5E1352

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B. Tech. V - Sem. (Main / Back) Exam., January - 2022
Computer Science & Engineering
5CS4 – 02 Compiler Design
CS, IT

Time: 3 Hours **Maximum Marks: 120**

Min. Passing Marks: 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 What is Lexical Analyzer?

Q.2 What do you mean by Context-free grammar?

Q.3 What do you mean by Activation record?

Q.4 Give the full form and definition of DAG.

Q.5 What is Intermediate Code?

Q.6 What is Input buffering?

Q.7 What is YACC error handling in LR Parser?

Q.8 Difference between Bottom-up and Top-down parsing.

Q.9 What do you mean by Peephole Optimization?

Q.10 Explain different types of errors in compilers.

PART – B

(Analytical/Problem solving questions)

Attempt any five questions **[5×8=40]**

Q.1 What are the phases of a Compiler? Explain the function of each phase in brief.

Q.2 Describe Bootstrapping in detail.

Q.3 Write a short note on operator precedence parsing and function.

Q.4 Explain the symbol table management system.

Q.5 What do you mean by basic block? Also explain in detail the transformation in basic block.

Q.6 Construct a DAG for the basic block whose code is given below –

$D := B * C$

$E := A + B$

$B := B * C$

$A := E - D$

Q.7 Explain in brief the various issues of design of a code generator.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[4×15=60]**

Attempt any four questions

Q.1 Consider the following grammar G -

$E \rightarrow E + T \mid T$

$T \rightarrow TF \mid F$

$F \rightarrow F^* \mid a \mid b$

(a) Construct the SLR parsing table for this grammar

(b) Construct the LALR parsing table

Q.2 Define syntax directed definition. Explain the various forms of syntax directed definition.

Q.3 Translate the arithmetic expression –

(a + b) * (c + d) + (a + b + c) into

(a) Syntax tree

(b) Three address code

(c) Quadruple

(d) Triples

Q.4 Consider the following basic block and then construct the DAG for it.

$t_1 = a + b$

$t_2 = c + d$

$t_3 = e - t_2$

$t_4 = t_1 - t_3$

Q.5 Explain different storage allocation strategies.
