B.Sc. (Part II) (Information Technology)
EXAMINATION, 2009

COMPUTER ORIENTED STATISTICAL METHODS
(B.Sc. I.T.-21)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. **What are the main characteristics of Numerical Computation ? Explain them clearly . (10)**
2. **Factorize the matrix :**

$$\begin{bmatrix} 10 & 2 & 1 \\ 2 & 20 & -2 \\ -2 & 3 & 10 \end{bmatrix}$$

as a product of lower and an upper triangular matrix. (10)

3. **Compute the inverse of the matrix**

$$\begin{bmatrix} 3 & 2 & 1 \\ 0 & -4 & 3 \\ 8 & 12 & -5 \end{bmatrix}$$

and prove that A^{-1} A = I **(10)**

4. **Solve the following system by Gauss – Seidel method :**

$$10x - 5y - 2z = 3$$
$$4x - 10y + 3z = -3$$
$$x + 6y + 10z = -3$$

5. **Explain the following :**

   (a) Main properties of determinant :
   (b) Types of matrix . **(5,5)**

6. **Assuming that a root of $x^3 - 9x + 1 = 0$ lies in the interval (2,4) , find that root by bisection method .** **(10)**
7. **Find the real root of the equation $x^3 - 2x - 5 = 0$ by the method of False position correct to three decimal places** **(10)**

8. **(a) Comment on the necessity and usefulness of the interpolation** **(4)**
   (b) The following table shows the mean weight of babies during the first six months of life . Estimate the likely weight of a 4 month baby : **(6)**

Age (months)	Weight (in lbs)
0	5
2	7
3	8
5	10
6	12

9. **(a) Derive the formula of Gauss's Forward Interpolation Method .** **(5)**
   (b) From the following table find *f(x)* as the polynomial in x and find *f(9)* using Newton's divided difference formula (method) : **(5)**

x	*f(x)*
4	48
5	100
7	294
10	900
11	1210
13	2028

10. **Explain the following :**
    (a) Method of successive approximation:
    (b) Jacobi method of iteration.

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EXAMINATION, 2009

SYSTEM ANAYSIS AND DESIGN
(B.Sc. I.T.-22)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. **What do you understand by System Development Life Cycle (SDLC) ? Describe each step involved in SDLC**

2. **Describe the following:**

   (i) Structured Programming Approach .
   (ii) Bottom-up Programming Approach .
   (iii) Top-down Programming Approach .

3. **(a) What are the way by which data can be organized in data files ? Discuss the advantages of different type of File Organizations.**
   (b) What are the issues while designing a data file and report file ? Discuss .

4. **(a) Define an Audit trail . why is an audit trail important to an organization ?**
   (b) What are the various special systems test technique ? Explain at least four of them.

5. **Write short notes on the following :**
   (i) Walk Through
   (ii) Case Tools
   (iii) Data Dictionary
   (iv) Security of systems

6. **Discuss the following :**
   (i) Program development methodology :
   (ii) Online Transaction Processing :

7. **(a) What does the term 'feasibility' mean ? Discuss the different types of**

feasibility and their importance

(b) Explain at least *three* difference approaches for Software evaluation.

8. Define a DFD . Write the convention that govern the Construction of DFDs Design a DFD for a study of Library Information System

EXAMINATION, 2009

CLIENT SERVER TECHNOLOGY
(B.Sc. I.T.-23)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. **Explain the need and motivation foe client/server approach . also explain different types of client/server models.**

2. **Explain various components and advantages of client / server technology**

3. **Explain the role of client.**

4. **(a) Differentiate between Dynamic Data Exchange and Object Liking and Embedding .**
   (b) Differences between COH/DOCH and CORBA.
5. **Explain the role of server .**

6. **Differences between two-layer and three-layer architectures**

7. **Explain the following :**
   (a) Open system Interconnectivity (OSI);
   (b) Inter Process Communication (IPC).
8. **What do you mean by protocols ? Explain any two protocols used in client /server model.**

