

**BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)**  
**B.C.A. Sem-I : WINTER : 2021**  
**SUBJECT: ALGORITHM & PROGRAM DESIGN**

**Day :** Tuesday  
**Date :** 18-01-2022

**W-18752-2021**

**Time :** 10:00 AM-01:00 PM  
**Max. Marks:** 60

**N.B.:**

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All question CARRY EQUAL marks.
- 5) Answers to Both the sections should be written in SAME answer book.
- 6) Draw a labeled diagram WHEREVER necessary.

**SECTION - I**

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) What is pseudo-code? Explain with an example.
- b) What is the difference between Structured programming and Procedure oriented programming?

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) What do you mean by swapping? Write an algorithm for given variables of integer type a and b, exchange their values without using third temporary variable and explain.
- b) Analyze and design an algorithm to print all the prime numbers between 1 to 100

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) Analyze and design an algorithm to find largest and second largest number from a list of 8 numbers.
- b) Design an algorithm to remove duplicates from an ordered array and contract the array accordingly.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Advantage of algorithm
- b) Iterative construct in control structure
- c) Evaluation of Polynomial
- d) Cube root of a number.
- e) Compare bubble and selection sort.

**SECTION - II**

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) What is the difference between Algorithm and Pseudo code?
- b) What do you mean by control structure in structured programming language? Explain

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Design an algorithm that reads a list of numbers and makes a count of the number even and odd members in given series: 1,2,4,5,6,7,8,9,10,11,12
- b) Write an algorithm to find the value of polynomial is  $P(x) = 7x^2 + 5x + 6$

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) Design an algorithm to find cube root of a given 729.
- b) Design and algorithm in search an element in an array using binary search.

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