5E1352

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B. Tech. V - Sem. (Main / Back) Exam., Feb.-March - 2021

Computer Science & Engineering

5CS4 – 02 Compiler Design

Common for CS, IT

Time: 2 Hours **Maximum Marks: 82**

Min. Passing Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two 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 Define parser.

Q.2 Mention the basic issues in parsing.

Q.3 Why lexical & syntax analyzers are separated out?

Q.4 Define contex free grammar.

Q.5 Define the terms language translator & compiler.

Q.6 What is a flow graph? Explain with an example.

Q.7 List out different object code forms.

Q.8 Differentiate Abstract Syntax Tree & DAG representation of intermediate code.

Q.9 Define left recursion. Is the following grammar left recursive? E → E + E /E * E/ a/b

Q.10 What is hashing? Explain it.

PART – B

(Analytical/Problem solving questions) **[4×8=32]**

Attempt any four questions

Q.1 Define an LL (1) grammar. Is the following grammar LL (1)
G : S → i E t S /i E t Ses/ a ; E → b.
Also write the rules for computing FIRST() & FOLLOW().

Q.2 What is an LALR (1) grammar? Construct LALR parsing table for the following grammar.

$$S \rightarrow cC, C \rightarrow cC, C \rightarrow c/d.$$

Q.3 Explain the usage of YACC parser generator in construction of a parser.

Q.4 Why do we need syntax trees when constructing compliers?

Q.5 Explain the various complier phases in brief with suitable example.

Q.6 What is the process & importance of intermediate code generation?

Q.7 Explain the various strategies of symbol table creation & organization?

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 Write short notes on -
(a) Nesting dept & access links
(b) Data structures used is symbolic table
(c) Static versus dynamic storage allocation

Q.2 What is LEX? Discuss the usage of LEX in Lexical Analyzer generation?

Q.3 Generate the three address code for the following code fragment -

```
while (a > b)
{
  if (c > d)
  x = y + z ;
  else
  x = y – z ;
}
```

Q.4 Explain the different storage allocation strategies.

Q.5 Explain the following terms –
(i) Register descriptor
(ii) Address descriptor
(iii) Instruction costs
