K.E. CARMEL SCHOOL, SARISHA

1st Term Examination, 2021–22

F.M.-100 Class-X Sub: Computer Applications Time-2hrs

Answer to this paper must be written on the paper provided separately. You will not be allowed to write answer for the first 15 minutes. This time is to be spent on reading the question paper.

This paper is divided into two sections. Attempt **all** questions from **Section A** and **any four** questions from **Section B.** The intended marks for question or parts of questions are given in brackets [ ].

SECTION A [40 Marks]

Attempt all questions

While answering questions from this part, briefly indicate your work and reasoning, wherever required.

Question 1:

a) Name the primitive data type in Java that is: [2]
   1) A 64-bit integer and is used when you need a range of values wider than those provided by int.
   2) A single 16-bit Unicode character whose default value is '\u000'.

b) What is the difference between / and % operator? [2]

c) Differentiate between the output statements System.out.print() and System.out.println(). [2]

d) What is the use of the keyword '**import**' in Java programming? [2]

e) State the difference between **syntax error** and **logical error** with example. [2]

Question 2:

a) Write the significance of **default** case in switch statement. [2]

b) Write one difference between **Linear Search** and **Binary Search**. [2]

c) Write down the syntax to perform the following tasks: [2]
   1. To extract the last character of a word (wd) stored in the variable chr.
   2. To replace the word "old" with the word " new" in a given String st = "old is always old".

d) Describe the purpose of the following functions with their syntax: [2]
   1. indexOf()
   2. trim()

e) Write the difference between **length** and **length ()**. [2]

Question 3:

a) Consider the following string array and give the output: [2]

```
String arr[] = {"DELHI", "CHENNAI", "MUMBAI", "LUCKNOW", "JAIPUR"};
System.out.println(arr[0].length()>arr[3].length());
System.out.print(arr[4].substring(0,3));
```

b) Debug the **errors** and **rewrite** the following function prototypes: [4]
   i. int add(m, n);
   ii. float fun(int a, float=4.3);
   iii. float sum(int num1, num2);
   iv. float product(p, int q);

c) Find the **values** of **x** and **y**: [2]

```
int num[ ] = {1,2,3,5,7,9,13,16};
x=Math.pow (num[4], num[2]);
y=Math.sqrt (num[5] + num[7]);
```

d) Rewrite the following using **ternary operator**: [2]

```
if (bill >10000)
discount = bill*10.0/100.0;
else
discount = bill*5.0/100.0;
```

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e) What will be the **output** of the following code? [2]

```
int k=5, j=9;
k+ = k++ - ++j + k;
System.out.println("Value of k = "+k);
System.out.println("Value of j = "+j);
```

f) Rewrite the following using **switch case** statement: [2]

```
if (a==1000)
c=a*20;
if(a==2000)
c=a*40;
if(a==4000)
c=a*10;
```

g) Predict the **output**: [2]

```
int j, k, p=-1;
for(j=-2; j<=1; j++)
{
        for(k=j; k<=0; k++)
        k=Math.max(j*k, p);
System.out.print(k+" ");
p=p+2;
}
```

i. How many times will the outer loop run?

ii. Predict the output.

h) State the **output** of the following code snippet: [2]

```
String str1= "Smartphone", str2="Graphic Art";
String h=str1.substring(2,5);
String k=str2.substring(8).toUpperCase();
System.out.println("Value of h = "+h);
System.out.println(k.equalsIgnoreCase(h));
```

i) Predict the **output**: [2]

```
int a[4]={2,4,6,8};
for(i=0; i<=1; i++)
{
        s=a[i]+a[3-i];
        System.out.println(s);
}
```

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SECTION B [60 Marks]

Attempt any **four** questions from this Section the answer in this Section should consist of the **Programs in BlueJ** environment or any program environment with Java as the base**.** Each program should be written using variable description/mnemonic codes such that the logic of the program is clearly depicted.

Question 4: [15]

Design a class called '**Yobike**' with the following specifications:

Instance variables/data members:
int bno : To store the bike number
int phnno : To store the phone number of the customer
String name : To store the name of the customer
int days : To store the number of days the bike is taken on rent
int charge : To calculate and store the rental charge

Member methods:
void input() : To input and store the details of the customer
void compute(): To compute the rental charge

No of days	Charge
For first 5 days	₹500 per day
For next 5 days	₹400 per day
Rest of the days	₹200 per day

void display() : To display the details in the following format:

Bike No.	Phone No.	Name	No. of Days	Charge
_____	_____	_____	_____	_____

Question 5: [15]

Write a menu driven program in Java to display the pattern of a string entered by the user. If the user enters a choice 'F' then it displays the **first** character of each word. In case the choice is 'L' then it will display the **last** character of each word.

Sample Input: HONESTY IS THE BEST POLICY

Enter your choice:	F	Enter your choice:	L
Sample output:	H	Sample output:	Y
	I		S
	T		E
	B		T
	P		Y

Question 6: [15]

Write a program to accept **name** and **total marks** of N number of students in two Single Dimensional Arrays name [ ] and totalmarks [ ].

Calculate and print:

i. The average of the total marks obtained by N number of students.
[Average = (sum of total marks of all the students)/N]

ii. Deviation of each student's total marks with the average.
[Deviation =total marks of a student-average]

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Question 7: [15]

Design a class to overload a function **SumSeries()** as follows: **(use main method)**

i. void SumSeries (int n, double x) with integer argument and double argument to find and display the sum of the series given below:

$S=\frac{x}{1}-\frac{x}{2}+\frac{x}{3}-\frac{x}{5}\ to\ \ldots\ldots\ldots\ldots n\ terms$

ii. void SumSeries (int n) with integer argument to find and display the sum of the series given below:

$S=\frac{1}{1}+\frac{1}{2}+\frac{1}{3}+.\ldots\ldots\ldots+\frac{1}{n}$

iii. void SumSeries() to find and display the sum of the series given below:

$S=1+(1\times2)+(1\times2\times3)+\ldots\ldots\ldots+(1\times2\times3\times4\times\ldots..\times20)$

Question 8: [15]

Write a program in Java to accept a word. Check and display whether the word is **palindrome** or only a **special** word or none of them.

Special words are those words which start and end with the same letter.
Example: COMIC, WINDOW
Palindrome words are those words which read the same from left to right and vice versa.
Example: LEVEL, CIVIC
All Palindromes are special words but all special words are not palindromes.

Question 9: [15]

Write a program to accept the names of 10 cities in a single dimensional **string** array and their STD codes in another single dimensional **integer** array. Search for the name of a city input by the user in the list. If found, display "Search Successful" and print the name of the city along with its STD code, or else display the message "Search Unsuccessful, no such city in the list".

Sample Input:
City: New Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Dehradun, Pune, Bangalore, Ahmedabad, Mysore
STD Codes: 011, 022, 033, 044, 040, 135, 020, 080,079, 821

Sample Output: Enter a city to be searched: Kolkata
Search Successful!
STD Code of Kolkata is 033

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