

**Assignment-4 (CO3, CO4)**  
**Submission deadline: 6<sup>th</sup> Nov., 2023**

1. Write Three Address Code for the following expression/statements-

- a.  $c = 0$   
do  
{  
    if ( $a < b$ ) then  
         $x++$ ;  
    else  
         $x- -$ ;  
     $c++$ ;  
} while ( $c < 5$ );
- b. while ( $A < C$  and  $B > D$ ) do  
    if  $A = 1$  then  $C = C + 1$   
    else  
        while  $A \leq D$   
            do  $A = A + B$
- c. switch (ch)  
    {  
        case 1 :  $c = a + b$ ;  
        break;  
        case 2 :  $c = a - b$ ;  
        break;  
        default:  $c++$ ;  
    }

2. Construct a DAG for the following three address code-

$a = b + c$   
 $t1 = a * a$   
 $b = t1 + a$   
 $c = t1 * b$   
 $t2 = c + b$   
 $a = t2 + t2$

3. Represent the following expression into quadruple, triple and indirect triple-

- a.  $c[i] = a + b * c / e \uparrow f + b * c$   
b.  $b = (d - a) * b[i]$

4. Write a program to evaluate sine series (up to N terms). Convert the program into 3 address code. Construct flow graph and apply any three optimization techniques on this flow graph.