This question paper contains 5 printed pages.

7239

M.Sc. / II

J

OPERATIONAL RESEARCH - Course XI (a)
(Database Management System and JAVA Programming)

Time 3 hours   *Maximum Marks 38*

*(Write your Roll No on the top immediately
on receipt of this question paper)*

*Attempt six questions in all, selecting three questions
from each section.
Question No. 1 is compulsory.
Answer each Section in a separate answer - sheet.*

SECTION - A

1. Explain the following term in context of a database: *07*
   (i) entity,
   (ii) attribute, single valued attribute, multiple valued attribute, derived attribute, composite attribute
   (iii) Primary key and Foreign Key
   (iv) tuple
   (v) End users

2. (a) Explain various data models with example.   *03*

   (b) Discuss codd's rule for RDBMS.   *03*

3. Write short notes on following   *06*
   (i) Physical and Logical Data Independence.
   (ii) Concurrency control mechanism

4. Draw E-R diagram for any real life example. After drawing E-R diagram, describe the structure of various tables along with different SQL statements to create table, insert data in table, modify a record, delete a record, and update a record.   *06*

SECTION - B

Answer three questions

5 a) Why is JAVA known as platform neutral language ? Describe the salient features of JAVA.   *02*

   b) What does the following code print?
   a. int number, n;

```
      number = 10;
      n = 1;
      do {
                switch (number) {
                                case 1: n++; break;
                                case 2: n=n+ 3;
                                case 3: n--, break;
                                case 4: n+=2; break;
                                default : break,
                                }
                Number--
      }
      While (number > 0);
      System. out. println( n);
```

   b. class Prob {
      public static void main(String [] args) {
       boolean b 1 = true, b2 = false;

```
int il = 0, i2 = 3;
double f 1 = 0, f2 = 0,
if ( (i2 > 2) || ((fl = 3.5) < 10))
   il = (int) (bl ? fl · f2);
else
   i2 = (int) (fl + 2 0),
System.out.println (bl + ", " + b2 + ", "+ il + ", "+
                i2 +" ," + fl + "," + f 2);
                      }
```

```
                                      }        02
```

c) Consider the following code·

```
class Product
{
    public static void main (Strings args[ ])
    {
        int x = 10, y = 20;
        System.out.println( mul(x,y) );
    }
    int mul (int a, int b)
    {
        return (a * b),
    }
}
```

Will it compile? Yes or No. Give reasons, if no.   02

d) How many times the body of the following loop will be executed ?

i.
```
x = 5;
y = 65;
while (x <= y)
{
    x = y / x;
}
```

ii.
```
int x = 5;
int y = 9;
while (y % x >= 0)
{
    x = x + 1;
    y = y + 3; }     01
```

6 a) Can an abstract method be declared as final ? If No, give reasons. *01*

b) Write a method called sum 1 which will do the following. It will read an integer n input by the user at Keyboard. Then it will read n floating point numbers entered by the user. Finally it will output the sum of the floating point numbers. The method will have no parameters or return value. *02*

c) What are Wrapper classes ? What are their applications ? *01*

d) Suppose a program contains a method with the following headings

public static void main (Strings [ ] args)

What do the words public, static, void mean ? *01*

7 a) Suppose st denotes a string that contains the last two digits of a year. Assume the year lies between 1970 and 2069. Write statements that will store the year in the int variable y. e.g. if st denotes the string "01", y will be set to the integer 2001. *02*

b) What is an interface ? Describe the various forms of implementing interfaces. *02*

c) What is a vector ? How is it different form an array? *02*

8 a) How does String class differ from the StringBuffer class? *02*

b) Define a class Item having a field title of type String and two subclasses Book and Periodical that might be included in a very simple program for keeping records of items in a library. A Book will have a title, an author and an ISBN number, all of which will be of type String. A Periodical will have a title which is a string, and a count of how many times a year the periodical is published.

Include in the class Book a constructor Book (t, a, i) which will create new Book object with title t. author a, and ISBN number i. Define a similar constructor Periodical (t, n) for the Periodical class. Also define for both classes an instance method display ( ) which will display on the screen all the details of a book or periodical.   *04*