

Roll No.....

Total Pages: 3  
**10001**

**MCA/M-17**  
**SYSTEM PROGRAMMING**  
Paper: MCA-14-21

Time: Three Hours

Maximum Marks: 80

Note: Attempt five questions including No. 1 which 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
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- aSb|a.  
(b) What is a relocating loader? How the process of relocation is performed? Discuss.
8. (a) What is a loader? What are the main functions performed by it? Discuss.  
(b) A palindrome is a string that read 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

9. (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.
10. (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.