# SCHEME OF EXAMINATION

## Semester I

*w.e.f. 2014-2015 session*

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*w.e.f. 2014-2015 session*

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**Semester III**

**Semester IV**

**Departmental Elective - 3**
### Semester V

**w.e.f. 2016-2017 session**

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### Semester VI

**w.e.f. 2016-2017 session**

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Objective: To provide the basic architecture about the mathematical concept of computer that will help the students to understand that how the data is stored and traverse in computer.

THEORY:
Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION - A

UNIT - 1

Relation: Relations, Properties of Binary relation, Matrix representation of relations, Closures of relations, Equivalence relations, Partial order relation. Function: Types, Composition of function, Recursively defined function.

Algebraic Structures: Properties, Semi group, Monoid, Group, Abelian group, Subgroup, Cyclic group, Cosets Normal Subgroups, Lagranges Theorem, Permutation groups.

UNIT - 2

Graph Theory: Graphs Theory: Euler and Hamiltonian path and circuits, Coloring, Directed Graphs Planar Graphs, Matrix Representation of Graphs, Weighted Graphs, Network flows, Max-flow Min-cut theorem.

UNIT - 3


SECTION - B

UNIT - 4


UNIT - 5

Introduction to defining language, Kleene Closure, Arithmetic expressions, Chomsky Hierarchy, Regular
UNIT-6

Conversion of regular expression to Finite Automata, NFA, DFA, Conversion of NFA to DFA, Optimizing DFA, FA with output: Moore machine, Mealy machine, Conversions, Introduction to Turing Machine.

Suggested Reading:

Text Books:

1. Lipschutz, Seymour: Discrete Mathematics, Schaums Series

Reference Books:


Note: Latest and additional good books may be suggested and added from time to time.
Objective:
To provide sound conceptual understanding of the fundamental and advanced concept of programming.

THEORY:
Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION A

UNIT-1

UNIT -2
Concept of variables and constants, structure of a C program. Operators & Expressions: Arithmetic, Unary, Logical, Bit-wise, Assignment & Conditional Operators, Library Functions, Control Statements: while, do-while, for statements, Nested loops, if..else, switch, break, continue and goto statements, Comma operator.

UNIT -3
Functions: Defining & Accessing : Passing arguments, Function Prototype, Recursion, Use of Library Functions, Storage Classes: Automatic, External and Static Variables (Register), Arrays: Defining & Processing, Passing to a function, Multidimensional Arrays.

SECTION - B

UNITT-4

UNIT - 5
Structures: Defining & Processing, Passing to a function, Unions (Array within structure, Array of structure, Nesting of structure, Passing structure and its pointer to UDF, Introduction to Unions and its Utilities).
UNIT-6

Data Files: Open, Close, Create, Process Unformatted Data Files. (Formatted Console I/O functions, Unformatted Console I/O functions, Modes Of Files, Use Of fopen(), fcloseO, fgetcO, fputc(), fgets(), fprintf(), fscanf(), fread(), fwriteO, Command Line Arguments). Documentation, debugging, C Processors, Macros. Examples illustrating structured program development methodology and use of a block structured algorithmic language to solve specific problems.

Suggested Reading:

Text Books:
4. Y. Kanetkar: Let us C, BPB Publication

Reference Books:

3. Rajender Singh: Application of IT to Business, Ramesh Publishers
Objective:
To have a fundamental understanding of the design, performance and state of the art of Internet. Topics covered include state of the art E-mail, Internet and research.

THEORY:
Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION - A

UNIT-1

UNIT - 2
Introduction to E-mail, advantages and disadvantages, message components, mailer features, E-mail management, Mime types, Newsgroups, mailing lists, chat rooms.

UNIT - 3
Introduction to networks and Internet: history, working of Internet, Internet Congestion. Collaborative computing. Modes of Connecting to Internet, Internet Service Providers (ISPs), Introduction to IETF, Internet address, standard address, DNS, Introduction to IPv6.

SECTION - B

UNIT - 4

UNIT - 5
Introduction to Web Servers: HS, Apache; Microson Personal Web Server. Accessing & using Apache server.

UNIT-6
Introduction to cryptography: Encryption schemes, including private key, public key, symmetric &
asymmetric, Encryption schemes, Secure Web document, Digital Signatures, Firewalls, Proxy servers, HTTPS, SSL.

