WEST BENGAL STATE UNIVERSITY

B.Sc. Honours PART-III Examinations, 2018

COMPUTER SCIENCE-HONOURS

PAPER-CMSA-VI

Time Allotted: 4 Hours   Full Marks: 100

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

Answer Question No. 1 and any *five* from the rest taking at least one from each group

1.   Answer any *ten* questions from the following: 2×10 = 20
   (a) What is copy constructor?
   (b) Give some characteristics of procedure oriented language.
   (c) What is orthogonal base class?
   (d) What is meant by Data hiding?
   (e) Why tuples in a Relation are not ordered?
   (f) Distinguish between a Strong Entity and Weak Entity.
   (g) What do you mean by Lossless decomposition of a relation?
   (h) What is OLTP?
   (i) What do you mean by database constraint?
   (j) Differentiate between primary key and candidate key.
   (k) What is abstract class?
   (l) What is frame buffer?
   (m) What do you mean by clipping?
   (n) What is Inverse transformation?
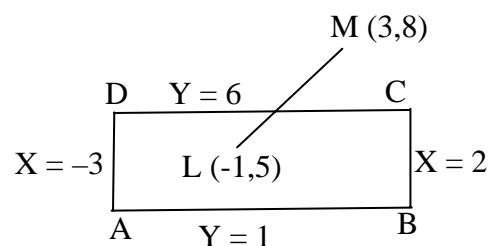
Group-A

2. (a) What is the utility of Scope Resolution Operator? What are the Advantages and Disadvantages of using Friend Function?   2+2

   (b) When do we need a Copy Constructor in C++? What do you mean by an Abstract Class? When do we need to create an Abstract Class in C++?   2+2+2

   (c) Describe briefly different Access Specifiers of members of a class in C++? When do we need to make a class virtual?   4+2

3. (a) What do you mean by an Operator Overloading in C++? Give the syntax of Binary Operator Overloading in C++. Assignment Operators "=" can not be overloaded using Friend Operator Function. Give reasons.   2+2+2

   (b) What are the different forms of Inheritance available in C++? What is the role of Empty class in Exception Handling in C++?   2+2

   (c) What do you mean by a Virtual Function in C++? Discuss briefly the role of Virtual Pointer (VPTR) and Virtual Table (VTABLE) to implement virtual function mechanism in C++.   2+4

Group-B

4. (a) What are the characteristics of good SRS? 4

   (b) Discuss the disadvantages of water fall model. 4

   (c) Discuss top down and bottom up approach of software design. 4+4

5. (a) What do you mean by SDLC? 4

   (b) Discuss in brief about functional design and delailed design. 4

   (c) What is structure chart? 4

   (d) What do you mean by white box testing? 4

Group-C

6. (a) Clip the line segment LM given below against the clipping window ABCD using Cohen-Sutherland Line clipping algorithm. 6

   (b) A triangle with vertices A(1, 0), B(0, 1) and C(1, 1) rotates about the origin by an angle 45°. Find coordinates of vertices of the rotated triangle. 4

   (c) Compare parallel projection and perspective projection. 4

   (d) Write down a 2D transformation matrix for reflecting a point with $x = y$ axis. 2

7. (a) Explain Bresanham's circle algorithm. 8

   (b) Perform a 45° anticlockwise rotation a triangle A(2, 1), B(3 ,8), C(5, 6) about the origin. 4

   (c) Discuss animation and give its utility. 2

   (d) What do you mean by exterior clipping? 2

Group-D

8. (a) What is DBMS? 2

   (b) Discuss the advantages and disadvantages of using DBMS approach as compared to using a conventional file system. 5

   (c) Define the concept of Aggregation, Cardinality Ratio and Relationship. 3+3+3

9. (a) Define 3NF. Why BCNF is called restricted 3NF? Explain with example. 2+2+2

   (b) How lossless join decomposition can be tested? 3

   (c) Explain how division operation works? 2

   (d) What do you mean by Primary, Secondary and Cluster indexing? 3

   (e) What are the different interpretation of NULL values? 2