

Seat No.	
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[4457]-112

S.E. (Computer Engineering) (First Semester)

EXAMINATION, 2013

PROGRAMMING AND PROBLEM SOLVING

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

- N.B. :-** (i) In Section I, attempt Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6.
- (ii) In Section II, attempt Q. No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10, Q. No. 11 or Q. No. 12.
- (iii) Answers to the two Sections should be written in separate answer-books.
- (iv) Neat diagrams must be drawn wherever necessary.
- (v) Figures to the right indicate full marks.
- (vi) Assume suitable data, if necessary.

## SECTION I

1. (a) What do you mean by Algorithmic solutions and Heuristic solutions ? Describe the different steps in problem solving. [8]
- (b) Write a short note on Top down design. [6]
- (c) Explain the difference between variables and constants. [4]

P.T.O.

Or

2. (a) Write short notes on the following with suitable examples : [12]
- (i) Interactivity Chart
- (ii) IPO Chart
- (iii) Internal Documentation and External Documentation.
- (b) What is function ? Explain different category of functions with examples. [6]

3. (a) A bank offers interest on fixed deposits as follows. Describe and explain complete steps of solution development to read Name of customer, Interest and print payable amount : [12]

Interest Rate	Duration
4.5%	<=45 days
5%	<=90 days
6%	<=180 days
7%	<=1 year
8.5%	<=3 years
9%	>3 years

- (b) What are different ways to send data from one module to another through the use of parameters ? Explain with suitable example. [4]

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Or

4. (a) Explain in brief about Decision table using suitable example. [6]  
(b) What do you mean by cohesion and coupling ? How are these important to programmers. [6]  
(c) Describe positive logic with suitable example. [4]

5. (a) Design and explain an algorithm to find the sum of the digits of an Integer number. [8]

- (b) Design and explain an algorithm to compute factorial of a given number. [8]

Or

6. (a) Design and explain an algorithm to convert binary number to decimal number with suitable example. [8]  
(b) Design and explain an algorithm for square root of a given number. [8]

## SECTION II

7. (a) Design an algorithm to find second largest value in an array of N elements. [8]  
(b) Write a pseudo algorithm for removal of duplicates from an ordered array. [8]

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P.T.O.

Or

8. (a) Write short notes on : [8]  
(i) Pointer technique  
(ii) Table Look-Up technique.

- (b) Write a pseudo algorithm for partition a randomly ordered array of  $n$  elements into two subsets such that element less than equal to  $X$  are in one subset and elements are greater than  $X$  are in other subset. [8]

9. (a) Write and explain algorithm for text length adjustment. [8]  
(b) Explain algorithm for line Editing. [8]

Or

10. (a) Design and implement an algorithm that will search a line of text for a particular pattern or substring. [8]  
(b) Explain algorithm for left-right justification of a given text. [8]

11. (a) Explain the following concepts : [8]  
(i) Constructor  
(ii) Destructor  
(iii) Object  
(iv) Class.

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- (b) Explain Access specifiers in C++. [6]
- (c) Write a program in C++ to find average of 5 numbers. [4]

*Or*

12. (a) Write a program in C++ to implement the concept of polymorphism with suitable example. [6]
- (b) Write a program in C++ to implement the concept of multiple inheritance with suitable example. [6]
- (c) Explain static member function with suitable example. [6]