2016

M.Sc. 4th Seme. Examination

APPLIED MATHEMATICS WITH OCEANOLOGY AND COMPUTER PROGRAMMING

PAPER—MTM-402 (Unit-I)

Full Marks : 25

Time : 1 Hour

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

(Data Structure and Design and Analysis of Algorithm)

1. Answer any *two* questions :　　　　　　2×2

   (a) What do you meant by row-wise and column-wise order in two dimensional array ?　　　2

   (b) What is the time complexity to access and insest an element on array ?　　　2

   (c) What are the advantages of circular queue over line queue ?　　　2

2. Answer any *four* questions :   4×4

  (a) What is the stack ? What are the operations performed in the stack ? It is possible to get the following outputs 3, 4, 1, 2 for the inputs 1, 2, 3, 4 in the stack ? Justify your answer.   1+1+2

  (b) Write an algorithm to merge two sorted arrays. Hence find it time complexity.   2+2

  (c) Explain at least two asymptotic notations. Show that

$$n \log_2 n - 2n + 13 = \Omega \left(n \log_2 n \right).$$ 2+2

  (d) Write an algorithm to sorting numbers in a dynamic linked list without using an additional array or other data structure.   4

  (e) Write the steps to convert infix expression to postfix expression. Use it for the expression :

$$A - B * (C + D) / (E - F)^{\wedge} G * H.$$ 2+2

  (f) Write down algorithms to insert a node in the linked list at the begining, at the middle and at the end. When the linked list is better than the array.   1+1+1+1

[*Internal Assesment : 05 Marks*]

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