

END SEMESTER EXAMINATION, JUNE - 2019**MCA THIRD SEMESTER****COURSE CODE: MCA208 (O)****COURSE TITLE: COMPILER DESIGN****[Time allotted: Three hours]****[Max. Marks: 100]***Note: Attempt all Sections & Questions.***Section (A)****Q.1. Attempt all questions.****(2 x 10 = 20)**

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| <p>a.</p> <p>b. Explain parser generator YACC.</p> <p>c. Define cross compiler.</p> <p>d. What are the features of good compiler?</p> <p>e. What is activation record?</p> <p>f. Write a note on L-attributed definition.</p> <p>g. Define operator grammar.</p> | <p>h. What do you mean by ambiguity of grammar?</p> <p>i. Why code optimization is called optional phase?</p> <p>j. What is left recursion in grammar? How to remove it?</p> <p>k. What are the limitations of operator precedence parsing?</p> |
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Section (B)**Q.2. Attempt any 5 questions.****(7 x 5 = 35)**

- a. Draw and explain various phases of a compiler.
- b. Give a brief description of type checking.
- c. What is the difference between dynamic and static storage management?
- d. Describe the process of code generation from DAG.
- e. Check whether the given grammar is LL (1)? Remove left recursion and then again verify whether it is LL(1):
- $S \rightarrow Aa \mid b$
- $A \rightarrow Ac \mid Sd \mid \epsilon$
- f. Translate the expression: $-(a+b)*(c+d) - (a+b+c)$ into quadruples, triples, and indirect triples.
- g. Construct the collection of LR(0) item sets and draw the goto graph for the following grammar:

$S \rightarrow SS \mid a \mid \epsilon$

Indicate the conflicts (if any) in the various states of the SLR parser.

Section (C)**Attempt any 3 questions.****(15 x 3 = 45)**

- Q.3.** a. Explain the term backpatching with a suitable example.
- b. Construct three- address code for the following:

if [(a<b) and ((c>d) or (a>d))]

$z = x + y * z$ else $z = z + 1$

10

- Q.4.** a. What is DAG? Construct the DAG for the following basic blocks:

$a := b + c$

$b := b - d$

$c := c + d$

$e := b + c$

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- b. What do you understand by peephole optimization?

5

- Q.5.** a. Write the criteria for code improving transformations. Explain the principles sources of optimization in detail. **10**
- b. Explain copy-propagation transformation with a suitable example. **5**

- Q.6.** a. What are the different parameter passing mechanisms for a procedure call? Explain any two methods with example. **8**

- b. Give the general activation record field and their purpose. **7**

- Q.7.** a. Write a short note on operator-precedence parser. **5**

- b. Construct CLR parsing table for the following grammar-

$S \rightarrow AA$

$A \rightarrow aA \mid b$

Is it CLR (1)?

10
