Code: 13A05101

R13

B.Tech I Year (R13) Supplementary Examinations December/January 2014/2015

PROBLEM SOLVING & COMPUTER PROGRAMMING

(Computer Science and Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

- (a) Give brief description about the general problem solving strategies.
- (b) Write a program that reads nine integers and prints them three in a line separated by commas.
- (c) What is an expression? Give brief description about the different types of expressions.
- (d) Given a set of n numbers design an algorithm that adds these numbers and returns the resultant sum. Assume n is greater than or equal to zero.
- (e) Given an integer n devise an algorithm that will find its smallest exact divisor other than one.
- (f) What is top – down design? Illustrate it with the help of a diagram.
- (g) With the help of neat sketch, explain the bitwise shift – right operator.
- (h) Draw and explain the truth table for bitwise exclusive OR operator.
- (i) Explain the node structure of a single linked list.
- (j) Give brief description about the block memory allocation technique.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

2 (a) Explain in detail about the system development life cycle.

(b) What is an identifier? What are the rules that should be followed for defining the identifiers?

OR

3 (a) Write a program that prompts the user to enter an integer and then prints the integer first as a character, then as a decimal and finally as a float.

(b) What are the major computer hardware components? Explain them.

UNIT - II

4 (a) What is type conversion? Explain the different types of conversion in detail.

(b) Write a program to print the Fibonacci sequence of any given number .

OR

5 (a) With the help of a flowchart and syntax explain the for loop.

(b) Write a program to calculate the GCD of given two numbers.

UNIT - III

6 (a) What is an array? Explain the one dimensional array with suitable example program.

(b) Design an algorithm that rearranges the elements in an array so that they appear in reverse order.

OR

7 (a) Given a randomly ordered array of n elements determine the k^{th} smallest element in the set.

(b) What is a function? In how many ways the arguments can be passed to the function? Explain them in detail.

UNIT - IV

8 Discuss in detail about the various string manipulation functions

OR

9 (a) What is a structure? Explain how it differs from arrays.

(b) What is a mask? Explain the one bit and two bit masks with suitable examples.

UNIT - V

10 What are the different possible positions that a node can be deleted from a single linked list? Explain them in detail.

OR

11 Explain in detail about the various types of standard input and output functions

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