

Roll No.

Total Pages : 03

MCA/M-17 10001
SYSTEM PROGRAMMING
MCA-14-21

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) "Multiplication by two is replaced by adding the value to itself." Name the type of code optimization.
- (b) Differentiate between context-sensitive and context free grammar.
- (c) What is the difference between static and dynamic scoping ?
- (d) What is program overlay ?

Unit I

2. What is a system software ? What is the difference between user centric and system centric view of system software ? Explain.

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3. What do you understand by language processor ? What are its different types ? Explain.

Unit II

4. What do you understand by forward references ? How are these resolved in two-pass assemblers ? Explain.
5. (a) What is an assembly language ? What are the elements of assembly language ? Discuss.
- (b) What is a macro ? What is macro preprocessor ? How are the nested macro call handled ? Discuss.

Unit III

6. What is parsing ? How is it different from scanning ? Differentiate between top-down and bottom-up parser using suitable examples.
7. (a) What is a formal language ? What is a regular language ? Show that the language generated by the following grammar is a regular language :
 $S \rightarrow aSb|a$.
- (b) What is a relocating loader ? How the process of relocation is performed ? Discuss.

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8. (a) What is a loader ? What are the main functions performed by it ? Discuss.
- (b) A palindrome is a string that reads the same forward and backward. Show that the set of odd-length palindromes over the alphabet $\{a, b\}$ is a context free language.

Unit IV

8. (a) What do you understand by code optimization ? What are the different techniques of loop optimization ? Explain.
- (b) What are the different binding times ? Explain using a suitable example.
9. (a) Write a detailed note on dynamic memory allocation. Discuss its merits and demerits over static memory allocation.
- (b) What is frequency reduction code optimizing transformation ? Discuss.

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