered field, Neighbourhood, open and closed sets, limit points of sets, Bolzwnoweierstrass theorem.

Limits continuity, sequential continuity, algebra of continuous functions, Continuity of composite function, continuity on (a,b) implying bounded ness Intermediate value theorem, inverse function theorem, Uniform continuity.

Sequence, convergent sequence, Cauchy sequence, Monotonic sequence, Subsequence, limit superior and limit inferior of sequence.

Infinite series convergence of series, positive term series, Comparison test, Cauchy's nth root test, Dalemberth's ratio test, Raabes tests, Cauchy's integral test, Alternating series, Absolute and conditional convergence. Taylor's series and Maclaurin's series.

(for $\sin X$, $\cos X$, $\log(1+X)^m$) Application of mean value theorem to monotone function and inequalities, Maxima and minima, indeterminate forms.

Note:

- 1. Emphasis should be on Computer Applications*
- 2. The examiners are requested to set 8 questions in each paper covering the whole syllabus, out of which students will be required to attempt 5 question only.*

BSC-104: Analog Electronics

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Diode characteristics: Junction- diode, break down diode, semiconductor photodiode, tunnel diode, characteristics; photovoltaic effect, Light Emitting Diode.

Diode circuits: clipping circuits; components; sampling gates; rectifiers; capacitors filters.

Transistor circuits: bipolar transistor; field effect transistor; transistor biasing and thermal stabilizing; transistor amplifier at low frequencies, transistor amplifier at high frequencies, multistage amplifier: Feedback amplifier, stability and circulation, operational amplifier Linear analog circuits: analog integration and Differentiation electronic analog computation: active filters; integrated circuit tuned amplifier; cascaded, video amplifier Nonlinear analog system: comparator, sample hold circuits, precision AC/DC converter: Logarithmic amplifier, wave from generator; Schmitt trigger.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus, out of which students will be required to attempt 5 question only.

BSC-105: Behavioural and Communication Skills

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Motivation: Characteristics of motivation ,process of motivation, Maslow's needs hierarchy, Achievement motivation, Affiliation motivation, Power motivation, Expectancy Theory of motivation.

Foundation of Group Behaviour: Definition of classifying groups , stages of group development external condition imposed in the group, Group member resources , Group structure, Group Cohesiveness.

Leadership : Nature and definition theories of leader ship , styles of leader ship behaviour, the managerial Grid, Fiedler's contingency approach, leadership effectiveness.

Power Politics And Conflict-Bases and sources of power, power tactics, power in groups, **Politics:** Power in action, implication for performances and satisfaction.

Organization Stress and its management: Stress and its consequences, potential sources of stress, stress management strategies, implication for performance and satisfaction on.

Process of communication: The importance of communication barrier of effective communication, effective listening.

Communication Effectiveness in Organization: Changing Management concept in communication, practices to improve communication.

Communication and Group decision making: Direction of communication, formal v/s informal network decision making, group decision making, group v/s the individual, group think and group-shift ,group decision making techniques

REFRENCES:

1. Robbin Stephen B (1994) (sixth edition) organizational behaviour, New Delhi :prentice hall of India Pvt. Ltd.
2. Costley Dan Land Todd Ralph (1991) Human Relation in (fourth addition) New York: West Publishing company.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-106: PRACTICAL SOFTWARE LAB (BASED ON PAPER-101 AND SOFTWARE TOOLS)

BSC-107: PRACTICAL- ANALOG ELECTRONICS LAB (BASED ON PAPER BSC-104)

SECOND SEMESTER

BSC-108: Data and File Structure

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Data Structures:

Linear and list structure: Arrays, stacks, queues and lists, Sequential and linked structures, Simple lists, doubly linked lists, circular list, inverted list, threaded Lists, Operation on all these structures and applications.

Arrays: Multidimensional arrays, sequential allocation, address calculation, spares- arrays.

