**Faculty of Engineering & Technology**

**Third Semester B.E. (Mech. Engg.)/Third Semester B.E.P.T.(Mech.) Examination**

**COMPUTER APPLICATION—I**

**Paper—I**

**Sections—A & B**



Time—Three Hours] [Maximum Marks—80

**INSTRUCTIONS TO CANDIDATES**

(1) All questions carry marks as indicated.

(2) Answer any **THREE** questions from Section A and any **THREE** questions from Section B.

(3) Due credit will be given to neatness and adequate dimensions.

(4) Assume suitable data wherever necessary.

(5) Illustrate your answers wherever necessary with the help of neat sketches.

(6) Write algorithms in algorithmic language only.

**SECTION—A**

1. (a) Write an algorithm to calculate $z = x^y$ without using in-built function. 6



(b) Write an algorithm to find solution of following series :

$1 + 2 + 4 + 8 + 16 + 32 + \ldots\ldots\ldots + n$.

(n should be given by user) 7

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2. (a) Write an algorithm for bubble sort technique. Also trace the same with suitable example. 8

(b) Comment "Binary search technique is faster than Linear search technique". 5

3. (a) Write an algorithm to calculate sum of two $3 \times 3$ matrices. 6

(b) What is recursion ? Write recursive algorithm to calculate factorial of a number. 7

4. (a) Write POP and PUSH algorithm. Elaborate with suitable example. 10



(b) Explain the need of array with suitable example. 4

5. Write short notes on (any **THREE**) :

(a) Linear and nonlinear data structure

(b) Single and double linked list

(c) Data types

(d) Properties of algorithm. 13

**SECTION—B**

6. (a) Draw binary search tree for following sequence :

92, 89, 07, 18, 28, 27, 52, 69, 32, 42

Also traverse the tree in preorder, inorder and postorder. 8



(b) Write algorithm to calculate no. of nodes in Binary Search Tree. 5

7. (a) Calculate prefix and postfix form of the following mathematical expression : 

   (i) (A + B * C) /(D – E/F)

   (ii) (P * Q – R) + S*(T – U). 8

   (b) Write various terminology related with tree. 5

8. (a) Discuss various types of file organisation. Give their advantages and disadvantages. 6

   (b) Write algorithm to copy OLD-FILE to NEW-FILE. 7

9. (a) Differentiate between structured programming and object oriented programming. 6

   (b) Differentiate with example between object, class and method.  7

10. Write short notes on (any **THREE**) :

   (a) File handling techniques

   (b) Characteristics of OOPS

   (c) Record organization

   (d) Binary threaded tree. 14



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