**Suggested Reading:**

**Text Books:**

1. Fundamental of Internet & the world wide web, Raymond Green Law. & Ellen Hepp, 2001, TMH

**Reference Books:**

1. Internet & Web Design, Ramesh Bangia, LaXmi Publication
2. Complete Reference, Internet, TMH.
Internet concepts and web designing lab

1. Introduction to HTML
2. WAP to use different font tags and styles
3. WAP to use Marquee tags
4. WAP to List
5. WAP to create Table
6. WAP to insert an Image
7. WAP to implement Frames
8. WAP to use different arithmetic operations

C Programming Lab

1. Introduction of Turbo C IDE and Programming Environment
2. C Building Blocks
3. Loops in C-Language
4. Nested looping
5. Decision making the if and if-else structure
6. Decision making the Switch case and conditional operator
7. Debugging and Single-Stepping of C Programs
8. Functions in C-Language programming
9. Preprocessor Directives
10. Arrays in C (single dimensional)
11. Arrays in C (Multidimensional)
12. Learning Text and Graphics modes of display in C
13. Structures
14. Pointers in C-Language
15. Pointers with arrays and function
16. Filing in C-Language
Objective:
To provide the knowledge of different digital devices and their functioning.

THEORY:
Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

Section A

Unit-I
Digital Design and Binary Numbers: Binary Arithmetic, Negative Numbers and their Arithmetic, Floating point representation, Binary Codes, Cyclic Codes, Error Detecting and Correcting Codes, Hamming Codes.

Unit II
Minterm and Maxterm Realization of Boolean Functions, Gate-level minimization: The map method up to four variable, don’t care conditions, SOP and POS simplification, NAND and NOR implementation, Quine Mc-Cluskey Method (Tabular method).

Unit-III
Combinational Logic: Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder, Subtractor, Code Converters, Parity Generators and Checkers, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, Hazards and Threshold Logic

Section B

Unit-IV
Memory and Programmable Logic Devices: Semiconductor Memories, RAM, ROM, PLA, PAL, Memory System design.

Unit-V
Synchronous Sequential Logic: Sequential Circuits, Storage Elements: Latches, Flip Flops, Analysis of Clocked Sequential circuits, state reduction and assignments, design procedure. Registers and Counters: Shift Registers, Ripple Counter, Synchronous Counter, Other Counters.

Unit-VI
Asynchronous Sequential Logic: Analysis procedure, circuit with latches, design procedure, reduction of state and flow table, race free state assignment, hazards.

References:

UNIT-1: INTRODUCTION
- Concept of communication
- Verbal and non-verbal modes of communication
- Function and Role of effective communication
- The process of communication – the four skills of listening, speaking, reading and writing (LSRW)

UNIT-2: ACTIVE LISTENING AND EFFECTIVE READING
- Listening skills – reiteration and application of concepts
- Reading skills – reiteration and application of concepts
- Listening Comprehension - speeches (general and business) professional texts (based on business reports/work related issues/ current affairs/ environment etc).

UNIT-3: PROFESSIONAL SPEAKING
- Speaking skills – reiteration of concepts
- Group Discussion with evaluation
- Debate
- Presentation with evaluation
- Jam/ Extempore
- Mock Interview and Meetings with evaluation
- Case Studies and SWOT analysis

UNIT-4: BUSINESS WRITING
- Principles of Communicative Writing
- Business Letters – application, enquiry, complaints, reservations
- E-Mails
- CV Writing
- Reports – a) Graph Sales Report b) Field/Survey Report c) Minutes and Agenda

UNIT-5: FUNCTIONAL GRAMMAR AND BUSINESS VOCABULARY
- English for Specific Purposes – vocabulary related to the fields of Hospitality, Travel and Tourism, Airlines, Banking, Media and Corporate.
- Phrasal Verbs, Word Pairs, Synonyms and Antonyms
- Use of Tense & Modals
UNIT-1: INTRODUCTION
• Soft Skills – What and Why?
• Ingredients
• Utility & Scope

UNIT-2: BETTER ENGLISH USAGE AND ACCENT TRAINING
• Introduction to phonetic sounds
• Stress
• Intonation

