2017

Full Marks : **80**
Time : **3** hours

*Answer **All** questions.*
All questions carry equal marks.

(INFORMATION TECHNOLOGY APPLICATION)

1. (a) Draw and explain different functional units of a digital computer.

(b) Explain the working principle of a Computer.

OR

(c) Briefly explain the working principle of a microcomputer.

(d) How control unit and ALU coordinate with each other? Explain.

2. (a) What is number system ? What is base or radix of a number system ? What are the radix value of different number system.

(b) How data are represented using octal number system ? Covert the octal number (762.23) into equivalent decimal and binary representations.

OR

(c) What is 1's complement ? Perform the following subtraction of binary number using 2's complement.

(i) 101 – 1101

(ii) 1110 – 1111

(d) Draw the flow chart for Booth's algorithm for multiplication.

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3. (a) Distinguish between hardware and software, write their usage with example.

(b) Explain different types of software ? Differentiate between software and firmware.

OR

(c) Distinguish between translator and assembler. Give example of each.

(d) Distinguish between Interpreter and compiler. Give example of each.

4. (a) What are the proofing tools available in Ms-Office. Explain each one briefly.

(b) Write the steps needed to insert a table in MS-Word.

OR

(c) Write the steps needed to create a student database using MS-Access.

(d) Outline the tools available in Power Point, explain some of them.

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(DATA STRUCTURE)

1. (a) What is an algorithm ? Define different rotation of algorithm and also define the complexity of algorithm.

(b) Write an algorithm to insert an element in specific location of linear Array.

OR

(c) Define Data Structure. Describe different operation on a data structure in details.

(d) Describe in details the memory repir esentation of 1D and 2D Array.

2. (a) What is a stack ? Write an algorithm of push an pop operation of a stack.

(b) What is linked list ? Write an algorithm to search the location of an item from single linked list.

OR

(c) Define circular Queue. Write an algorithm to insert an element in a circular Queue.

(d) Define double linked list. Write an algorithm to insert an item at the beginning of the double linked list.

3. (a) Define Binary tree. Write in-order pre-order and post-order traversal with suitable example.

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(b) Write is Binary search tree ? Construct a Binary search tree with following rods

M, A, T, D, F, N, Q, W, O Q

OR

(c) Define Binary tree. Write different representation of binary tree in memory.

(d) Define Threaded binary tree. Define it's representation, write the advantages over normal binary tree.

4. (a) Write an algorithm to search location of an item according to linear search. Analyse its time complexity.

(b) What is Sorting ? Write an algorithm to sort the element in an array according to Bubble sort.

OR

(c) What is searching ? Write the algorithm of binary search. Write the time complexity of it.

(d) Write an algorithm to sort the elements of an array according to selection sort. Explain it's time complexity.

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