KARNATAKA ICSE SCHOOLS ASSOCIATION
PREPARATORY EXAMINATION - JANUARY 2020

CLASS : X SUBJECT: COMPUTER APPLICATIONS MAX. MARKS : 100
DURATION : 2 HOURS DATE : ___.___. 2020

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

SECTION A (40 MARKS)
(Attempt all questions)

Question1 [5x2=10]

a) What is polymorphism?
b) Write the number of bits allocated for char x[][] of 3rows and 2 columns.
c) What are static members?
d) Write the return data type of
   i) compareToIgnoreCase()
   ii) parseLong()
e) Differentiate between break and System. exit(0)

Question2 [5x2=10]

a) Rewrite the following using ternary operator:
```
int n=27;String s="";
if(n>=18)
s="eligible";
else
s="not eligible";
```
b) What is meant by private visibility of a method?
c) Give the difference between pure and impure function.
d) What is an exception? Write one example.
e) Explain autoboxing with an example.

Question3 [10x2=20]

a) Evaluate the following Java expression if a=4 andb=6
```
a+=++b%a--+a/2+a
```

b) Write valid Java statement for the following:
d =|x| - $\sqrt[3]{b}$

c) Write the output for the following:
```
i)System.out.println(Math.round(8.3));
ii)System.out.println(Math.ceil(Math.min(Math.PI,17.7)));
```

d)
```
int a[][] = {{1, 0, 0},{0, 1, 0}, {0, 0, 1},{0,1,0}};
System.out.println(a.length);
System.out.println(a[1].length);
```

e) Name the function which is used
   i) To find sine of an angle
   ii) To eliminate leading and trailing spaces of a string

f) What will the following code print?
```
char str[]={'c','o','m','p','u','t','e','r'};
String a =new String(str);
System.out.println(a.length());
```

g) String x[] = {"SAMSUNG", "NOKIA", "SONY" , "MICROMAX", "BLACKBERRY"};
   Give the output of the following statements:
   i) System.out.println(x[1].toLowerCase());
   ii) System.out.println(x[3].indexOf('M')+ x[4].indexOf('M'));

h) What will be the output for the following code?
```
for(; ;)
System.out.println("GEEKS");
```
   Options:
   i) Compile time error
   ii) Run time Exception
   iii) GEEKS (Infinitely)
   iv) GEEKS

i) Give the output of the following program segment:
```
int a[]=new int[6];
a[0]=2;
a[1]=3;
for(int i=2;i<6;i++)
{
a[i]=a[i-1]+a[i-2];
}
for(int i=0;i<6;i++)
System.out.println(a[i]);
```

j) Write the Output:
```
char ch= 'F';
int m=ch;
m+=5;
ch+=5;
System.out.println(m+ "\t" +ch);
```

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 anyprogram environment with Java as the base.

Each program should be written using Variable descriptions/Mnemonic Codes so that the logicof the program is clearly depicted.

Flow-Charts and Algorithms are not required.

Question 4 [15]

Define a class ElectricBill with the following specifications:
class: ElectricBill
Instance Variables/ data members:
String name – private variable to store the name of the customer
int units – private variable to store the number of units consumed
double bill – private variable to store the amount to paid

Member methods:
ElectricBill(..) – parameterized constructor to initialize the data members.
void calculate() – to calculate the bill as per the following tariff :

Number of units	Rate per unit
First 100 units	Rs.2.00
Next 200 units	Rs.3.00
Above 300 units	Rs.5.00

A surcharge of 2.5% is charged if the number of units consumed is above 300 units.
void display() – To print the name of the customer, number of units consumed and bill amount.
Write main() method to create an object of the class and call the above member methods.

Question 5 [15]

Write a program to check if the given number is a Munchausen Number or not.
A Munchausen Number is a number that is equal to the sum of its digits each raised to a power equal to the digit. It is also called perfect digit-to-digit invariant (PDDI) because of its feature.
Example of Munchausen numbers are 1 and 3435.
Consider the number 3435
$3^3 + 4^4 + 3^3 + 5^5 = 27 + 256 + 27 + 3125 = 3435$

Question 6 [15]

Design a class to overload a function pattern() as follows:
(a) void pattern(String s): to display the following if s="MODERN".
MODERN
MODER
MODE
MOD
MO
M

(b) void pattern(int n): to display the following if n=5.
1
12
121
1212
12121

Question 7 [15]

Write a program to accept n alphabets and sort them in descending order using selection sort. If the user enters input in uppercase,convert it into lowercase and store in the array.

Question 8 [15]

Write a program to accept a sentence from the user and print all the 5-letter words that ends with a vowel.

Sample input: The grass is greener where you water it

Output: where

Question 9 [15]

Write a program to accept and store elements in an integer 2-D array a[][]of size mxn and print the elements in matrix form. Also print the productof numbers of each column.

Sample input: 6 2 4
4 5 6
2 3 5

Output:

Product of numbers of column1: 48

Product of numbers of column2:30

Product of numbers of column3: 120

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