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END TERM EXAMINATION – DECEMBER 2021

SEMESTER – V

(B.Tech. CSE) – 2018, 2019

Subject Code: CS3001 **Duration: 3 hours**

Subject: Compiler Design **Max. Marks: 100**

Instructions

- **All Questions are compulsory**
- **The Question paper consists of 2 sections - Part A contains 10 questions of 2 marks each. Part B consists of 5 questions of 16 marks each.**
- **There is no overall choice. Only Part B question include internal choice.**

PART – A *(2 * 10 = 20 Marks)*

1. What are the macros? Define structure of macro.
2. Define the terms Language Translator and compiler and name any tools use for compiler design.
3. Name all the different data structures used for symbol table?
4. Specify the functionality of linker, loader, DAG and compiler.
5. What is the role of lexical analyser?
6. What is forward reference problem?
7. Remove left recursion in the following grammar

   S→AS | b

   A→SA | a
8. Define the term Intermediate code generator?
9. What is meant by strength reduction
10. List the properties for regular expression.

PART – B *(16 * 5 = 80 Marks)*

11. (a) What do you mean by assembler? Discuss Pass 1 assembler with forward reference problem in detail.

OR

(b) Mention any four compiler construction tools with their drawbacks in detail.

12. (a) Explain in detail the phases of compiler. Illustrate the output of each phase of compilation of the input

Position = initial + rate * 60

OR

(b) Construct minimum state DFA for the following regular expression

(a+b*(aa+bb) (a+b)*)

13. (a) What are different intermediate code forms? Discuss different Three Address code types and implementations of Three Address statements.

OR

(b) Calculate FIRST and FOLLOW for the following grammar?

(1) (8)

E-> E+T/T

T-> T*F/F

F-> (E)/id

(2) (8)

S->xABC

A->a|bbD

B->a|ε

C->b| ε

D->c| ε

14. (a) With a neat diagram explain the format of the Symbol Table. And explain various storage allocation strategies?

OR

(b) What is DAG and flow graph? Explain their role in compilation process.

15. (a) What is code optimization? Explain with an example about the optimization of basic blocks. Name the techniques used in loop optimization

OR

(b) Write a note on code optimization and code generator.