(Please write your Exam Roll No.) *Exam Roll No. .....*

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] MAY - JUNE 2019

Paper Code: IT-308	***Subject: Compiler Design***
Time: 3 Hours	***Maximum Marks: 75***

Note: Attempt five questions in all including Q no.1 which is compulsory. Select one question from each unit.

Q1 Explain following in brief **any five:-** **(5x5=25)**

(a) Differentiate between LR(0) and LR(1) algorithm.
(b) Discuss the various issues involved in designing lexical analyzer.
(c) What are the advantages of intermediate code? Describe various representation of Intermediate code.
(d) Discuss the importance of symbol table in compiler. How is it manipulated in the different phases of compilation?
(e) Compare syntax tree and parse tree.
(f) What is a loader? What does the loading process do? What does the link editing does?

UNIT-I

Q2 Describe the general phases of a compiler. Trace the program segment A=C*D-F+100 for all phases. **(12.5)**

Q3 What are the compiler construction tools? Write note one each compiler construction tool. **(12.5)**

UNIT-II

Q4 (a) What is an ambiguous and unambiguous grammar? State whether the following grammar is ambiguous or not? Justify? Why unambiguous grammars are preferred? **(6.25)**

$E \rightarrow E + E \mid E * E \mid (E) \mid id.$

(b) Prepare the following grammar is LL(1) but not SLR(1). **(6.25)**

$S \rightarrow AaAb \mid BbBa$

$A \rightarrow \epsilon$

$B \rightarrow \epsilon$

Q5 (a) Define YACC parser generator. List out the error recovery actions in YACC. **(6.25)**

(b) What is the main difference between YACC and Bison? **(6.25)**

UNIT-III

Q6 (a) Define inherited attributes and synthesised attributes. Give examples. Define Syntax directed definition for the simple type declaration. **(6.25)**

(b) Differentiate between syntax and semantic errors. **(6.25)**

Q7 What is an activation record? Consider the program fragment: **(12.5)**

```
Sum=0;
for(i=1;i<=30;i++)
sum=sum+a[i]-b[i];
```

and generate the three-address code for it. There are four bytes per word.

UNIT-IV

Q8 (a) Give the code generation process for an arithmetic operation. Generate instruction for the statement, **(6.25)**
t=a-b, u=a-c, v=t+u

(b) How code optimization is ensured during compilation? Discuss. **(6.25)**

Q9 Answer following in brief:- **(4+4+4.5=12.5)**

(a) How can we generate code from a DAG
(b) What are the issues in design of a code generator?
(c) Write short notes: Assembler and Interpreter.

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