



K21P 0423

Reg. No. :

Name :

**IV Semester M.C.A./M.C.A. (Lateral Entry) Degree (CBSS – Reg./Supple.
(Including Mercy Chance)/Imp.) Examination, May 2021
(2014 Admission Onwards)**

MCA4C21 : SYSTEM PROGRAMMING AND COMPILER DESIGN

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **any ten** questions. **Each** question carries **three** marks. **(10×3=30)**

1. Explain the listing and error reporting in assembler.
2. Write a note on nested macro calls.
3. What are the different types of statements used on assembler ?
4. Write a note on loaders.
5. Write a note on Lex.
6. Write a regular expression to represent integers in hexadecimal notation.
7. Write a note on Handle Pruning.
8. Explain left-recursion and its affect the design of parsers.
9. Write a note on syntax directed translation.
10. Write a note on S-attributed definition.
11. Briefly explain the criteria for code improving transformations.
12. What is the role of code Optimizer in compiler.

P.T.O.



SECTION – B

Answer **all** questions. **Each** question carries **ten** marks. (5×10=50)

13. a) Explain in detail design of the two pass assembler. 10
b) i) Explain basic elements of assembly language programming. (5+5)
ii) Explain the data structures considered for design of macro preprocessor.
14. a) With a neat diagram explain the role of the lexical analyzer. 10
b) i) Explain self relocating programs. (5+5)
ii) Define overlays and explain linking for overlays.
15. a) Construct the LL(1) parser for the following grammar. 10
 $E \rightarrow TE'$
 $E' \rightarrow + TE' \mid \epsilon$
 $T \rightarrow FT'$
 $T' \rightarrow *FT' \mid \epsilon$
 $F \rightarrow (E) \mid id$
Show the moves of the parser on the string $id + id$.
b) What is shift reduce parser ? Describe the steps involved in design of shift reduce parser and also discuss conflicts during shift reduce parsing. 10
16. a) Explain in detail different parameter passing mechanisms. 10
b) What are activation records ? Explain structure and purpose of each field in the activation record. 10
17. a) Explain the various code optimization techniques in detail. 10
b) What is a three address code ? Mention its types. How would you implement these address statements ? Explain with suitable examples. 10
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