2E3207

Roll No. _____

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2E3207

B. Tech. II - Sem. (Main / Back) Exam., - 2023

2FY3 – 06 Programming for Problem Solving

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

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

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 What is stored program architecture of computers?

Q.2 What are the differences among sequential access, direct access and random access methods?

Q.3 Write the key properties of semiconductor memory.

Q.4 Form the two's complement of $(111011101110)_2$ binary numbers.

Q.5 Convert $(39.B8)_{16}$ to its decimal equivalent.

Q.6 What is the output of following code segment? Justify the output.

```
int a=1,b=2,c,d;

float x=5.0, y=6.0, w, z;

printf("%d %d \n", a, b);

printf("%f %f \n", x, y);

printf("%d %d \n", w, z);

printf("%f %f \n", c, d);
```

Q.7 Rewrite the following code segment using IF-ELSE structure without compromising on the underlying logic.

```
int a;
switch(a+2)
{
case 49: { printf("the value of this case is %d", 49);
           break;
         }
case 48: printf("the value of this case is %d \n", 48);
printf("case without break st");
default: printf("i am in default case");
}
```

Q.8 What is bound checking in an array?

Q.9 Write the differences between break and continue.

Q.10 Show the use of strcmp function for strings.

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 What is flowchart? List and show the uses of each symbol of flow chart.

Q.2 What are the differences between primary and secondary memory?

Q.3 Convert the $(3754)_8$ octal numbers to binary, decimal and hexadecimal formats.

Q.4 Write a C code to check whether a given number is prime or composite. If it is composite, display all its prime factors.

Q.5 Write a C program to print the following series upto 20 terms. 1 2 6 15 31 46.

Q.6 What are the differences between the structure and union?

Q.7 What is file in C? Write the syntax of C code for reading and writing text in file.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 Discuss the concepts of High-level, Assembly and Low-level languages.

Q.2 Consider the base r system.

(i) What is the range of numbers in decimal represented by this system in -

(a) signed system

(b) 1's complement system

(c) 2's complement system

(ii) Given an integer n, how many bits do you need to represent n in all of the above three systems. Express as a function of n and r.

Q.3 Define the function. Discuss the parameter passing methods with the help of an example.

Q.4 An array, Array[20][15] is stored in the memory along the column with each element occupying 8 bytes of memory. Find out the Base address and address of the element Array[2][3], if the element Array[10][25] is stored at the address 1000.

Q.5 Write a program in C to demonstrate the use of the &(address of) and *(value at address) operators.
