V.P.M's B. N. Bandodkar College of Science, Thane

F.Y.J.C First Terminal Examination January 2023

Subject: Computer Science Paper - I

Date: 02.01.2023 **Time: 02.30 pm to 05.00 pm**

Day: Monday **Marks: 50**

Note: All Questions are compulsory.

Q.1 A) Select the correct alternatives and rewrite the following: 04

1. The Octal number system has Radix of _____

   a) 7 b) 8 c) 10 d) 12

2. Conditional operator is equivalent to _____ control structure.

   a) For b) Do....While c) If .... Else d) If

3. In _____ loop, condition is tested after first iteration.

   a) Do .... While b) For c) If.... Else d) While

4. The decimal equivalent of a hexadecimal number 2A is _____

   a) 42 b) 62 c) 82 d) 17

B) Answer any two of the following: 06

1. Convert the following: (a) $(2AC)_{16}$ = (_____)$_{10}$ (b) $(574.321)_8$ = (_____)$_2$
2. Explain the difference between prefix and postfix operators.
3. Convert the following Hex to Octal: **(a)** 2F7 **(b)** BAB **(c)** ABC * 4D

Q.2 A) Answer any two of the following: 06

1. Explain 2's complement method of subtraction with suitable example.
2. Explain different bitwise operators in C++
3. Explain if .... Else statement.

B) Answer any one of the following: 04

1. Draw a flowchart for calculation of a Fibonacci series.
2. Given the following declarations:

```
int    a = 0,  b = 1,  c = -1;
float  i = 2.5,        j = 0.0;
```

Evaluate the following and justify your answer

(i) a > b
(ii) b/c
(iii) a <= b && b>= c
(iv) a<=1&&1 == b
(v) ++a == b && b*1 = j *2

Q.3 A) Answer any two of the following: 06

1. What is an array? Explain the advantages of arrays.
2. Explain the difference between in while and do ... while loop.
3. Explain the use of continue statement.

B) **Answer any one of the following:**

1. Explain the different control structures in C++ with syntax.
2. Find X if : **(i)** $(2AC)_{16} = (X)_2$ **(ii)** $(11110 - 1101)_2 = (X)_{10}$

Q.4 A) **Answer any two of the following:**

1. Differentiate between pass by value and pass by reference.
2. Explain conditional operator with example.
3. Differentiate between entry controlled and exit controlled loops.

B) **Answer any one of the following:**

1) What is pointers? Write its advantages.
2) Perform the following using binary arithmetic
(i) 12 – 14 **(ii)** 23 +25 **(iii)** 111101 + 110011

Q.5 **Answer any two of the following.**

1) Write a program in C++ to find the sum of the series 1+ 3 + 5 +...+ n
The value of n should be accepted from user.
2) Write a program in C++ to find a area of circle using return type functions.
3) Write a program to swap the numbers using pointers.

OR

Q.5 **Answer any two of the following.**

1) Write a program in C++ to display odd numbers between 1 – 100 using for loop.
2) Write a program in C++ to reverse a number. The number should be accepted from user.
3) Write a program in C++ to compute the sum of the series $1^2 + 2^2 + 3^2 + \ldots + n^2$. The number should be accepted from user.

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