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29/6/13 FN

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Question Paper Code : 65103

(5 Year) M.Sc. DEGREE EXAMINATION, MAY/JUNE 2013.

First Semester

Software Engineering

ESE 013 — PROBLEM SOLVING TECHNIQUES

(Regulation 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is the choice of variable names so important during programming?
2. Write a pseudo-code to swap two values of the variables without using temporary variable.
3. Differentiate between GCD and LCM?
4. What is meant by histogramming?
5. Sort these numbers [20, 35, 18, 4, 41, 3] by insertion sort.
6. What is meant by hashing?
7. Define dynamic memory allocation.
8. List the conditions to call a tree a binary search tree.
9. Define recursion.
10. What is divide and conquer strategy?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain about the steps involved during problem solving. (8)
(ii) With pseudo-code explain the steps involved during the summation of set of number by computer. (8)

Or

- (b) (i) Explain the procedure of top-down design of an algorithm. (8)
(ii) With the help of suitable code explain the procedure in computing a factorial of a number. (8)
12. (a) (i) Explain the procedure of generating a prime number with an example. (8)
(ii) How will you remove the duplicates from an ordered array? Explain with an example. (8)

Or

- (b) (i) Briefly give a note on computing procedure for the prime factor of an integer. (8)
(ii) Discuss the procedure involved in finding the k^{th} smallest element from a randomly ordered array of n elements. (8)
13. (a) (i) Compare and contrast on selection sorting and exchange sorting with an example. (8)
(ii) Design and implement an algorithm that will search a line of text for a particular pattern or a sub-string. (8)

Or

- (b) (i) Explain the principle involved in sorting of randomly ordered set of n numbers by partitioning. (8)
(ii) Design and implement a procedure that would left and right justify the text in such a way that, it should avoid splinting of words in a paragraph. (8)
14. (a) What is a Stack? Explain its operations with the suitable pseudo-code.

Or

- (b) With neat diagram, explain the operations of a linked-list with the relevant pseudo-code.
15. (a) What is a traversal? Explain the procedure involved in different traversals of a binary tree.

Or

- (b) State Towers of Hanoi problem. Design a recursive algorithm to solve it for one or more disks.