V I B G Y O R H I G H

Term-2 Examination

AY 2020-2021

COMPUTER APPLICATIONS

Grade: IX **Max. Marks: 100**

Date: 02/03/2020 **Time Allowed: 2 hours**

INSTRUCTIONS:

- **Answers to this paper must be written on the paper provided separately.**
- **You will not be allowed to write during the first 15 minutes.**
- **This time is to be spent in reading the question paper.**
- **The time given at the head of this paper is the time allowed for writing the answers.**
- **The intended marks for the questions or parts of questions are given alongside the questions.**
- **This paper is divided into two Sections**
- **Attempt all questions from Section A and any four questions from Section B.**
- **This question paper contains 6 printed pages.**

SECTION A (40 marks)

*Attempt **all** questions*

Question 1 **[10]**

(a) What is Inheritance? Explain with an example. [2]

(b) Write a Java statement to create an object Rectangle from the class Shapes. Also mention any two attributes of the object "Rectangle". [2]

(c) What are the default values of primitive data type char and boolean? [2]

(d) Rewrite the following code snippet using ternary operator: [2]

```
if(n>0)
        System.out.println("Positive");
else{
```

```
if(n<0)
        System.out.println("Negative");
 else
        System.out.println("Zero");  }
```

(e) What is the difference between Scanner class functions next( ) and nextLine( )? [2]

Question 2 **[10]**

(a) What is the value of k after evaluating the following expression? [2]

k-=k++ * 2 - (k-- / 2) + k ; when int k=16 initially

(b) Give the output of the following program segment. [Show the dry run] [2]

```
for(int m=5; m<=20; m+=5)
{
  if(m%3==0)
  break;
  else
  if(m%5==0)
  System.out.println(m);
  continue;
}
```

(c) Write a Java statement to print the following sentence: [2]

“Be the CHANGE that you wish to see in the world”

MAHATMA GANDHI

(d) Give the output of the code snippet given below: [2]

```
char ch='1';
switch(ch)
{
  case '1':
  System.out.println("Java");
  default:
  System.out.println("C++");
  case '2':
  System.out.println("Python");
```

```
    break;
    case '3':
    System.out.println("Ruby");
    break;
}
```

(e) Define the term byte code. [2]

Question 3 **[20]**

(a) Convert the following while loop to corresponding for loop: [2]

```
int m=5, n=10;
while(n>=1)
{
   System.out.println(m*n);
   m*=2;
   n--;
}
```

(b) Why class is called an object factory? [2]

(c) What will be the output of the code snippet given below if num=1: [2]

```
int x=0 , y=0;
  if(num>0)
 {
   System.out.println(x=x++);
   System.out.println(y=y++);
 }
```

(d) Arrange the following operators from higher precedence to lower precedence [2]

&& , !=, ++ , %

(e) Write a Java expression for the following: [2]

res= $\frac{by^{10}-5}{b^5}$

(f) State one similarity and one difference between for loop and while loop. [2]

(g) Give the output of the following code snippet. [Show the steps] [2]

```
char i='Z';
```

System.out.println((char) (i-'A'+'a')+'1');

(h) Write the output and name the type of conversion used in the following statement: [2]

System.out.println((float)5.399);

(i) Name the type of error (compile time, runtime or no error) in each case given below: [2]

i. System.out.println(double x=2);

ii. int z= 6 * 4 / 3 * 0;

(j) Write the output of the following code snippet: [2]

double n= - 8.99;

System.out.println(Math.round(n++) - Math.ceil(n));

SECTION B (60 marks)

*Attempt **any four questions** from this Section*

*The answers in this Section should consist of the **Programs in either Blue J environment or any program environment with Java as the base.***

*Each program should be written using **Variable description/Mnemonic Codes** so that the logic of the program is clearly depicted.*

*Flowcharts and Algorithms **are not required.***

Question 4 **[15]**

GoFast taxi service charges to the passenger's as per the following conditions:

Kilometers travelled (km)	Rate/km (Rs)
≤ 2 km	25
2< km ≤ 6	10
6< km ≤ 12	15
12< km ≤ 18	20
>18 km	25

Write a program to accept the kilometers travelled. Calculate and display the total amount to be paid by the passenger.

[15]

Question 5

Write a program to find and display the sum of the series given below:

S= 2x/2 – 4x/5 + 6x/8 – 8x/11 + ……. n terms

Question 6 **[15]**

Using switch statement, write a menu driven program to calculate the maturity amount of a Bank Deposit based on the following options given to the user:

(i) Term Deposit: Calculate and print the maturity amount (A) receivable using the formula

$A = P \left[1 + \frac{r}{100} \right]^n$, where P is Principal, r is rate of interest and n is time period (in years).

(ii) Recurring Deposit: Calculate and print the maturity amount (A) receivable using the formula

$A = (P * n) + \left(P * \frac{n(n+1)}{2} * \frac{r}{100} * \frac{1}{12}\right)$, where P is Monthly installment, r is rate of interest and n is time period (in months)

For an incorrect option, an appropriate message should be displayed.

Question 7 **[15]**

Write a program to accept a number and check and display whether it is an Emirp number or not.

An Emirp number is a number which is prime backwards and forwards.

For example: 13 is an Emirp number since 13 and 31 are both prime numbers.

Question 8 **[15]**

An ABC Mall has announced the festive discounts on the purchase of items based on the total cost of items as per the given criteria:

Total cost	Home Appliances	Furniture
Less than 25000	5%	7%
25001 - 30000	7%	10%
30001 – 45000	10%	13%
45001 and above	14%	16%

Write a program to input the name of the customer, total cost of purchase, type of purchase (H for Home Appliances and F for Furniture). Compute and display the amount to be paid by the customer after availing the discount in the following format:

Name Cost of purchase Discount (in Rs) Net amount to be paid

****** ***** ***** *****

Question 9 **[15]**

Write a program using switch statement to perform the following:

(i) To display the following series:

1, 2, 5, 12, ……..503

(ii) To print the value of Y

$Y= 3x^2 + 2x$, where x ranges from -5 to 5 with an increment of 2

* * * * *