

B. TECH.
(SEM V) THEORY EXAMINATION 2022-23
COMPILER DESIGN

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

- (a) What is a lexeme? Define a regular set.
- (b) What is a predictive parser?
- (c) List the properties of LR parser.
- (d) Give the applications of DAG.
- (e) Define backpatching.
- (f) Draw the transition diagram for an identifier.
- (g) Differentiate analysis and synthesis phase.
- (h) What are the functions of error handler?
- (i) Define a syntax-directed translation.
- (j) Define loop jamming with an example.

SECTION B**2. Attempt any three of the following;****10 x 3 = 30**

- (a) Construct a DFA that accepts a language L over input alphabets $\Sigma = \{a, b\}$ such that L is the set of all strings starting with 'aa' or 'bb'.
- (b) Define the following terms and give suitable example for it.
 - i) Handle
 - ii) Handle pruning
 - iii) Left Factoring
- (c) Construct CLR parsing table for the following grammar.

$$S \rightarrow CC$$

$$C \rightarrow cC \mid d$$
- (d) Explain various data structures used in symbol table management.
- (e) Define DAG. Explain DAG representation of basic block with example.

SECTION C**3. Attempt any one part of the following:****10 x 1 = 10**

- (a) Explain stack implementation of shift reduce parser.
- (b) What is left recursion? Eliminate the left recursion from the following grammar.

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T * F \mid F$$

$$F \rightarrow (E) \mid id$$

4. Attempt any *one* part of the following: 10 x 1= 10

- (a) Discuss differences between inherited attributes and synthesized attributes.
- (b) Explain various dynamic storage allocation techniques.

5. Attempt any *one* part of the following: 10 x 1= 10

- (a) What is an activation record? Explain how they are used to access local and global variables.
- (b) Explain syntax directed translation scheme for Infix to Postfix conversion with example.

6. Attempt any *one* part of the following: 10 x 1= 10

- (a) Generate three address code for the following code segment
While (a<b) do
 If (c<d) then x= y+z
- (b) Explain different error recovery techniques with suitable example.

7. Attempt any *one* part of the following: 10 x 1= 10

- (a) What is intermediate code? Explain different types of intermediate coderepresentations. Also discuss importance of intermediate code.
- (b) Explain in detail about the data-flow schemas on basic block and the transfer equations for reaching definitions with example.