

Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: 2]

Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 6th

Name of Subject: Compiler Design

Subject Code: PCCS-112

Paper ID: 17188

Scientific calculator is Allowed

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) Illustrate the role of the parser in compiler design.
- b) What do you understand by type checking in compilers?
- c) Define peephole optimization.
- d) What is the significance of symbol table at runtime and compile time?
- e) Differentiate top-down parsing and bottom-up parsing.
- f) Construct the three-address code for the statement "W=X+Y/Z".

Part – B

[Marks: 04 each]

- Q2. Identify the issues in the design of code generator.
- Q3. Write a short note on the lexical-Analyzer Generator Lex.
- Q4. Explain the phases of a compiler with diagram in detail.
- Q5. Justify the reason for removal of left recursion. Eliminate left recursion of the following grammar:
$$E \rightarrow E + T / T, T \rightarrow T * F / F, F \rightarrow (E) / id$$

- Q6. Develop an SDT scheme for statements that alters the program control flow.
- Q7. Examine criteria for Loop optimization of machine-independent code.

Part – C

[Marks: 12 each]

- Q8. What are variants of syntax tree? Generate quadruples, triples and indirect triples for the expression $W = (A + B) - (C + D) + (A + B + C)$

OR

Explain backpatching mechanism in intermate code generation. Also Generate intermediate code for procedures.

- Q9. a) Draw a DFA for the language accepting strings starting and ending with same character over input alphabets $\Sigma = \{0, 1\}$
- b) Construct the predictive parsing table for the following grammar:

$$S \rightarrow A, A \rightarrow aB|Ad, B \rightarrow bBC|f, C \rightarrow g$$

OR

- a) Draw a DFA for the language accepting strings starting and ending with '0' always over input alphabets $\Sigma = \{0, 1\}$
- b) Construct an LALR parsing table for the following grammar
- $$S \rightarrow CC, C \rightarrow cC, C \rightarrow d.$$