UNIT-3: ORAL COMMUNICATION
• Art of Conversation
• Speaking at home, office/college, in the market, bank, airport/railway station and with government and private officials

UNIT-4: WRITTEN COMMUNICATION
• Art of Written Communication
• Domains of Written Communication: Letter Writing, Resume & covering letter, E-mail

UNIT-5: PRESENTATION SKILLS
• Tools of Presentation Skills
• Power Point Presentation

UNIT-6: WINNING SKILLS:
• Development of leadership skills in the light of all professional needs
• Negotiation
• Presentation
• Risk taking
• Managing Challenges
• Thinking ahead
Objective:
To relay the theoretical and practical fundamental knowledge of most commonly used object oriented language which deals with objects and real time applications.

THEORY:
Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION - A

UNIT - 1


UMT - 2

Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, State identity and behavior of an object, Constructors and destructors, instantiation of objects, Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Meta class/abstract classes.

UNIT - 3

Operator overloading: Introduction; fundamentals of operator overloading; restrictions on operators overloading; operator functions as class members vs. as friend functions; overloading; <<; >> overloading unary operators; overloading binary operators.

SECTION - B

UNIT - 4

Inheritance; virtual functions and polymorphism: Introduction; inheritance: base classes and derived classes; protected members; casting base-class pointers to derived-class pointers; using member functions; overriding base_class members in a derived class; public; protected and private inheritance; using constructors and destructors in derived classes.

Unit - 5

Files and i/o streams: Files and streams; creating a sequential access file; reading data from a sequential
access me; updating sequential access files; random access files; creating a random access file; writing data randomly to a random access file; reading data sequentially from a random access file.

**Unit - 6**

**Templates & exception handling:** Function templates; overloading template functions; class template; templates and inheritance; templates and friends; templates and static members; basics of C++ exception handling: try; throw; catch; throwing an exception; catching an exception.

Suggested Readings:

2. Data Structures & Algorithm using C by RS.Salaria.
3. Lipschutz, "Data Structures" Schaums Outline Series, TMH

Reference Books:

1. Aaron M. Tenebaum, Yedidyah, Langsam and Moshe J. Augenstein "Data Structure using C / C++", PHI
2. Horowitz and Sahani, "Fundamentals of Data Structures", Galgotia Publication
3. R. Kruse et.al, "Data Structures and Program Design in C", Pearson Education

Note: Latest and additional good books may be suggested and added from time to time
Program 1: Given that an EMPLOYEE class contains the following members:
   a. Data members: Employee_number, Employee_name, Basic, DA, IT, Net_Sal.
   b. Member functions: To read data, to calculate net_sal and to print datamembers.

Write a C++ program to read data on employees and compute the net_sal of each employee (DA = 52% of basic and income tax = 30% of the gross salary).

Program 2: Define a STUDENT class with USN, name and marks in 3 tests of 4 subjects. Declare an array of 10 STUDENT objects. Using appropriate functions, find the average of the two better marks for each student. Print the USN, name and the average marks of all the subjects.

Program 3: Write a C++ program to create a class called COMPLEX and implement the following overloading functions ADD that return a complex number:
   a. ADD(a,s2) - where ‘a’ is an integer (real part) and s2 is a complex number.
   b. ADD(s1,s2) - where s1 and s2 are complex numbers.

Program 4: Write a C++ program to create a class called DATE. Accept two valid dates in the format dd/mm/yy. Implement the following operations by overloading the operators + and -. After every operation display the results by overloading the operator <<.
   a) no_of_days=d1-d2; where d1 and d2 are DATE objects. d1≧d2 and no_of_days is an integer.
   b) d2=d1-no_of_days; where d1 is a DATE object and no_of_days is an integer.

Program 5: Create a class called MATRIX using two-dimensional array of integers. Implement the following operations by overloading the operator ++ which checks the compatibility of two matrices to be added and subtracted. Perform the addition and subtractions by overloading the + and – operators respectively. Display the result by overloading the operator << if(m1==m2) then m3=m1+m2 and m4=m1-m2 else display error.

Program 6: Write a C++ program to create a class called OCTAL which has the characteristics of an octal number. Implement the following operations by writing an appropriate constructor and an overload operator +.
   a. OCTAL h=x; where x is an integer.
   b. Int y=h + k; where h is an OCTAL object and k is an integer.