Tree Structure: Trees, binary, trees, traversal algorithms, threaded trees, binary search trees, trees in search algorithms, B- tree, E- tree and applications.

File structure: Physical storage devices and their characteristics, constituents of a file viz. fields, records, fixed and variables length records, primary and secondary keys, File operation , Basic file system operations.

File organization : Serial sequential, indexed sequential , Direct inverted, multi-list.
Hashing function and collision handling methods.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-109: Structured System Analysis & Design

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Introduction to Systems Contemporary System Analysis:

Effective communication in system analysis - Tools of the system analyst, problem definition, classification data collection and analysis.

Systems Planning and alternative, feasibility and proposal User and management involvement, planning alternatives , design considerations, systems feasibility, selection of a system plan, the system proposal.

System Cost Determination : System costs and system benefits, comparative cost analysis, data processing costs , DP costs center concepts.

A Structured Approach to System Design: Structured Top – down design, logical design requirements, data administration and data dictionaries, auditable systems, Forms Requirements and design .CRT screen design, Programs specification, development completion schedule. Structured walk through.

Project Management and Control, Gantt charts, PERT and CPM. Systems Conversation and Implementation: Planning consideration, Conversion methods, systems follow- up quality assurance of new systems.

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BSC-110: Mathematical Foundation of Computer Science

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Set: Cardinality counting, operations.

Functions: Boolean functions. Permutation functions.

Induction: Principles of mathematical induction Format's Theorem .

Exponentiation: (How to complete first exponentiation) Advantages of Logarithmic algorithms over linear algorithms Big Oh" notation, binomial coefficients lexicographic order . Number theory: GCD, Euclidean algorithm Fibonacci numbers complexity, congruences and equivalence Relations, public key encryption schemes .

Graph Theory: Graphs, Trees ,and LAN Minimum distance trees, minimum weight & minimum distance spanning trees , recursive procedures .

Recursion: Merge sort, Insertion sort, Bubble sort Decimal to binary.

Recurrence Relations: LHRR, LHRRWCCS , DCRR.

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BSC-111: Digital Electronics

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Logic circuit hardware: basic logic gates AND, OR, NOT, EX-OR, Logic, DTL, RTL, TTL, ECL, CMOS, logic circuits, fanout, propogation delay, noise immunity of logic circuits.

Boolean Algebra: Boolean operator & truth table, Boolean Expression & Boolean laws, De-Morgan's Theorem, universal building blocks.

Logic circuit minimization: sum of products & product of sums form algebraic simplification, K-map Minimization techniques Q-M minimization procedure.

Combinational circuits: Adder, subtractor, encoder, decoder, multiplexer, de-multiplexer.

Sequential Logic : RS. JK, Master slave J-K flip-flop, D Type toggle , edge triggered flip-flop counters – synchronous and ripple counter, shift registers serial to parallel, parallel to serial conversion .

Memory circuits: RAM, ROM, EEROM , Static & Dynamic RAM ,EDO RAM. Analog to digital, digital to analog converter, PLA Fundamental of electronic devices: overview of semi conductor physics, diode and transistors characteristics diode and transistor as a switch.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-112: Electromagnetics and Magnetism

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Electric field, Potential due to charge distribution and due to a dipole,

Electric potential energy, flux, gauss's law, electric field in a dielectric,

Energy stored in a electric field; Magnetic field due to a current carrying conductor, Biot Savart law magnetic force on a current Lorentz force. Displacement vector, Boundary condition, electromagnetic Induction, Faradays Law of Induction.

Electromagnetism:

Modification of Ampere's Law, Equation of continuity and displacement current, Maxwell's equations, wave equations and its plane wave solution, nature of electromagnetic waves transversally and polarisation pointing vector pointing theorem, Reflection of a plane wave at a plane interface between dielectrics, fresnel formulae total internal reflection, waves in conducting media Metallic reflection.

