

University of Mysore
Syllabus for PG Admission Entrance Examination – 2014- 2015

Program : M.Sc Tech in Computer Science

Subject: Computer Science

Unit-I: Computer Fundamentals

Evolution of Computers, Generation of Computers, Computer Applications in various fields, Classification of Computers, Functional Units – Input, Output and memory devices, Internal and External memory, Types of memories: ROM: PROM, EPROM, EEPROM, RAM:SRAM, DRAM, SDRAM, RDRAM, Secondary Storage – Magnetic Disk, Tape, Optical memory, CDROM, DVD, Hardware and Software – Types of Storage, stages in Problem solving, algorithms and flowcharts, Computer Languages

Unit-2: Number System

Binary, Octal, Hexadecimal number systems, Conversion from one system to another, Binary arithmetic, Complements – 1's and 2's Complement, BCD Code, BCD addition, Non weighted codes – Excess 3, Gray, Floating point and fixed point representation, Alphanumeric codes

Unit-3: Computer Organization

Boolean Algebra – Boolean Laws, Demorgan's Theorem, Logic gates – Basic gates and Universal gates, SOP and POS expression, realization of Boolean expression using gates, Simplification of Boolean expression using Karnaugh map, Combinational logic circuits – Half adder, Full adder, Half subtractor and Full subtractor, Flip Flops – SR, T, JK and Master Slave, Encoder and Decoder, Counter and Shift registers

Unit-4 : Basics of 'C' Language

Features of C, General structures of C program, Keywords and Identifiers, Constants and Variables, Data types in C, Operators in C, Mathematical Functions, Input and Output functions, Decision making – if, if else, nested if, else if ladder, switch, break and continue statements, looping statements – for, do and while loops, Arrays – Declaration and initialization of one and two dimensional arrays, Strings – String function

Unit-5: Advanced C Language

Functions – Categories of functions, Functions with arrays and strings, recursion, storage classes, call by value and call by reference, structures and unions : Definition and use of structures, declaring, initializing and accessing structure members, Array of structures, nested structures, Introduction to unions, Pointers – Declaring and initializing a pointer, accessing a variable using

pointers, Pointers and arrays, pointers and functions, pointers and structures, files in C-Definition and need of file, defining, opening and closing a file, Input and output operations on files, Random access files

Unit-6: Data structures

Data structure – Fundamentals, classifications, operations on primitive and non primitive data structures, arrays-Different operations on array – Traversal, insertion, deletion, sorting, searching, merging, two dimensional array as a linear data structure – memory representation with address computation, Stack – Memory representation, algorithm for stack operations, linear queue – Memory representation, algorithms for different operations on linear queue, disadvantages of linear queue. Circular queue – Memory representation of circular queue, different operations of circular queue, applications of stack and queues, Linked list – Memory representation, Operations on linked list – Insertion, deletion, searching, different types of linked lists – Circular, double and header linked list, Trees – Tree as a linear data structure, different memory representation of trees, tree traversal, different types of trees-complete, binary, balanced and skewed tree

Unit-7: Object oriented programming

Object oriented programming – Pitfalls of procedure oriented programming , Basic concepts of OOPs – Objects, classes, encapsulation, dynamic binding, inheritance and polymorphism, benefits of OOPS, Object oriented programming languages, Difference between C and C++, Structure of C++ program, functions in C++ - Default arguments, function overloading, inline functions, operators in C++, Constructor and Destructors, Types of constructors, operator overloading, inheritance – Different types of inheritance

Unit -8: Java Programming

Introduction to Java, Java tokens, Character set, keywords, identifiers, literals, operators, decision making and iterative statements, classes and objects – Adding variables, Adding methods, Creating objects, Accessing class members, constructors, various types of inheritance, method overloading, various types of access controls, arrays – One dimensional and multidimensional, strings. Using various java packages, networking with Java. Threading – Thread life cycle, Thread methods, Thread exceptions, Errors and exceptions. Applets – Creating and executing applets, applet life cycle, Applet methods, Handling text fields, buttons, check box, radio buttons, file and I/O streams

Unit-9 :Operating System

Fundamentals of Operating system(OS) – Introduction, History, Types of operating system – Single user, Multiuser, batch systems, multitasking, multiprogramming, real time systems. OS services and system calls, Memory management techniques – Single contiguous, partitioned,

paged, virtual memory management techniques – Demand paged and segmented, Process management – Scheduling criterion, scheduling policies, deadlocks – Conditions, prevention and recovery of dead locks, banker’s algorithm, Synchronization – Spooling and semaphores

Unit-10: Computer Networks

Introduction, benefits of networks, network classification, network topologies, transmission media – Guided and unguided, digital and analog transmission, encoding schemes – Digital to analog encoding: ASK, FSK and PSK, Analog to digital encoding: Pulse amplitude modulation and pulse coded modulation, Multiplexing – FDM, TDM, Error detection and correction, ISO OSI reference model – Functions and services of various layers, repeaters, bridges – Functions of bridge, types of bridge, routers – Issues involved in routing, gateways. Virtual and datagram services, Introduction to TCP/IP

Eligibility:

The candidates who have passed B.Sc. with Computer Science / Computer Applications as an optional with 65% marks in Cognate subject (5% relaxation in case of SC,ST and Cat-I candidates) or BCA degree with 65% (5% relaxation in case of SC,ST and Cat-I candidates) in aggregate (excluding languages). Candidates should have studied Mathematics as a major or minor subject in their BCA / B.Sc. degree.

Note:

1. A student will get a degree entitled M.Sc. Computer Science, if he/she opts out to exit from the course at the end of the 4th semester.
2. A student who obtains M.Sc. Computer Science degree cannot register to continue for M.Sc. Tech. in Computer Science.