

11506/21506

Roll No. _____

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**B. Tech. I - Sem. Main/Back & II-Sem. Back Exam., March – 2021
ESC**

1FY3-06 /2FY3-06 Programming for Problem Solving

Time: 2 Hours

Maximum Marks: 80

Min. Passing Marks:

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5×2 marks = 10 marks.
All five questions are compulsory.

Part – B: Analytical/Problem solving questions 4×10 marks = 40 marks.
Candidates have to answer four questions out of six.

Part – C: Descriptive/Analytical/Problem Solving questions 2×15 marks = 30 marks.
Candidates have to answer two questions out of three.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL

2. NIL

PART – A

Instruction for question no. 1 and 2 of part – A :- A program is given below. Identify errors present in the program. If you find this program in order then what will be the output? Justify your answer in 25 words.

Q.1 `int main ()` [2]
 {
 `int a = 12, b = 13;`
 `if (a = b)`
 `printf ("a and b are equal");`
 `else`
 `printf ("a and b are not equal");`
 }

Q.2 `int main ()` [2]

```
{  
    int a [ ] = { 10, 20, 30, 40, 50 };  
    int j;  
    for (j = 0; j < 5; j++)  
    {  
        printf ("%d\n", *(a + j));  
    }  
}
```

Q.3 Convert the following- [2]

$(255)_{16} = (?)_{10}$

Q.4 Convert the following using direct conversion method- [2]

$(1234)_8 = (?)_2 = (?)_{16}$

Q.5 Suppose a system have two variables. Draw a flowchart identifying the variable which contains highest number. (No explanation required) [2]

PART – B

- Q.1 (a) What is Stored Program Architecture of computer? Draw the architecture block diagram. Briefly describe each component and their interconnections. [5]
- (b) Discuss following access methods using suitable example- [5]
- (i) Direct Access
 - (ii) Sequential Access

Q.2 Subtract using 2's complement method following steps as shown below (Step 1. Convert to binary → Step 2. Subtract using 2's complement → Step 3. Find magnitude in decimal) [4+6=10]

- (a) 49 – 25
- (b) 101 – 115

Q.3 Draw a flowchart that read N numbers and also calculates the average of these N Numbers.

Write an algorithm for the same.

[5+5=10]

Q.4 What is 2 – D Array? Write a program to multiply two matrices A and B of size 3×3 each and store result in matrix C.

[2+8=10]

Q.5 (a) Write a program to display the following patterns-

[5]

A

A B

A B C

A B C D

A B C D E

:

(b) What is pointer variable? Explain, why pointer variable of a particular data type cannot refer to variable of another data type using suitable example.

[5]

Q.6 During festive season a supermarket store offers discounts on total purchase cost under various offers which are as given below-

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Offer 1: if Purchase amount ≥ 3000 then Discount = 10%

Offer 2: if Purchase amount ≥ 6000 then Discount = 15%

Offer 3: if Purchase amount ≥ 10000 then Discount = 20%

Write a program which accept total purchase amount as input from user and display billing amount after applying discount. (e. g. if purchase cost = 12000/- then billing amount = 9600/- after discount @ 20%)

[10]

PART – C

Q.1 (a) Explain features of Assembly level, Low level and High level languages in comparative manner. [8]

(b) What is Primary memory? Define and explain all types of primary memory used by computer systems. [7]

Q.2 Explain the difference between Structures and Unions in C. Write a C program to read the student's name, roll number and marks of three subjects and display the same using structures in C. [5+10=15]

Q.3 Explain following – (use suitable examples as needed) [5+5+5=15]

- (a) Break statement
- (b) Parameter passing in function
- (c) File handling in C language

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