Skin Depth, waves guides, Modes in rectangular waves guides, energy flow and attenuation in wave guides. Resonant cavities, power loss in a cavity Q of a cavity optical fiber, Numerical aperture, propagation of electromagnetic waves in anisotropic media, characteristics plasma frequency plasma, propagation of electromagnetic waves in ionosphere.

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BSC-113: PRACTICAL SOFTWARE LAB (BASED ON BSC-108 SOFTWARE TOOLS)

BSC-114: PRACTICALS – DIGITAL ELECTRONICS LAB (BASED ON BSC-111)

THIRD SEMESTER

BSC–201: Computer System Architecture

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Register transfer and micro-operations, register transfer language, Bus and memory, Transfers, Arithmetic Logic Micro operation, Shift Micro-operations.

Basic Computer Organisation and Design: Instructions and instruction code, Computer instructions, instructions, input–output and interrupts, complete computer description, programming the basic computer.

Machine Language, Assembly language, The assembler program loops programming Arithmetic and Logic, Subordinates, Input- output programming.

Micro programmed Control :Control memory, Address Sequencing micro program example, Design of Control Unit.

Central Processing Unit: General Register Organisation, Stack Organisation. Instruction Formats, Addressing modes data transfer and Manipulation program control, Reduced instruction set Computer, pipeline and vector processing, parallel processing, pipelining, Arithmetic Pipeline RISC Pipeline and vector processing, Array processor.

Computer Arithmetic: Addition and subtraction, multiplication algorithms, Division algorithm, floating point Arithmetic operation, decimal arithmetic unit, Decimal Arithmetic operation.

Input Output Organization: Peripheral devices, Input output interfaces, Asynchronous Data Transfer, priority interrupt, direct memory access(DMA),input output processor(IOP),serial communication.

Multiprocessors: Characteristics of multiprocessors, Interconnection structures, Interprocessor arbitration, interprocessor communication and synchronization, cache coherence.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-202: Algorithms and Advanced Data Structures

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Trees: Search trees, AVL trees, treading, storage management: Run time storage management, Garbage collection & compaction.

Sorting Techniques: Insertion sort, quick sort merge sort, heap sort , shell sort, radix sort , external sort, lower bound for sorting by comparison of keys, selection and adversary argument

Traversal: Minimum spanning trees shortest path, graph component algorithms, string matching KMP and Boyer Moore algorithms.

Dynamic Programming: Matrix multiplication and optical binary search tree algorithms.

NP Complete Problem: Complexity classes P and NP, Examples of problems in the NP class.

Parallel algorithms: Parallelism, PRAM and other, models, parallel algorithms finding maximum element in a list, merging and sorting.

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BSC-203: Microprocessor-I

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Evolution of microprocessor: Intel series of microprocessor; Motorola series of microprocessors
microprocessor architecture : Arithmetic and logic Unit ; control unit ; General purpose registers;
external system bus architecture , example of 8085 microprocessor architecture. Memory Interfacing :
memory devices, ; memory decoding ; 8085 memory interfacing.

Basic I/O interface: I/O mapped I/O ; Memory mapped I/O; I/O port address decoding schemes of
synchronous, asynchronous, interrupt programmable; direct memory Access data transfer ; 8255
programmable peripheral interface; 8279 programmable key board and display interface; 8253
programmable timer; 8237/8257 DMA controller, interfacing of above chips with 8085
microprocessor. Assembly Language of 8085 microprocessor.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus, out of which students will be required to attempt 5 question only.

BSC-204: Database Systems

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Data Modeling for a data base : records and file , abstraction and data integration.

Data base management System: The three level architecture of a DBMS, component of a DBMS.

Data models and their implementations, relational, network, hierarchical.

Relational Data Manipulation: Relations Algebra, Relational Calculus, SQL.

Relational Data base Design : Relational Functional Dependencies; finding keys ; Ist to IIIrd NFs
BCNF , Loss less join and dependency preserving decomposition, computing cloures of set FD's
finding keys.

