

Computer Application Question Paper

2006

General Instructions

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

SECTION A (40 Marks)

Attempt all questions.

Question 1 [10]

- (a) Define encapsulation.
- (b) Explain the term object using an example.
- (c) Define a variable.
- (d) What is a wrapper class? Give an example.
- (e) What is the purpose of the new operator?

Question 2 [10]

- (a) State the two kinds of data types.
- (b) Write the corresponding expressions for the following mathematical operations:-
 - i. $a^2 + b^2$
 - ii. $z = x^3 + y^3 - xy / z$
- (c) Define an impure function.
- (d) Differentiate between if and switch statements.
- (e) What will be the output for the following program segment?

```
String s = new String("abc");  
System.out.println(s.toUpperCase());
```

Question 3

- (a) What is meant by private visibility of a method? [2]
- (b) Find and correct the errors in the following program segment:-
`int n[] = (2,4,6,8,10);`
`for (int i = 0; i <= 5; i ++)`
`System.out.println("n[" + i + "] = " + n[i]);` [2]
- (c) Explain function overloading with an example. [4]
- (d) Find the output of the following program segment, when:
- i. `val = 500`
 - ii. `val = 1600`
`int val, sum, n = 550;`
`sum = n + val > 1750? 400 : 200;`
`System.out.println(sum);` [2]
- (e) What is a default constructor? [2]
- (f) What will be the output for the following program segment?
`int a = 0, b = 30, c = 40;`
`a = --b + c++ + b;`
`System.out.println("a =" + a);` [2]
- (g) Differentiate between `compareTo()` and `equals()` methods. [2]
- (h) What is a package? Give an example. [2]
- (i) Explain the function of a return statement. [2]

SECTION B (60 Marks)

Attempt any four questions from this Section.

Question 4

Write a program to calculate and print the sum of odd numbers and the sum of even numbers for the first n natural numbers.
The integer n is to be entered by the user. [15]

Question 5

A cloth showroom has announced the following festival discounts on the purchase of items, based on the total cost of the items purchased:- Total cost Discount (in Percentage)

<u>Total cost</u>	<u>Discount (in Percentage)</u>
Less than Rs. 2000	5%
Rs. 2001 to Rs. 5000	25%
Rs. 5001 to Rs. 10000	35%
Above Rs. 10000	50%

Write a program to input the total cost and to compute and display the amount to be paid by the customer after availing the discount. [15]

Question 6

Consider the following statement:-

"January 26 is celebrated as the Republic Day of India".

Write a program to change 26 to 15, January to August, Republic to Independence and finally print

"August 15 is celebrated as the Independence Day of India". [15]

Question 7

Write a program that outputs the results of the following evaluations based on the number entered by the user.

- (i) Natural logarithm of the number
- (ii) Absolute value of the number
- (iii) Square root of the number
- (iv) Random numbers between 0 and 1. [15]

Question 8

The marks obtained by 50 students in a subject are tabulated as follows:- Name Marks

Name	Marks
.	.
.	.
.	.

Write a program to input the names and the marks of the students in the subject.
Calculate and display:-

- The subject average marks ($\text{subject average marks} = \text{subject total} / 50$)
- The highest mark in the subject and the name of the student.
- The maximum marks in the subject are 100) [15]

Question 9

Write a program to accept 15 integers from the keyboard, assuming that no integer entered is a zero. Perform selection sort on the integers and then print them in ascending order. [15]