(**3 Hours**)   [**Marks:60**]

N.B.:   (1) **All** questions are **compulsory**.

       (2) Attempt **either** *sub-questions* **(a), (b)** or *sub-questions* **(p), (q).**

       (3) Answer to **both** sections must be written in **same** answer book.

       (4) Figures to the **right** indicate full marks.

SECTION I (SSAD and Networking)

1. a)   **Answer any *two* of the following questions:**   **6**

     i)   Discuss the **Design** phase of System Development Life Cycle

     ii)   What is prototyping in System analysis?

     iii)   Describe any one fact-finding technique in the determination of system requirements.

    b)   Create a decision tree for the following :   **4**

A student appears in an examination that consists of total 5 subjects, each subject having maximum marks of 100. The roll number of the student, his name, his sex and the marks obtained by him in various subjects is supplied as an input data. We want to make a list of only those female students who have passed second division (obtained 45% or more but less than 60% marks)

OR

1. p)   **Answer any *two* of the following questions:**   **6**

     i)   What are various types of information systems? State features of any one.

     ii)   What is a DFD? State different symbols used in DFD.

     iii)   Explain briefly the use of Data Dictionary.

    q)   Draw a decision table for the following: **4**

There is 4% chance that a patient admitted to the hospital is suffering from cancer. A doctor has to decide whether a serious operation should be performed or not. If the patient is suffering from cancer and the serious operation is performed then the chance that he will recover is 70%, otherwise it is 35%. On the other hand, if the patient is not suffering from cancer and the serious operation is performed then the chance that he will recover is 20%, otherwise it is 100%. Assume that recovery and death are the only possible results.

2) a)   **Answer any *two* of the following questions:**   **6**

     i)   Explain the criteria involved in Network Security

     ii)   Mention one feature each for different types of Networks.

     iii)   State advantages and disadvantages of bus topology

    b)   Explain responsibilities of data link layer in OSI reference model   **4**

OR

[TURN OVER]

1

(p) **Answer any *two* of the following questions:** **6**
   i) What are the factors that determine whether a communication system is LAN, MAN or WAN.
   ii) Mention advantages of Tree Topology. Give one example of application where Tree Topology is used.
   iii) List the layers of OSI reference model. Classify them as network support layers or user support layers

(q) List the features of TCP/IP reference model. **4**

3. (a) **Answer any *two* of the following questions:** **6**
   i) Define the term **Internet** address. Explain the different classes of addresses used.
   ii) What is subnetting and why is it important?
   iii) Define the role of gateways, routers, and bridges.

b) Write a short note on routing algorithms. **4**

OR

p) **Answer any *two* of the following question** **6**
   i) What is an IP address? Explain with example.
   ii) State features of circuit switching.
   iii) What do you mean by Domain names?

q) What is multiplexing? Discuss FDM. **4**

SECTION II(JAVA Programming)

4) a) **Answer any *three* of the following questions:** **6**

   i) Give three important features of Java.
   ii) What is a class and subclass? Give an example.
   iii) Explain the term polymorphism with an example.
   iv) Is there any error in the following? If yes, then make suitable changes so that it becomes a valid Java statement :
   a = 1, b = 2, c; c = a + b;

b) Write a short note on "Java Virtual Machine". **4**

OR

p) **Answer any *three* of the following questions:**

   i) What is a class in OOP? Give an example. **6**

   ii) What is JDK? How is it useful?

   iii) Mention the logical operators in Java. When are they used?

   iv) Can you replace a program segment with switch statement using an if … else … statement? Justify your answer with suitable example.

[TURN OVER]

q) Consider the statement : **public static void main(String args[])** **4**
Explain every keyword involved in it.

5) a) **Answer any *three* of the following questions:** **6**
i) Can you have two return statements in a method? Give an example.
ii) What are constructors? How are they different from methods?
iii) Explain the use of 'super' keyword.
iv) Can you assign one object as a value to another object of the same class? Can you do so without creating the second object?

b) Write a Java program to do the following : **4**
Operator class contains methods to calculate sum, product and division of two variables. Constructor is used to initialize the instance variables. *Oper_constructor* class contains main() method. Define myOper as an object of the class *Operator* to invoke different methods of *Operator* class and to display the result.

OR

5) p) **Answer any *three* of the following questions:** **6**
i) Mention the features of constructor.
ii) What is method overloading?
iii) Explain the use of keyword final.
iv) Define a class B with an instance variable and a constructor to initialize it.

q) Write a Java program to compute the simple interest (SI) as well as **4**
compound interest (CI) for given values of P (Principal Amount), N (Number of Years) and R (Rate of Interest).

6) a) **6**
Answer any *three* of the following questions:
i) What is an applet? How do applets differ from application programs?
ii) What is an abstract class and how do you create it?
iii) Explain the significance of 'super' keyword with appropriate example
iv) Mention two types of inheritance with their meaning.

b) Write a java program to find the area of a triangle. Assuming that *Shape* is **4**
a class with *Shape* () as a constructor with instance variables b and h.
Define *Triangle* as subclasses of shape containing corresponding *area*()
method which calculates and prints the area of the triangle. Write a class
Area with main() method to invoke the necessary objects.

[TURN OVER]

OR

6) p) **Answer any *three* of the following questions:** **6**

    i)   Discuss the steps involved to execute and run an applet.

    ii)   What is the use of finalize() method?

    iii) Explain drawString() method.

    iv)   What is the difference between a class and an interface?.

  q)   Create an applet to display a string "In the Center" in MSOutlook, with   **4**
        size 40 and style bold and italic. The text should be centered both
        horizontally and vertically.