

2021  
B.E. (Information Technology)  
Seventh Semester  
ITE-746/703: Compiler Design

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit. Any missing or misprinted data may be assumed suitably.

x-x-x

- I. Attempt the following:-
- List various compiler construction tools.
  - Explain the classification of errors.
  - What are the various attributes of symbol table
  - Differentiate between Syntax and Semantics of a Programming Language.
  - Explain difference between Top Down Parsing and Bottom Down Parsing. (5x2)

**UNIT – I**

- II. a) Explain different phases of Compiler. Write the output for different phases of compiler for the string  $a = b + c * 30$ .
- b) Write regular expressions for the following languages over the alphabet  $\Sigma = \{a,b\}$ :
- The set of all strings such that third symbol from the right end is b.
  - The set of all strings which contain the substring aa. (2x5)
- III. a) Find FIRST and FOLLOW sets for each of the non-terminals of the following grammar.
- $E \rightarrow E * E$   
 $E \rightarrow (E)$   
 $E \rightarrow id$
- b) Define left recursion. Is the following grammar left recursive?
- $E \rightarrow E+E \mid E*E \mid a \mid b$  (2x5)
- IV. a) What is Postfix Notation? Translate statement  $(a+b) * (c-d)$  into Postfix Notation.
- b) Explain the usage of YACC parser generator in construction of a Parser. (2x5)

P.T.O.

(2)

**UNIT – II**

- V. a) Define activation records. Explain how it is related with runtime storage allocation.
- b) What is the role of Code Optimizer in compiler? What are the principle sources of optimization? (2x5)
- VI. a) Write Three Address Code ,Quadruples, Triples for the following Expression  
 $(A+B)+(C*D)-(A+B+C)$
- b) Construct the DAG for the following statements:-  
A=B / C  
W =P \* B  
M= B \* C  
Z=W-A (2x5)
- VII. Write short note on
- a) Symbol Table Management
- b) Register Allocation and Assignment (2x5)

x-x-x