B.Sc. IT (Part II) Examination, 2012

COMPUTER ORIENTED STATISTICAL METHODS

Part A (Marks: 10)

1. If .333 is the approximate value of $\frac{1}{3}$, find absolute and relative errors.
2. Find adjoint A if A = $\begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$
3. Define trace of a Square Matrix.
4. Find determinant of A = $\begin{bmatrix} 1 & 2 & 1 \\ 0 & 2 & 2 \\ 2 & 1 & 1 \end{bmatrix}$
5. Write down the formula used in Regula-Falsi Method.
6. Write down the difference between Gauss Jordan and Gauss Elimination Methods.
7. Write down the formula used in Newton Raphson's Method.
8. Write the various types of interpolation.
9. Write down Newton Gregory forward and Backward interpolation formula.
10. Find $\Delta^3 [x^3 + 3x^2 + 4x + 5]$.

Part B (Marks: 10)

1. Express the matrix A = $\begin{bmatrix} 1 & 5 & 7 \\ -1 & -2 & -4 \\ 8 & 2 & 13 \end{bmatrix}$ as the sum of a symmetric and a skew symmetric matrix.
2. Solve the system of equations by Jacobi method:

   8x - 3y + 2z = 20

   6x + 3y + 12z = 35

   4x + 11y - z = 33
3. Find the missing figures in the table:

x	1	2	3	4	5
f(x)	7	-	13	21	37

4. Find the value of x for y(x) = .390

x	20	25	30	35
f(x)	.342	.423	.5	.65

5. Find a root of equation $x^3 - 4x - 9 = 0$ by Bisection method.

Part C (Marks: 30)

1. Using the method of false position, Find the root of equation $x^6 - x^4 - x^3 - 1 = 0$ up to four decimal places.

OR

Solve $x^3 - 5x + 3 = 0$ by using Regula flasi method.

2. Using Horner's method find the root of $x^3 = 9x^2 - 18 = 0$, correct to two decimal places.

OR

Apply Gauss's Forward formula to find the value of f(x) at x = 3.75 from the table:

x	2.5	3.0	3.5	4.0	4.5	5.0
f(x)	24.145	22.043	20.225	18.644	17.262	16.047

3. Verify A(adj A) = (adj A) A = |A|I for the following matrix:

$$A = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & 3 \\ 3 & 1 & 2 \end{bmatrix}$$

OR

Solve the Gauss's Jordan Method:

$27x + 6y - z = 85$

$6x + 15y + 2z = 72$

$x + y + 54z = 110$

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ANALOG CIRCUIT & COMMUNICATION

Part A (Marks: 10)

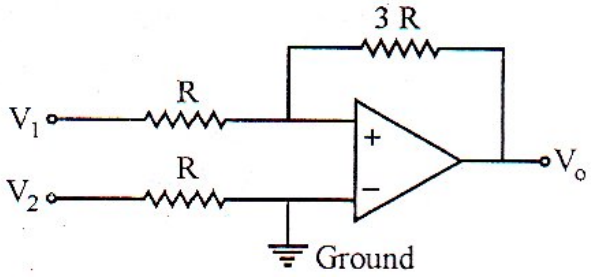
1. What is the value of V_0 for the following circuit?

   (a) $-3V_1 + 2V_2$

   (b) $1.5V_2 - 2.55V_1$

   (c) $-3V_2$

   (d) $2V_2 - 3V_1$



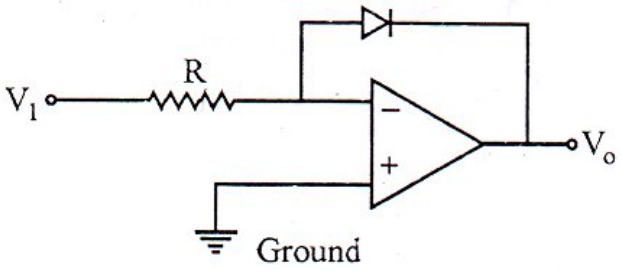
2. The circuit figure shown below using an ideal Op-Amo for small positive value of V1. The circuit works as.

   (a) Half Wave Rectifier

   (b) Differentiator

   (c) Logarithmetic Amplifier

   (d) Exponential Amplifier



3. What is the value of Ripple factoe for half wave rectifier and full wave rectifier.

4. What do you mean by Amlitude Modulation (AM)?
5. What is side bands in radio communication?
6. What is difference between series and shunt regulator?
7. Draw circuit model of the differential input operational amplifier.
8. What is transistor? Give types of transistors.
9. Draw electrical circuit model for the single ended operational amplifier.
10. Draw Integrator Circuit and Differentiator Circuit of operational amplifier.

Part B (Marks: 10)

1. What is Common Mode Rejection Ratio (CMRR) & Slew Rate of operational Amplifier?
2. Explain Bridge Rectifier using block diagram.
3. What is data communication? Describe need and elements of communication.
4. What do you mean by power electronics? Explain applications of it.
5. Write short notes on Switch Mode Power Supply (SMPS).

Part C (Marks: 30)

1. What do you mean by filters and explain all types of filters using filter circuit with bridge rectifier?

   OR

   What is Rectifier and explain all types of Rectifiers in detail using block diagram?

2. What do you mean by modulation and describe its types and needs?

   OR

   What is regulated power supply and what is three terminal regulators? Explain 78XX and 79XX Regulators using block diagram.

