

Assignment: Individual Assignment (15 %)

Prepare a document on the following questions and submit at the day of your final examination.

1. Construct the DAG and three address code for the expression: $a+a*(b-c) +c*(b-c) +b$.
2. Consider the following grammar and find the parsing table using operator precedence parser.

$$S \rightarrow iCtSeS/a$$
$$C \rightarrow b$$

3. Consider the following grammar

$$S \rightarrow En$$
$$E \rightarrow E+T|T$$
$$T \rightarrow T*F|F$$
$$F \rightarrow (E) | id$$

Draw an annotated parse tree for the expression $7*9+5$

4. Write Three address code for the below example

```
While ( i<10)
```

```
{
```

```
  a= b+c*-d;
```

```
  i++;
```

```
}
```

5. What is a Syntax Directed Definition? Write Syntax Directed definition to convert binary value in to decimal?
6. Explain different code optimization techniques available in local and global optimizations?
7. What is a flow graph? Explain the process of constructing flow graphs and the use of flow graphs in code optimization.
8. Describe the various fields of activation record?
9. Write the Code Generation Algorithm and explain the getreg function.
10. What is the role of peephole optimization in the compilation process?
11. With an example explain the following loop optimization techniques:
 - Code Motion
 - Induction Variable Elimination
 - Strength Reduction
12. Generate a code sequences for the assignment $d = (a-b) +(a-c) +(a-c)$