9. **Write notes on any *two* of the following :**
   (a) Firewall;
   (b) Encryption ;
   (c) IPC ;

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JAVA PROGRAMMING
(B.Sc. I.T.-23)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. **Discuss the need and creation of Java . Why is java important to the internet environment ? How does Byte code solve the security and portability problems of JAVA .**

2. **What do you understand by object oriented programming language . Discuss The three OOP principles of Encapsulation , Inheritance and Polymorphism.**

3. **What do you understand by Java " variable ". Discuss the declaring of variable and its dynamic initialization using an example .**

4. **What is the general form of " class" . How would you declare objects using this class ? Write a program to describe a " DemoBox" class that accepts inputs of width , height , depth from user and creates a new object .**

5. **What do you understand by constructor ? Discuss parameterized constructors and "this" keyword.**

6. **Define Java package . Elaborate using an example program . Write a note on Importing packages.**

7. **What do you understand by interfaces . Describe defining of an interface and its General form . How do we implement interfaces and how is it important for Java programmer.**

8. **Write short notes on any *two* :**
   (a) Java applets
   (b) Abstract Window toolkit
   (c) Multithreaded programming

B.Sc. (Part II) (Information Technology)
EXAMINATION, 2009

Star Infotech College

COMPUTER GRAPHICS
(B.Sc. I.T.-24)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. **What is computer graphics . What are the functional characteristics required for computer graphics (10)**

2. **Write short note on any five of the following hardware of the peripherals (2*5=10)**

   (i) Trackball (ii) Joystick

   (iii) Touch Pad (iv) Light Pen
   (v) Mouse (v) Digitizer

3. **(a) Explain Cathode Ray Tube (CRT) with diagram**
   (b) Explain the working principle of Laser Printer. (6+4=10)

4. **(a) Explain the concept of line drawing algorithm with the help of DDA algorithm.**
   (b) Describe the character generation (6+4=10)

5. **(a) What is the homogeneous co-ordinate system .**
   (b) What is 2D rotation transformation with respect to origin (4+6=10)

6. **Write the mid-point circle algorithm and draw the circle octant in the first quadrant from x=0 to x=y with radius r=10 (10)**

7. **Explain Flood fill and boundary fill algorithm (10)**

8. **Given clipping window PQRS where P(0,0) , Q (30, 0) , R (30, 20) and S (0,20) . Use cohens algorithm to determine visible portion of line A (5, 30) and B (20 , -10). (10)**

9. **A triangle is located P (10 , 40) , Q (40 , 40) , R (40 , 30) . Work out the transformation matrix which would rotate the triangle by 90^0 in anticlock**

wise direction about the point Q . Find the co- ordinates of the triangle (10)

10. (a) What is the Scan-Line polygon fill algorithm ? Explain

(b) What is clipping ? Explain its various types ? (6+4=10)

B.Sc. (Part II) (Information Technology)
EXAMINATION, 2009

OBJECT ORIENTED TECHNOLOGY AND C++ PROGRAMMING
(B.Sc. I.T.-23)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. **(a) What is OOPs paradigm ? Describe (5)**
   (b) Explain encapsulation with suitable example (5)

2. **What do you mean by token ? Which tokens are available in C++ ? (2,8)**

3. **(a) What are Iteration statements ? How many types of iteration statements are available in C++ ? Explain (1,4)**
   (b) Write a program that prints the following series : (5)

   1, 1, 2, 3, 5,……n.

4. **Write short notes on the following : (2.5*4)**
   (a) Nested classes
   (b) Friend function
   (c) Dynamic memory allocation
   (d) Static data member.

5. **What do you understand by constructor and destructor function used in class ? How are these different from the member functions ? (5,5)**

6. **What is visibility in inheritance ? What are pure virtual function ? Explain (5,5)**

7. **Write a program for tower of hanoi simulation using recursive function . (10)**

8. **Write short notes on the following : (2.5*4)**
   (a) Multilevel inheritance;
   (b) Operator Overloading ;
   (c) Structure;
   (d) Polymorphism