Query Processing: General Strategies for query processing query optimization, query processor.

Concept of security, concurrency and recovery . Data base Design Project : Definition and analysis of
existing systems , preliminary and final design , testing and implementation , operation and tuning.

Use of relational DBMS package for class project.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus, out of which students will be required to attempt 5 question only.

**BSC-205: PRACTICAL SOFTWARE LAB
(BASED ON BSC-202 & 204 SOFTWARE TOOLS)**

**BSC-206: PRACTICALS – Microprocessor LAB
(BASED ON BSC-203)**

FOURTH SEMESTER

BSC-207: Operating System Organisation and Unix

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Operating systems overview : operating system as an extended machine & and resources manager; operating system classification: operating systems mode and systems calls; operating systems architecture.

Processor management functions: processor models. Hierarchies and implementation; process states and transition, multiprogramming. Mutitasking, multithreading, levels of schedulers and scheduling algorithms micro-kernel architecture.

Memory management functions : memory management of single user operating system ; memory management for multi user operating system for operation system position , swapping , paging segmentation, virtual memory.

Device Management Function : I/O devices and controller , interrupt handlers, device independent I/O software user-space I/O software; disk scheduling ; clock hand ware software; terminal input out put software.

File management function : File naming, structure, types, access , mechanisms, attribute and operations, hierarchial directory systems, directory structures and directory operations ; file space allocations; file sharing file locking; symbolic link; file protection and security; distributed file systems.

Concurrent Programming : sequential and concurrent process; precedence graph , Bernsteins conditions; time dependency and critical code section mutual exclusion problem: classical process co-ordination problems; deadlock handling, inter process communication
(This course should be taught in the context of Unix operating system)

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus, out of which students will be required to attempt 5 question only.

BSC-208: Software Engineering

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Software engineering definition and paradigms, a generic view of software engineering.

Requirements Analysis : Statement of system scope . isolation of top level processes and entitle and their allocation to physical element, refinement and review, Analyzing of a problem, creating a software specification document, review for a correctness, consistency and completeness.

Designing software solutions : Refining the software specification Application of fundamental design concept for data, architectural , and procedural design using software blue print methodology and object oriented design paradigm, creating a design document, Review a conformance to software requirements and quality.

Software Implementation : Relationship between design and implementation; implementation issues and programming support environment ; coding and procedural design; Good coding style and review of correctness and readability.

Software testing: Role of testing and its relationship to quality assurance; Nature and limitation of software testing ; software testing methods.

Software Maintenance: Maintenance as part of software evaluation, reason for maintenance.

Type of maintenance, designing for maintainability; techniques for maintenance.

Comprehensive examples using available software platforms/case tools, configuration management.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-209: Object Oriented Design and Programming

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Introduction to object oriented modeling, modeling techniques object oriented Design, object design , comparison of methodologies (SA/SD, OMT,USD) , Design implementation , object oriented languages, programming in C++, Application in data base, compilers, animation and business.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-210: Theory of Computation

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Concept of alphabet, string language, basic operations on language : union, intersection, on complementation, Kleene star; regular languages : regular expressions non-deterministic finite automata, and their equivalence, pumping theorem, design and implementation of a lexical analyzer generator context free languages : context free grammar , deterministic and non-deterministic push down automata . pumping theorems, for context free languages, top down and bottom up pressing technique , design and implementation of an LALR PRASER; models of computation : turning machine and RAM, equivalence of variance of standard . Turning machine mode ; Universal Turning machine, solving problem on turning machine, turning acceptability and turning decidability, unsolvability of problems (Halting problems and others)

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-211: PRACTICAL SOFTWARE LAB (BASED ON BSC-207 SOFTWARE TOOLS)

BSC-212: PRACTICAL – SOFTWARE LAB (BASED ON BSC-208 & 209)

FIFTH SEMESTER

BSC-301: Data Communication and Network

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Data Communication: Concepts of data, signal, channel, bandwidth, bit-rate and baud-rate, Fourier analysis, maximum data rate of channel; analog and digital communication asynchronous and synchronous transmission; data encoding techniques; modulation technique; multiplexing; TJ/EL carrier systems; transmission medium ; transmission errors; error detection & correction codes.