3. Explain positive and negative feedback of Op-Amp and also explain effects of feedback on gain, Input Impedance, OutputImpedance, Response Time and Offset.

   OR

What is multi-vibrator? Explain the operation of monostable multi-vibrator and draw the output voltage wave-form.

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CLIENT SERVER TECHNOLOGY

Part A (Marks: 10)

1. Define client.
2. Define server.
3. Define the term: upsizing & downsizing.
4. What is IPC?
5. What is the use of OLE DB?
6. Give the name of client/server development tools.
7. What is meant by a stored procedure?
8. Give the name of components in client server architecture.
9. What is CORBA?
10. Give an example of network operating system.

Part B (Marks: 10)

1. What is client/Server technology?
2. What is RPC?
3. Give the classification of server.
4. What is the advantage of client/server technology?
5. Describe the server operating system.

Part C (Marks: 30)

1. (a) Explain the role of LAN Manager.

   (b) What are the advantages of GUI applications?

OR

(a) Explain the difference between web client/server and traditional client/server.

(b) Write short note on system application architecture.

2. What is Object Linking and Embedding (OLE)? Explain in detail.

OR

Explain about the basic building blocks of the client/server computing.

3. Discuss the comparison between 2 tier client server architecture and 3 tier client/server architecture.

OR

Illustrate the working of Remote Procedure Call with a neat diagram.

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JAVA PROGRAMMING

Part A (Marks: 10)

1. Define abstract class.
2. Define ODBC.
3. What is collection framework?
4. Define Java Bean.
5. Define Interface
6. What is Java RMI?
7. What is CORBA?
8. Ehat is thread?
9. Define polymorphism.
10. Define operator.

Part B (Marks: 10)

1. Describe difference between Constructor and Destructor.
2. Explain difference between Object and Class.
3. Describe applet life cycle.
4. Explain difference between method overloading and method overriding.
5. Define uses of final keyword and finally clause.

Part C (Marks: 30)

1. What is JDBC? Explain all steps for connection establishment with Microsoft Access database with an example.

OR

What is difference between string and string buffer class? Write a program to input string “teacher are mentor” and “guide for the students”. Concatenate of these two strings and then output shoud be displayed in upper case letters as-

Output: Teachers are mentor and guide for the students.

2. What is a listener interface? Explain all the methods of mouse listener interface with an example.

OR

What is multithreading? Explain all thread class method with an example.

3. What is the main use of collection framework? Explain all the methods of stack class with an example.

OR

Explain exception handling mechanism in detail.

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COMPUTER GRAPHICS

Part A (Marks: 10)

1. How screen is scanned in Raster Scan Display?
2. An image scanner can be used for storing:

   (a) _____

   (b) _____

   (c) _____
3. What is the means of 15 inch monitor?
4. The quality of a picture produced by a laser printer would depend on _____.
5. What is the full form of AutoCAD.
6. What do you mean by Pixel?
7. What is digitizer?
8. What do mean by data glove?
9. Write the area filling technique names.
10. What is the means of clipping?

Part B (Marks: 10)

1. Write the importance of display processor in a computer graphics system.
2. Explain the term Windowing.
3. Define the term Projection.
4. Describe the functional characteristics of graphics table.
5. Explain the term Reflection.

Part C (Marks: 30)

1. Draw and explain the book diagram of a graphics hardware system.

OR

How printers are classified? Explain working of any two types of printers.

2. (a) Explain the role of computer graphics in the field of animation.

(b) Write an algorithm for scan converting a circle.

OR

(a) How colours are displayed on display unit?

(b) Explain working of refresh cathode ray tube.

3. (a) Explain the cartesian and homogeneous co-ordinate system.

(b) What is difference between transformation and clipping? Explain with an example.

OR

What do you understand by the following (explain with example):

(a) Scaling Rotation

(b) Bresenham's Algorithm

(c) Random Scan Displays

(d) Flat bed and Drum plotters.

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OBJECT ORIENTED TECHNOLOGY AND C++ PROGRAMMING

Part A (Marks: 10)

1. What do you mean by dynamic binding?
2. Explain the visibility modes in C++.
3. Why extraction operator is used?
4. What is pure virtual function?
5. Draw the hierarchy of C++ data types.
6. Why scope resolution operator is used?
7. What are empty classes?
8. What is container class?
9. What is operator overloading?
10. Explain stream classes in C++.

Part B (Marks: 10)

1. What is difference between POP (Procedure Oriented Programming) and OOP (Object Oriented Programming)?
2. What do you mean by expressions and list their types?
3. Why is an Array called a derived data type?
4. Explain function overriding with example.
5. What is destructor? Explain the utility of destructor.

Part C (Marks: 30)

1. Explain various looping statements available in C++ with example.

OR

What is inheritance? Explain various types of inheritance with example.

2. What do you mean by function? Explain different methods of passing values through functions. Also explain friend function with example.

OR

Describe the different methods of opening a file. Write a program to open a file named "aa.txt" and write your name and other details into that file.

3. Explain with example:

   (a) Ternary Operator

   (b) Pointers

   (c) Inline Function

   (d) Copy constructor

OR

Write short notes on:

(a) Memory Management Operator

(b) Storage Classes

(c) Static Class Member

(d) Structure

(e) Union