

Bombay Scottish School, Malim  
PRELIMINARY EXAMINATION  
COMPUTER APPLICATIONS

Std	: 10	Max. Marks	: 100
Date	: 18.01.2019	No. of Questions	: 09
Duration	: 2 hours	No. of Printed sides	: 05

(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.

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

**Question 1**

- (a) Identify the literals listed below: [2]
- (i) "b" (ii) true (iii) 32.8d (iv) '4'
- (b) Name the OOP's principle that is implemented by the following: [2]
- (i) a Super class and a Sub class  
(ii) multiple functions in a class having same name and different signature
- (c) Explain the term 'byte code', in brief. [2]
- (d) Name the Java keyword for the following: [2]
- (i) To create an object of a class  
(ii) To declare a variable as a class variable
- (e) Write any two characteristics of a constructor.

**Question 2**

- (a) Define Exception. Identify the following as a syntax error, run-time error or logical error: [2]
- Math.sqrt(25-29);
- (b) Explain the fall through situation, in brief.
- (c) Name the following: [2]
- (i) A package of Java containing wrapper classes  
(ii) Data type returned by compareTo()
- (d) Class is called a user defined data type. Comment.



(c) Identify each one of the following as a static method or non-static method:

(i) Math.abs()

(ii) str.length() where str is an object of a String class

### Question 3

(a) Study the given loop and answer the questions that follow:

```
int x=10,y=20;
```

```
do { ++x; y -= x; } while(x<10);
```

(i) How many times the loop will run?

(ii) What would be the resultant value stored in y?

(b) What would be the value of x after evaluating the expression given below?

```
x -= (x--) - (--x * x++);
```

where x is given as 8.

(c) Write the output of the following program code:

```
char ch;
```

```
String s = "WebWorld";
```

```
for(int i=0;i<s.length();i++)
```

```
{
```

```
    ch=s.charAt(i);
```

```
    for(int j=1;j<=2;j++)
```

```
        if(Character.isUpperCase(ch))
```

```
            System.out.print(ch);
```

```
        else
```

```
            System.out.print("$");
```

```
        System.out.print("\n");
```

```
}
```

(d) Rewrite the following program segment using if-else structure instead of ternary operators:

```
double rate = units >= 100 ? 2.5 : units >= 50 ? 1.8 : 1.5;
```

(e) Write the output of the following code fragment:

```
String s1 = "123"
```

```
String s2 = "58";
```

```
int x = Integer.valueOf(s1);
```

```
double y = Double.valueOf(s2);
```

```
System.out.println("x=" + x);
```

```
System.out.println("y=" + y);
```

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(f) Name the type casting seen in the following examples:

(i) char c = 'm';

int a = c;

(ii) double b = 15.2;

int x = (int)b;



✓ Write one point difference between private and public access specifiers. [2]

✓ What would be returned by Math.ceil(3.78) and Math.abs(Math rint(-51.2)) [2]

✓ Write a Java expression for the following: [2]

$$\frac{\sqrt{a^2 + b^2}}{(x + y)^2}$$

✓ Given the String array as,

String ar[] = {"English", "Physics", "Geography", "Maths", "Computers"};

What would be returned by the following: [2]

(i) ar[1].substring(0,5).concat(ar[2].substring(2));

(ii) ar[4].endsWith("s");

### 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 descriptions/Mnemonic Codes so that the logic of the program is clearly depicted.

Flow-Charts and Algorithms are not required.

#### Question 4 ✓ [15]

Create a class 'ACRoom' that will model a room that needs to be cooled by an Air Conditioning Unit.

Following is the description of the class:

Instance variables/data members:

String Rname : To store the type of a room in the house

double Rlength : Length of the room in feet

double Rwidth : Width of the room in feet

long capacity : Air conditioning capacity for the room

Member methods:

ACRoom() : Non-parameterized constructor to initialize numeric data values to 0.0 or 0 and String data members to ""

void accept() : To input and store Rname, Rlength, Rwidth

void calCapacity() : To calculate the area of the room (length x width) in square feet to decide the air conditioning capacity for the room.



Room Size (area in square feet)	Air Conditioner capacity
Below 250	5500
>= 250 and <500	10000
>=500 and <1000	17000
>= 1000	24000

void display()

To display all details of the room such as type, length, width and air conditioner capacity of the room.

Write main method to create an object of the class and call the above member methods.

[15]

### Question 5

A number that is smaller than the sum of its factors excluding the highest factor is said to be an abundant number.

Example: Number = 12

Sum of its factors excluding the highest factor =  $1+2+3+4+6=16$

Write a program to print all abundant numbers in the range 1 to n (both inclusive) where n is to be accepted in the program. Print the output with the appropriate message.

[15]

### Question 6

Write a program to input ten integers in an array. Using switch-case statement perform the appropriate operation as per the choice selected by user from the following menu:

1. Print the factorial of each number from the array
2. Print the sum of only odd numbers from the array

For incorrect choice number, an appropriate error message should be displayed.

[15]

### Question 7

Define a class to overload a function check() as follows:

void check(int,int) - To check and print if the first int is divisible by second or not, with an appropriate message.

void check(char,char) - To check the numeric values of both the characters and print the character with higher numeric values.

void check(String,char) - To check and print the number of times the character occurs in the string.

Write main method to call the above methods.

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**Question 8**

[15]

Write a menu driven program to perform the following operations on the word that is accepted:

✓ Check if the word is palindromic or not

✓ Print the letters of the words in the following pattern:

```
M
MO
MON
MONE
MONEY
```

(If the word entered is "MONEY")

For incorrect choice, an appropriate message should be displayed.

**Question 9**

[15]

Write a program to input the first name of a person. Make an array of the letters existing in the name. Arrange the elements of this array in ascending order using Bubble sort technique. Print the sorted array along with the name of the person.