RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2018

SECOND YEAR [BATCH 2017-20]

Date : 17/12/2018 **COMPUTER SCIENCE (Honours)**

Time : 11 am – 1 pm Paper : III [Gr – B] Full Marks : 35

(Use a separate Answer book for each unit)

Unit-I

Answer **any one** question from **Question Nos. 1 to 2**: [1 × 5]

1. a) What do you understand by 'abstract class'? 2
   b) What are the differences between constructor and destructor? 2
   c) What do you mean by 'std::exception'? 1

2. a) Which operator can not be overloaded? 1
   b) Specify the rules of function overloading. 4

Answer **any one** question from **Question Nos. 3 to 4**: [1 ×10]

3. a) When do we make a class virtual? 2
   b) What is containership? How does it differ from inheritance? 1+2
   c) What is the use of 'this' pointer? 2
   d) Define virtual function. 2
   e) What is pure virtual function? 1

4. a) What is Exception Handelling? Explain with example. 2
   b) What is copy constructor? Explain with example. 2
   c) Can we assign a void pointer to an int type pointer? If not, why? How can we achieve this? 1+1+1
   d) When will you make a function inline? Why? 2+1

Unit-II

Answer **any two** questions from **Question Nos. 5 to 8**: [2 ×10]

5. a) Construct a Min Heap using the array 2, 7, 5, 13, 8, 25, 14, 9, 65, 33, 4. Hence perform the heap sort. 5
   b) What is hashing? What are the characteristics of good hash function? 2+3

6. a) Write the following functions —
      (i) Find function for BST 4
      (ii) Delete from Threaded Binary Tree 4
   b) Explain the linear and coalesced chaining in the Context of Hashing. 2

7. a) Construct AVL tree using nodes 3, 4, 17, 12, 25, 13, 18, 9, 10 4

b) Write a function to implement the following–

(i) DFS 3

(ii) Preorder traversal in BST 3

8. a) Briefly explain the insertion procedure of B^+ tree with the help of an example. 5

b) Suppose a file contain six different characters appear with the following frequencies: 5

A	B	C	D	E	F
2	10	70	30	18	27

Use Huffman coding technique to compress the data.

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