# West Bengal State University

## B.A./B.Sc./B.Com. ( Honours, Major, General ) Examinations, 2012

## PART–III

## COMPUTER SCIENCE — HONOURS

## PAPER–VI

Duration . 4 Hours ] [ Maximum Marks : 100

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

*The figures in the margin indicate full marks.*

Question No. 1 is compulsory and answer any *five* questions taking at least one from each Group.

1. Answer any *ten* questions in brief : $10 \times 2 = 20$

a) What is an abstract class ?

b) What is destructor ? Give its utility.

c) What do you mean by operator overloading ?

d) Differentiate between spiral model and waterfall model.

e) What is candidate key ?

f) Define referential integrity constraint.

g) What do you mean by aggregation in terms of E-R model ?

h) Explain Rotation with its associated equation.

i) What is Social feasibility ?

j) What is the utility of software quality matrix ?

k) What is clipping ?

l) Discuss the main characteristic of 3NF.

m) What is the resolution of an image ?

n) What is exception handling ?

## GROUP – A

2. a) Differentiate between procedural programing and OOP. Give two advantages of OOP.

   b) Define inline function. Write the merits and demerits of inline functions.

   c) Define function overloading with example.

   d) Discuss polymorphism. Give example. ( 2 + 2 ) + ( 3 + 2 ) + 4 + ( 2 + 1 )

3. a) Differentiate between the following statements :

   char *const P;

   char cons *P;

   b) What is an exception ? Deseribe exception handling with proper example.

   c) Explain function template and class template with example.

   d) What is name space ? Give its utility.

   e) What is encapsulation ? Give example. 3 + ( 2 + 2 ) + 4 + 2 + 3

## GROUP – B

4. a) What do you mean by the software life cycle ? Discuss various models in short.

   b) What are the characteristics of a good software requirement specifications ( SRS ) document ? Explain with example.

   c) Explain the terms 'Logical' and 'Physcial' DFD. Differentiate between them.

   ( 3 + 3 ) + 5 + 5

5. a) What are the features of good coding ?

   b) Discuss top down and bottom up approach.

   c) Briefly describe the software quality attributes. 6 + 5 + 5

## GROUP – C

6. a) Deriving the necessary calculations write the DDA line drawing algorithm.

   b) Reduce the triangle with vertices $A(0, 0)$, $B(1, 1)$ and $C(5, 2)$ to half of its size while keeping $C(5, 2)$ fixed.

   c) What is the purpose of line clipping ? Discuss the nature of the blending function used in Beizer curve formulation. 6 + 5 + 5 = 16

7. a) Write the equation of 3D rotation. Give its utility.

   b) Discuss Morphing technique and its application.

   c) Discuss animation and give its utility.

   d) Compare parallel projection with persspective projection.

(3 + 1) + (3 + 1) + 4 + 4

## GROUP – D

8. a) Compare Relational, Network and Hierarchical database models with respect to their relative advantages and disadvantages.

   b) Give an comparative account of indexed sequential and random file organisation.

   c) Describe the characteristics of BCNF.

   d) What is the utility of ER diagram ? Give example. 4 + 4 + 5 + 3

9. a) Discuss Primary key, Secondary key and super key.

   b) Consider a relation $R(A, B, C, D, F)$ with the following dependencies :

   $AB \rightarrow C$, $CD \rightarrow E$, $DE \rightarrow B$

   Is AB a candidate key of this relation ? Explain your answer.

c) Consider the following schema of a relational database :

Staff ( staff No, name, position, salary, branch No )

Video ( catalog No, title, category, daily Rental, price, direction No )

Branch ( branch No, street, city, state, zipcode, mgrstaff No )

Director ( director No, director Name )

Actor ( actor No, actor Name )

Role ( actor No, catalog No, character )

Rental-Agreement ( rental No, date Out, date Return, member No, video No )

Video For Rent ( Video No, available, catalog No, branch No )

Write down expressions for the following queries :

i) For each branch office with more than one member of staff, find the number of staff working in each branch and the sum of their salaries.

ii) List all videos along with the name of the director, the names of the actors and their associated roles.

iii) Find the staff who work in the branch at "Degree College Road".

iv) Create the Branch table. 4 + 4 + ( 4 × 2 )