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53 (CS 601) CPDG

2016

## COMPILER DESIGN

Paper : CS 601

Full Marks : 100

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

Answer **any five** questions.

1. With an example discuss about the different phases of compiler design. 20
2. (a) Write down the rules for computing FIRST and FOLLOW for a grammar.  
(b) Use your rules to compute FIRST and FOLLOW for the following grammar :

$$S \rightarrow AbCd$$

$$A \rightarrow aAb \mid \epsilon$$

$$C \rightarrow pCd \mid q$$

5+15

Contd.

3. Consider the following augmented grammar

$$S' \rightarrow S, S \rightarrow S + P | P, P \rightarrow P * F | F,$$

$$F \rightarrow (S) | id.$$

Construct the  $LR(0)$  items for the above grammar.

Construct the SLR parsing table by using the items. 20

4. Consider the following augmented grammar

$$S' \rightarrow S, S \rightarrow PQ, P \rightarrow p, Q \rightarrow q.$$

Construct the  $LR(1)$  items for the grammar. 20

5. (a) Construct DAG for the following expression

$$a + (a + (a + b + (a + b + (a + b) + b))) + b)$$

- (b) Generate three address code from your DAG.

- (c) Represent your three address code using quadruples, triples. 10+5+5

6. Discuss about :

5+5+10

(i) Left recursion

(ii) Left factoring

(iii) Code optimization technique.