Display the OCTAL result by overloading the operator <<. Also display the values of h and y.
Objective: To provide basic knowledge of internals of microprocessor, its architecture, components, terminologies, etc. at minute level and ultimately about the working of a digital computer hardware as a whole.

Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION - A

UNIT - 1

Number representation: fixed and floating point number representation, IEEE standard for floating point representation. Error detection and correction codes: Hamming code. Digital computer generation.

UNIT - 2

Computer types and classifications, functional units and their interconnections, buses, bus architecture, types of buses and bus arbitration. Register, bus and memory transfer.

UNIT - 3

Addition and subtraction of signed numbers, look ahead carry adders. Multiplication: Signed operand multiplication, Booth’s algorithm and array multiplier. Division and logic operations. Floating point arithmetic operation Processor organization, general register organization, stack organization and Addressing modes

SECTION - B

UNIT - 4

Instruction types, formats, instruction cycles and sub cycles (fetch and execute etc) , micro-operations, execution of a complete instruction. Hardwire and micro programmed control: microprogramme sequencing, wide branch addressing, and microinstruction with next address field, pre-fetching microinstructions, concept of horizontal and vertical microprogramming.

UNIT - 5

Basic concept and hierarchy, semiconductor RAM memories, 2D & 2 I/2D memory organization. ROM memories. Cache memories: concept and design issues 9 performance, address mapping and replacement) Auxiliary memories: magnetic disk, magnetic tape and optical disks Virtual memory: concept implementation.

UNIT - 6

**Suggested Reading:**

**Text Books:**

1. Mano, Computer System Architecture", Pm

**Reference Books:**

1. Computer Organization & Architecture By SPS Saini

2. Tannenbaum," Structured Computer Organization, Pm

Note: Latest and additional good books may be suggested and added from time to time.
Objective:
To relay the theoretical and practical fundamental knowledge of most commonly used data structures and algorithms.

Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION-A

UNIT - 1

UNIT - 2

UNIT - 3
Queues: Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Army and linked implementation of queues in C, Dequeue and Priority Queue.

SECTION - B

UNIT - 4

UNIT - 5-

Searching: Sequential search, Binary Search, Comparison and Analysis Internal Sorting: Insertion Sort, Selection, Bubble Sort, Quick Sort, Two Way Merge Sort, Heap Sort, Radix Sort, Practical consideration for Internal Sorting.

UNIT - 6

Files: Sequential file organization, creating updating retrieving from sequential files advantages and disadvantages of sequential file organization. Data representation and density, parity and error control techniques, devices and channels, double buffering and block buffering, handling sequential files in C language, seeking, positioning, reading and writing binary files in C. External Sorting and merging files k way and polyphase merge

Suggested Reading:

Text Books:

I. Operating Systern Concept, Galvin, Wiley India

Reference Books

1. Operating System, Tanenbaum, Pearsons

2. Operating System, Schaum Series, Jyoti Singh, TMH

Note: Latest and additional good books may be suggested and added from time to time.
1. Write a program to calculate sum of n numbers using 1D array.
2. Write a program to find the transpose of a matrix.
3. Write a program to multiply two matrices.
4. Write a program to calculate factorial of a number using recursion.
5. Write a program to search a number in an array using linear search.
6. Write a program to search a number in an array using Binary search.
7. Write a program to implement insertion sort.
8. Write a program to implement stack using array.
9. Write a program to implement queue using array.
10. Write a program for implementation of creation, insertion, deletion, and searching operation in singly linked list.
11. Write a program to implement stack using linked list.
12. Write a program to implement queue using linked list.
13. Write a program to implement circular linked list.
14. Write a program for implementation of creation, insertion, deletion, and searching operation in doubly linked list.
15. Write a program to traverse the graph in Depth first Traversal.
MVN University, Palwal
School of Computer and Information Science
MASTER OF COMPUTER APPLICATION

Objective:
To have the fundamental concept of system, how its work, system design and planning and many more about system.

THEORY:
Note: For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two questions from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION - A

UNIT - 1

Introduction: introduction to system, characteristics of system, component of system, type of system, Models and contemporary systems Analysis : Effective communication in systems analysis: Tools of the systems Analysis, System development life cycle, role of system analyst.