Network classification and data communication services : Local area networks, metropolitan area network, wide area networks, wireless networks, internet works ; switched multi-megabit Data service, X.25 Frame relay; narrowband and broad band ISDN, Asynchronous transfer modes.

Network reference models : Layered architecture , protocol hierarchies, interface and services ; ISO-OSI Reference models Novel net ware; internet protocol stacks. Data link layer function and protocols : framing error-control , sliding window protocol : HDCL , SLIP AND PPP protocol.

Medium Access Sub-layer: CSMA/CD & Ethernet, Token Ring, FDDI; IEEE standards for LAN and MAN ; Satellites networks, TDMA and VSAT.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-302: Computer Graphics

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Development of computer graphic : basis graphic system and standards ; Raster scan and random scan graphics; continual refresh and storage displays ; display processor and character generators; color display techniques ; frame buffer and bit operations concept in raster graphics. points lines and curves ; scan conversion; line drawing algorithm; circle and ellipse generation; polygon filling; conic section generation ; anti-aliasing.

Two dimensional viewing; basic transformation; co-ordinate systems; windowing and clipping; segments interactive picture construction technique s; interactive input/output devices. Three dimensional concepts; 3-D representations; and transformations; 3-D viewing; algorithm for 3-D volumes, Spline curves and surface; fractals; Quad tree & Octree data structures.

Hidden lines, Hidden surfaces, Rendering.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-303: Principles of Visual and Windows Programming

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Diagram understanding. Generalized icons. The environment of a window application. Basic concept of windows programming The structure of window of program. Using child windows, Programming with the graphics devices interface. Displaying text receiving commands and data from user . X-Windows.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-304: Microprocessor-II

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Advanced microprocessor architecture; Intel 80286/ 80386/ 80486/ Pentium / Pro-pentium architecture; Macintosh power PC, DEC Alpha chip ; RISC and CISC Architecture; pipe line; Super-scaler architecture; real and protected modes; virtual 8086 mode.

Programming Model : General purpose registers; pointer and index register ; program invisible registers; memor/ addressing and addressing modes. Advanced memory interfacing ; memory address decoding of 32/64 bit microprocessor; memory paging mechanism and memory management ; Cache memory and cache controller. Advanced I/O features 8251 programmable communication interface ; Interrupts - interrupt vector and table, hardware and software interrupts ; 8259 programmable

interrupt controller; real time clock ; TTL RGB graphic controller ; Analog RGB graphic controller; shared bus operation .

The course should be taught in the context of Intel 80286, 80386, 83486, Pentium-IV and its assembly languages .

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

**BSC-305: PRACTICAL SOFTWARE LAB
(BASED ON BSC-302, 303 SOFTWARE TOOLS)**

**BSC-306: PRACTICALS – SOFTWARE LAB
(BASED ON BSC-301 & 304)**

SIXTH SEMESTER

BSC-308: Network & Internet Technologies and Applications

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Survey of contemporary Internet Technologies, The role use and implementation of current tools. Basic TCP/ IP name space, correctness, and protocols. Worldwide web/ HTML techniques for text, image links and forms. Indexing methods gopher. WAIS Server-side programming.

CGI scripts. Security issues, Emphasis on understanding, exploring and understanding, exploring and extending internet technology using Java or Perl.

EDI, Electronic Commerce

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

BSC-309: Scientific & Statistical Computing

Max. Marks (External): 75
Internal (Theory): 25
Time Allowed: 3 Hrs

Numerical Methods:

Floating point arithmetic: Basis concept of floating point number system implications of finite precision, illustration of error due to round of f.

