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52 (5) CPDG 5-1

2017

**COMPILER DESIGN**

Paper : 5-1

Full Marks : 60

Time : Three hours

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

1. What is Compiler? Explain its phases.

2+6=8

2. (a) What is regular expression? Write the algorithm for conversion of an NFA into a DFA.

2+6=8

Contd.

Or

Construct a minimum state automation from the transitional table given below :

8

State	Input	Symbol
	0	1
A	F	B
B	C	G
C	C	A
D	G	C
E	F	H
F	G	C
G	E	G
H	C	G

(b) Explain lex specification.

3

3. (a) What do you mean by ambiguity? Show that the following grammar is ambiguous

$$s \rightarrow a | absb | aAb, A \rightarrow bs | aAAb.$$

2+3=5

- (b) Define left factoring. Left factor the following grammar —

$$s \rightarrow aBDE | aB | aBCD$$

2+2=4

**Or**

What is parsing? Explain the main differences between Top-down parsing and Bottom-up parsing.  $1+3=4$

- (c) Construct Canonical LR parsing table for the following grammar —

$$S \rightarrow CC$$

$$C \rightarrow cC \mid d \quad 8$$

4. (a) Explain symbol table content and its operation.  $5$

**Or**

Give the translation scheme for case or switch statement.

- (b) Give syntax-directed definition to produce three-address code for booleans Expression.  $6$

5. (a) What do you mean by DAG? Draw the DAG for following basic block

$$t_8 = d + e$$

$$t_6 = a + b$$

$$t_5 = t_6 - c$$

$$t_4 = t_5 * t_8$$

$$t_3 = t_4 - e$$

$$t_2 = t_6 + t_4$$

$$t_1 = t_2 * t_3$$

$$2+4=6$$

**Or**

Explain Runtime storage management.

6

(b) Explain algebraic transformation method.

2

6. Write short notes on : **(any one)**

5

(a) Three\_address\_code

(b) Operator precedence parsing.

(c) Linker.