2014

M.Sc. Part–II Examination

APPLIED MATHEMATICS WITH OCEANOLOGY AND COMPUTER PROGRAMMING

PAPER—VIA

Full Marks : 50

Time : 2 Hours

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.

Write the answer to questions of each group in Separate answer booklet.

Group—A

1. Answer any *two* questions : 5×2

(a) Explain Von Neumann architecture of Computer. Discuss all of its components. 5

(b) What do you mean by flip-flop? Explain SR and D flip-flops with block diagrams and characteristic table. 2+3

(c) What is the use of adder? Design a 4-bit adder using full-adder. Construct a 16-bit adder using 4-bit adders as building blocks. 1+2+2

2. Answer any *three* questions : 5×3

(a) Define prefix, postfix and infix expressions with examples. Write an algorithm to evaluate a post fix expression. What are the limitations of the algorithm? 2+(2+1)

(b) Define stack and queue. Distinguish between them. Discuss about the implementation of queue as a circular array. 2+1+2

(c) Write an algorithm to add two polynomials without using a third list. 5

(d) Use quick sort technique to arrange the numbers 10, 5, −100, 50, 30, 40, 18, −20 in ascending order. Describe each step. 5

(e) (i) How can a binary expression/containing only binary operators) be represented by a binary tree? Write some important properties of this type.

(ii) What do you mean by tree traversal? Write a non-recursive algorithm for post order traversal. $2\frac{1}{2}+2\frac{1}{2}$

3. Answer any *two* questions : 5×2

(a) What services are provided by the Internet? Describe them briefly.

(b) Write short notes on e-mail, FTP, Talent and www.

(c) How are two remote computers connected to the Internet through communication system? Explain with a diagram.

4. Answer any *three* questions : 5×3

(a) Explain client server model in operating system.

(b) Explain memory management technique with buddy system. What are the advantages and disadvantages of buddy system?

(c) Write short notes on file access and file attributes.

(d) Explain operating system as an extended machine.

(e) Explains system calls and processes. What are the fundamental things which are used with a process ?
