

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal

Mid Sem Examination

Course - B.Tech.

Sem - I

November 2023

Subject Name- Computer Programming & Problem Solving

Section - A/B/C/D/E

Subject Code CS-104

Time- 1.30 hours

Max.Marks- 20

Note- Answer all questions

S No	Question	Marks
1(A)	You are coming back to hostel from home after spending Diwali holiday with your family members. This time you are traveling via air and only 15Kg luggage is allowed for free. Your mother cooked delicious sweets and packed 4Kg of them for you and your hostel friends. Also, due to cold weather you also packed 2 jackets (1kg each) and an extra blanket of 2 kg. At the time of checkout, you got to know that the luggage is more than 15Kg and you need to pay an extra Rs.150/kg. The extra luggage weight is due to 2 jackets and the blanket. As you don't want to throw the sweets prepared by your mother into the dustbin and to save money, you started wearing the extra jackets and putting the blanket over the jackets. Someone captured a video of your act of wearing extra jackets and putting the blanket over the jackets to save money and shared that video on social media. That video became viral. Write an algorithm to calculate the extra amount you need to pay considering you can wear a variable no of jackets depending on comfortability.	2+2
(B)	Draw a flowchart for your solution of the above problem mentioned in 1(A).	
2(A)	Write a program to print max and min of two numbers using the bitwise operators.	2+2
2(B)	Write a program to take any two digit positive number and display the following output using a switch statement without using any relational operators. When user entered any number between +10 to +99 (both included) display, You have entered a valid two digit positive number. When user entered any other number display, You have entered an invalid number.	

3 (A)	<p>Write a c program using any loop to find whether a valid integer number NUM is divisible by 3 or not, without using NUM%3 operation.</p> <p>Sample Output -</p> <p>Enter any number 153 153 is divisible by 3</p> <p>Enter any number 293 293 is not divisible by 3</p>	2
3(B)	<p>Write a program to check whether a number NUM is prime or not without using if-else, switch statement. Your program must not check divisibility of the number by (i+1),(i+2),...,(NUM-1) once it is found that the number is divisible by i.</p>	2
3(C)	<pre>#include<stdio.h> #define L 10 int main() { int a = 10; switch ((a,a/2,a*2)) { case L: printf("123\n"); break; case L*2: printf("456\n"); case L*3: printf("789\n"); break; default: printf("def"); } return 0; }</pre> <p>Rewrite the code using if-else statements to produce the same output.</p>	2

4

Write a C program to print the following pattern using nested loops.
When the user enters the number of rows is 6 then the following output is generated.

3

```

      A
     ABA
    ABCBA
   ABCDCBA
  ABCDEDCBA
 ABCDEFEDCBA

```

5

Write the output for the following programs

2+1

(A)

```

#include<stdio.h>
int main()
{
    int i,j,a;
    for(i=1;i<=5;i++)
    {
        for(j=1;j<=i;j++)
        {
            if((i+j)%2==0==0)
                printf("2");
            else
                printf("3");
        }
        printf("\n");
    }
    return 0;
}

```

(B)

```

#include <stdio.h>
int main()
{
    int w = 0, x = 2.5, y = 5, z = 3, r, s = 4, t = 5,
        u = -3;
    double a = 2.36, b = 3.19, c = 3.0, d = 2.91726;
    printf("Expr_1 = %lf\n", x + s * t * -c - u);
    printf("Expr_2 = %f\n",
        (float)(x + y < z + w && a > b - 17 * x || ! x < 5));
    return 0;
}

```

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