JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
(T-3 Examination May-2019)
B.Tech. 6TH Semester

COURSE CODE: 10B11CI612   MAX. MARKS: 35

COURSE NAME: COMPILER DESGIN

COURSE CREDITS: 4   MAX. TIME: 2 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q. 1   [CO 6] Generate 3-address code for following: (3x2=6)

     a)   int a[10], b[10], dot_prod, i;
         int *a1, *b1;
         dot_prod = 0;
         a1 = a;
         b1 = b;
         for (i=0; i<10; i++)
         dot_prod +=*a1++ * *b1++;

     b)   int a[10], b[10], dot_prod, i;
         dot_prod = 0;
         for (i=0; i<10; i++)
         dot_prod += a[i]*b[i];

Q. 2   [CO 6] Write short note on: (2x4=8)
     (I) Inherited translation
     (II) Synthesized translation
     (III) S-attributed definition
     (IV) L- attributed definition

Q. 3   [CO 7] a) Consider the following code   (5)

```
begin
  prod := 0;
  i := 1;
  do begin
    prod := prod + a[i] * b[i]
    i = i+ 1;
  end
  while i <= 20
end
```

Design the three address code notation, DAG, basic blocks and control flow graph for above code.

Q. 4   [CO-7] Define a Quadruple. How it is different from triples? Convert the following expression into three address code and quadruple.   (4)

$$S=(a+b)/(c-d)*(e+f)$$

Q. 5   [CO-8] What is activation record? Explain its organization. Discuss various storage-allocation strategies.   (4)

Q. 6   [CO-8] What do you mean by loop optimization? What are basic points that are required to find the loop in a program? What are the conditions to find leaders in a program? Design control flow graph for following: (1+2+2+3)

```
while (a<c and b<d)
do
if a=1 then
c=c+1
else
while a<=d do
a+a+3
```