AQ – 2897

First Semester M.E. (Computer Science & I.T.) Examination

ALGORITHMICS

Elective – 1

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

Note : (1) Separate answer book must be used for each section in the subject Geology, Engineering, material of Civil Branch and Separate answer-book must be used for Section A & B in Pharmacy and Cosmetic Technology.
 (2) Answer **Three** questions from Section A and **Three** questions from Section B.
 (3) Assume suitable data wherever necessary.
 (4) Illustrate your answer wherever necessary with the help of neat sketches.
 (5) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) Compare Theta and Omega notation. 6

 (b) Explain proof by contradiction with suitable example. 7

OR

2. (a) Describe the following term :—

 (i) Threshold rule.

 (ii) Maximum rule.

 (iii) Limit rule.

 (iv) Duality rule. 7

 (b) What do you mean by conditional asymptotic notation? Example. 6

3. (a) What is bionomial heap ? What is the advantage of bionomial heap over a heap? 7

 (b) Explain the concept of inhomogeneous recurrence with suitable example. 7

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OR

4. (a) Explain analysis of algorithm using the barometer instruction. 7

   (b) Compare with reference to data structure, graphs, trees and table. 7

5. (a) What is meant by scheduling? Describe how to minimize time in a system. 7

   (b) Explain exponentiation as an examples of divide and conquer. 6

OR

6. (a) Explain method suggested by Volker–strassen for matrix multiplication. 7

   (b) Explain spanning tree algorithms with examples. 6

SECTION B

7. (a) Explain principle of optimality. 7

   (b) What is branch and bound technique? Explain it with the help of assignment problem. 6

OR

8. (a) Explain general template of back tracking algorithm. 7

   (b) Explain minimax principle. 6

9. (a) Explain Button's needle on a Numerical Probabilistic algorithm. 7

   (b) Explain pointer–doubling algorithm. 6

OR

10. (a) Explain parallel sorting network in detail. 7

    (b) Explain term work and efficiency with reference to parallel algorithm. 6

11. (a) Write short note on linear reduction. 7

    (b) Explain approximate algorithm with examples. 7

                        OR

12. (a) Prove the theorem –

    $MQ \leq \, ^{\sqcup}IT$ assuming IT is smooth. 7

    (b) Compare theoretic and Adversary arguments. 7

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