Interpolation finite difference calculus, polynomial, interpolation Approximation Uniform, discrete least square, polynomial Fourier Numerical integration & differentiation Interpolator numerical integration numerical differentiation.

Solution of non-linear: Bisection, fixed point interaction. Newton's Reforms Methods.

Solution of ordinary differential equation- Taylor series method, Runge Kutta method, Euler method.

Random variable and their distributions: Random variables, probability density and distribution functions, special distribution, (Binomial, Poisson, Uniform, Exponential)

Independent random variable, function of random variable and theory distribution.

Limit theorems: Poisson and normal approximation, central limit theorem, law of large numbers.

Statistical Inference: Estimate and sampling point and interval estimate of hypothesis testing, power of test, regression.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus, out of which students will be required to attempt 5 questions only.

BSC-310: Multimedia and Applications

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Introduction to multimedia technology-computers, communications and entertainment framework for multimedia systems, M/M devices, presentation devices and user interface, M/M presentation & authoring.

Digital representation of sound & transmission, brief survey of speech recognition & generation, digital video & image compression, JEG image compression standards, MPEG motion video compression, DVI technology, time-based, media representation & delivery.

M/M software environments, limitation of workstation operating system, M/M system service OS support continuous media application, media stream protocol, M/M file system & information representation, data models for M/M & hyper media application.

Application of M/M, intelligent M/M system.

Desktop VR, virtual reality OS, distributed virtual environment systems, virtual environment display & orientation tracking, visually coupled system requirements, intelligent VR software systems.

Application of environment in various fields such as medical entertainment, manufacturing, business, education etc.

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BSC-311: Entrepreneurship

Max. Marks (External): 75

Internal (Theory): 25

Time Allowed: 3 Hrs

Need and significance of Entrepreneurship Development in Global contexts, Entrepreneurship – Concepts, Process, Experiences and Strategies, Theories of Entrepreneurship.

The Entrepreneurship – myths and misconception, qualities, characteristics and role demanded of an Entrepreneur, Entrepreneur v/s Professional Managers.

Government Programmes, Policies, Incentive and Institutional Networking for Enterprise setting, Steps of setting new Enterprise, Scanning Business Environment, Sensing Business Opportunity & identifying product.

Business Plan Preparation - Procedure & Steps, Market Survey & Demand Analysis, Growth, Modernization & Expansion of Enterprise.

Corporate Ethics - Nishkama Karma & Sakam Karma. Success Management. Stress Management.

Suggested Readings:

1. Entrepreneurship Development by C.B. Gupta & N.P. Srinivasan, Publisher – Sultan Chand & Sons.
2. Clarence Danhof. “ Observation on Entrepreneurship in Agriculture” in R. Wohl’s Change and the Entrepreneur. Harvard University, Cambridge.
3. Behavioral Exercises and Games – manual for trainers, learning systems, by M.V. Deshpande, P. Mehta & M. Nandami.
4. Product Selection by Prof. H.N. Pathak, Pub. By (NIESBUD), NSIC-PTC Campus, Okhla.
5. Entrepreneurship Development by Dr S.P. Mishra pub by National Institute for Entrepreneurship and Small Business Development (NIESBUD NSIC PTCB Campus Okhla.
6. DESAI A N: Entrepreneur and environment, Ashish, NEW DELHI.
7. Kumar S A: Entrepreneurship in Small Industry, Discovery, New Delhi.
8. Entrepreneurship Development by – Dr. S. Moharana & Dr. C.R. Das, Pub. By RBSA Publishers, Jaipur.

Note: The examiners are requested to set 8 questions in each paper covering the whole syllabus , out of which students will be required to attempt 5 question only.

**BSC-312: PRACTICAL SOFTWARE LAB
(BASED ON BSC-308 & 309 SOFTWARE TOOLS)**

**BSC-313: PRACTICALS – SOFTWARE LAB
(BASED ON BSC-310)**