UNIT - 2

System Analysis: What is planning, need of planning, feasibility study, steps in feasibility study, feasibility report, information gathering tool, tools of structured analysis

UNIT - 3

A structured Approach to System Design: Structured Top-down design, Logical design requirements, Forms requirements design, CRT screen design; Program specification, development completion schedule, Structured Walk Through.

SECTION - B

UNIT - 4

System Cost Determination: System costs and system benefits, comparative cost analysis, data Processing costs, DP cost centre concept

UNIT - 5

Project Management and Control: Development of standards, project control, Gantt Charts, PERT & CPM.
Systems Conversion and Implementation: Planning considerations, Conversions methods, systems follow-up quality assurance of new systems.

UNIT - 6

Testing: What is testing, what is the need of testing? Quality assurance, audit trail.

Suggested Reading:

Text Books:


Reference Books:

2. System Analysis & Design, Hoffer, Pearson Education
MSL- 518-A Principles of Management

L.T.P-4.0.0 Credits 4


Unit-IV Organizing: Concept, Forms of Organizational Structure, Departmentation, Span of Control, Delegation of Authority, Authority and Responsibility, Organizational Design.


Unit-VI Leadership: Concept of Leadership: importance, Functions of Leaders, Leadership Styles, Controlling: Concept, Characteristics, Types of control, Significance, Process, Relationship between planning and control.

Text Books:

1. C.B Gupta, Management Concepts and Application, Sultan Chand.

Reference Books:

1. Prasad L.M. - Principles and Practice of Management
2. Stoner & Wankel - Management
3. Peter F. Drucker - Practice of Management
UNIT-1: TEAM BUILDING
- Concept of Group
- Consideration and Cooperation
- Team building practices through group exercises
- Team task / Role play
- Ability to work together

UNIT-2: CRITICAL THINKING
- Analyse
- Prioritise
- Evaluating the problems
- Understands how to use decision making skills to support mission
- Demonstrated systems thinking ability
- External environments

UNIT-3: BUSINESS ETIQUETTE AND PERSONAL GROOMING
- Introduction to Etiquette
- Various accepted practices in the corporate world
- Unsaid codes of conduct
- Personality, manners, awareness and positive attitude

UNIT-4: ORGANIZATIONAL SKILLS
- Understanding organizational mission
- Understanding ethics concerned with public trust and organization
- Demonstrates ability in conflict management and dispute resolution
- Understanding how to acquire needed resources
- Understanding organizational culture

UNIT-5: INNOVATION
- Able to manage change
- Understands creative processes
- Capable of systems thinking
- Adept at framing issues
- Comfortable with risk taking
Objective:
This subject provides the basic knowledge about the environment, factors affecting environment etc.

Theory:
Note : For setting up the question paper, question no 1 will be set up from complete syllabus which will be compulsory and of short answer type. Three questions will be set from each of the sections. The students have to attempt first common question, which is compulsory, and two question from each of the sections. Thus students will have to attempt 5 questions out of 7 questions.

SECTION-A

UNIT-I


UNIT-II

Natural resources: – Renewable and non-renewable resources, natural resources and associated problems:
(a) Forest resource: Use and over-exploitation, deformation and case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
(b) Water resources: Use and overutilization of surface and ground water, flood, drought, conflicts over water, dams-benefit and problem.
(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
(d) Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problem, water logging, salinity.
(e) Land resource: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

UNIT-III

Ecosystems: – Concept, structure and function of an ecosystem; energy flow in the ecosystem; ecological succession; food chains, food webs and ecological pyramids; types of ecosystem – forest ecosystem, grassland ecosystem, aquatic ecosystems.

SECTION-B

UNIT-IV

Environmental Pollution: – Definition, cause, effects and control measures of different types of pollutions – air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal
pollution, nuclear hazards; solid waste management- causes, effects and control measures of urban and industrial wastes; role of an individual in prevention of pollution.

UNIT-V

Social issues and environment:– Urban problems related to energy, water conservation, rain water harvesting, resettlement and rehabilitation of people and its problems; global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.

UNIT-VI


SUGGESTED READINGS:
Text Books:
1. Rajagopalan R, Environmental Studies, Oxford University Press, New Delhi

Reference Books: