

Code: CS4T1

**II B.Tech - II Semester – Regular/Supplementary Examinations –
April 2017**

**COMPILER DESIGN
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22

1.

- a) Define Assemblers and Linkers.
- b) Differentiate between lexeme, token and pattern.
- c) Write the definitions for FIRST AND FOLLOW.
- d) Define Left Most Derivation (LMD), Right Most Derivation (RMD) and give example for each.
- e) Define handle with example.
- f) What are the advantages of LALR parsing over SLR and CLR methods?
- g) What are the various methods of implementing three address statements?
- h) What are the contents of activation record?
- i) Explain Stack allocation.
- j) What is basic block? Give an example.
- k) Define copy propagation and dead code elimination.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. Explain in detail the process of compilation. Illustrate the output of each phase of compilation for the input

“a = (b + c) * (b + c) * 2” 16 M

3. a) What are the difficulties in top down parsing? Explain in detail. 7 M

b) Consider the following grammar

$S \rightarrow (L) | a$

$L \rightarrow L, S | S$

Construct leftmost derivations and parse trees for the following sentences: 9 M

i) (a,(a,a))

ii) (a,((a,a),(a,a)))

4. a) What are the common conflicts that can be encountered in shift–reduce parser? 6 M

b) Construct SLR parsing table for the following grammar.

$E \rightarrow E + T / T$

$T \rightarrow TF / F$

$F \rightarrow F^* | a | b.$ 10 M

5. a) What are the advantages and disadvantages of static storage allocation strategy? 8 M
- b) What is an activation record? Explain the components with example. 8 M
6. a) Explain in detail the Optimization technique “strength reduction”. 4 M
- b) What are the various machine dependent code optimization techniques? 6 M
- c) Give a detailed account on loop optimization techniques. 6 M