

7E7035

Roll No. \_\_\_\_\_

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7E7035

B. Tech. VII Sem. (Main/Back) Exam., Nov.-Dec.-2016  
Computer Engineering  
7CS5A Compiler Construction

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal marks**. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No. 205)

1. NIL \_\_\_\_\_

2. NIL \_\_\_\_\_

### UNIT - I

Q.1 (a) What are the phases of a compiler? Explain the function of each phase in brief? [8]

(b) Describe bootstrapping in detail. [8]

OR

Q.1 (a) Define the term NFA and DFA with an example. What are the rules to get a NFA for a regular expression? [8]

(b) Construct NFA to accept  $a(a/b)^*b$ . [8]

## UNIT – II

- Q.2 (a) What do you mean by context free grammar? Give distinction between regular and context free grammar & limitations of context free grammar. [8]
- (b) Write a short note on operator precedence parsing and function. [8]

### OR

- Q.2 (a) Consider the following grammar to declare a list of variables. [5×2=10]
- D → Type list;
- Type → int/float
- List → id, tlist
- Tlist → id, tlist/E
- (i) Construct the FIRST and FOLLOW sets for the grammar.
- (ii) Construct a predictive parsing table for the grammar.
- (b) Give the model for LR parser & explain its actions. [6]

## UNIT – III

- Q.3 (a) Write syntax directed definition for a given assignment statement. [8]
- S → id = E
- E → E + E
- E → E \* E
- E → -E
- E → (E)
- E → id
- (b) Write the specification of a simple type checker with example. [8]

### OR

- Q.3 Translate the arithmetic expression. [4×4=16]
- $(a + b) * (c + d) + (a + b + c)$  into
- (a) Syntax tree
- (b) Three address code
- (c) Quadruple
- (d) Triples

## UNIT – IV

- Q.4 (a) Explain the symbol table management system. [8]  
(b) Differentiate between stack allocation and heap allocation. [8]

OR

- Q.4 Write a short note on . [8×2=16]  
(a) Activation Record  
(b) Parameter Parsing

## UNIT – V

- Q.5 Write a short note on - [4×4=16]  
(a) Code optimization  
(b) Flow graph  
(c) Basic block  
(d) DAG

OR

- Q.5 Generate code for the following C statements for the simple/target machine assuming all variables are static and three register are available. rtuonline.com [16]  
(a)  $x = a[i] + 1$   
(b)  $a[i] = b[c[i]]$   
(c)  $a[i] = a[i] + b[j]$   
(d)  $a[i] += b[j]$
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