



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**