



K17P 1082

Reg. No.:

Name:

**Fourth Semester M.C.A. Degree
(Regular/Supplementary/Improvement) Examination, July 2017
(2014 Admission Onwards)
MCA4C21 : SYSTEM PROGRAMMING & COMPILER DESIGN**

Time : 3 Hours

Max. Marks : 80

Instructions : 1) Answer **any ten** questions from Section A. Each question carries **three** marks.

2) Answer **all** questions from Section B. Each question carries **ten** marks.

SECTION - A

Note : Answer **any ten** questions. Each question carries **three** marks.

1. Enlist the steps for assembler design.
2. Briefly explain the advanced macro facilities.
3. Explain the listing and error reporting in assembler.
4. What are the reasons for separating the analysis phase of compiling into lexical analysis and parsing ?
5. Define a compiler and state the functions of compiler.
6. What are the three general approaches to the implementation of a Lexical analyser ?
7. What is the output of syntax analysis phase ? What are the three general types of parsers for grammars ?
8. What do you mean by Recursive Descent Parsing ?
9. Write a note on synthesized attributes.
10. Write a note on the type systems.
11. Write a note on basic blocks.
12. Briefly explain the criteria for code improving transformations. (10×3=30)

P.T.O.



SECTION – B

Note : Answer **all** questions.

13. a) i) Explain the data structure used by the pass-1 of the two pass assembler. **5**
 ii) Explain in detail about the basic macro processor functions. **5**
 OR
 b) Explain two-pass macro processor with flowchart and databases. **10**
14. a) Explain the functions of the Lexical Analyzer with its implementation. **10**
 OR
 b) With a neat sketch, explain the various phases of compiler in detail. **10**
15. a) i) Check whether the following grammar is SLR(1) or not. Explain your answer with reasons.
 $S \rightarrow L = R$
 $S \rightarrow R$
 $L \rightarrow * R$
 $L \rightarrow id$
 $R \rightarrow L$ **6**
 ii) Briefly explain error recovery in LR parsing. **4**
 OR
 b) i) Consider the grammar
 $E \rightarrow E + E \mid E * E \mid (E) \mid id$
 Show the sequence of moves made by the shift reduce parser on the input $id_1 + id_2 * id_3$ and determine whether the given string is accepted by the parser or not. **6**
 ii) Write a short note on YACC. **4**



16. a) i) Explain in detail about the organization of run-time storage. 6
ii) Explain in brief the various static checks used to report the programming errors. 4

OR

- b) i) Explain in detail with examples the various ways of passing parameters to procedures. 6
ii) Explain in brief about L-attributed definition. 4

17. a) What are the issues in design of a code generator? Explain in detail. 10

OR

- b) Explain various code optimization techniques in detail. 10

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