
COMPUTER APPLICATIONS

(Theory)

(Two hours)

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) Define Encapsulation. [2]
- (b) What are default values of primitive data types int and float? [2]
- (c) State the difference between == operator and equals () method. [2]
- (d) State the number of bytes occupied by int and float data types. [2]
- (e) `String s[] = { "monday", "tuesday", "wednesday", "thursday", "friday" };`
What will be output for (i) `System.out.println(s[1]);`
(ii) `System.out.println(s[3].length());` [2]

Question 2

- (a) What are the two ways of invoking functions? [2]
- (b) State the data type and value of res after the following is executed:
`char ch = 't';`
`res = Character.toUpperCase(ch);`
- (c) Write a java expression for the following :
 $ax^5 + bx^3 + c$ [2]
- [2]
- (d) Differentiate between constructor and function. [2]

- (e) What are the values stored in variables r1 and r2;
- (i) `double r1 = Math.abs
 (Math.min(-2.83, -5.83));`
- (ii) `double r2 = Math.sqrt(Math.floor(16.3));` [2]

Question 3

(a) Write a java statement to create a object mango of class fruit. [2]

(b) What does class encapsulate ?. [2]

(c) Attempt the following :

(i) Rewrite the following program using if ...else statement.
`result = (info > 1000)? result*3/50 : 10;`

(ii) If `int a[] = {3,4,5,19,7,20,18,44}` what are the values of x and y ?.

`x = Math.pow(a[4],a[2]);` [2]
`y = Math.sqrt(a[5]+a[7]);` [2]

(iii) What is the data type that the following library functions return?

(i) `isWhitespace(char ch)`

(ii) `Math.abs(float a)`

(iv) `int a = 8, b = 3, c =0;`
`if (a>b || a != b)`
`c = ++a+--b;`
`System.out.print(c+ " "+a+ " "+b);` [2]

(v) `int i =7;`
`while (i++ < 2)`
`{`
`i++;`
`System.out.print(i + " ");`
`}`
`System.out.print(i);` [2]

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

(e) What is the difference between the primitive data types and composite data types ?

[2]

(f) Convert the following while loop to the corresponding for loop :

```
int a = 10, b = 20;
while (a >= 1)
{
    System.out.println(a*b);
    a--;
}
```

[2]

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** such that the logic of the program is clearly depicted.*

Flow-Charts and Algorithms are not required.

Question 4

Write a program to generate a triangle or an inverted triangle till n terms based on the users choice of triangle to be displayed.

Example 1:

Input : Type 1 for a triangle and

Type 2 for inverted triangle. Example 2:

1 2

Enter the number of terms Enter the number of terms

4 4

Output : Output :

1 4 4 4 4

2 2 3 3 3

3 3 3 2 2

4 4 4 4 1

[15]

Question 5

Write a menu driven program to find the sum of the following series depending on the user choosing 1 or 2

1. $S = (1 \cdot 2^2) + (2 \cdot 3^2) + (3 \cdot 4^2) + \dots + n$ terms
2. $S = 1/1! - 2/2! + 3/3! - \dots$ upto n terms

where ! stands for factorial of the number and the factorial value of a number is the product of all integers from 1 to that number, e.g. $5! = 1 \times 2 \times 3 \times 4 \times 5$.

(use switch-case).

[15]

Question 6

Write a program to input a string. Print original string. Also print new string after reversing each word at its own place.

Example :

Input : india is my country

Output : aidni si ym yrtnuoc

[15]

Question 7

Write a program to input and store the weight of 10 apples. Sort and display them in descending order using the selection sort technique.

[15]

Question 8

Twin primes are prime numbers whose difference is 2.

For example 3,5 ; 5,7; 11,13; 17,19 etc

Write a program to print all the twin prime numbers from 2 to 200.

[15]

Question 9

Write a program to input name and print the initials of that name except the last word (surname) Each initial must be followed by symbol dot (.).

[15]

Example : Input : Vivek Kumar Shrivastava.

Output : V. K. Shrivastava