

T.E. Sem 6 (Rev.)  
I.T.

Systems Software and operating systems 18/12/08

Con. 5697-08.

RC-7016

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** questions from **remaining** questions.  
(3) Assume **data if required**.

1. (a) What is systems software ? How it differs from application software. 10  
Give eg. of systems software and explain its advantages to the user.
- (b) Explain different types of grammars and ambiguity in grammatic 10  
specification.
2. (a) With respect to assembler explain the following :— 10
  - (i) Statement Format
  - (ii) Types of assembly language statements
  - (iii) Advantages of assembly language.
- (b) Explain Design of Pass II assembler. 10
3. (a) Define Macro. What is Macro call and Macro Expansion ? 10
- (b) Compare and contrast the properties of macros and subroutines with 10  
respect to the following :—
  - (i) code space requirements
  - (ii) Execution speed
  - (iii) Processing required by the assembler.
4. (a) Explain code optimization phase of a compiler. 10
- (b) Explain Non relocatable programs, relocatable programs and Self 10  
relocating programs.
5. (a) Explain Resource allocation and User interface functions of the 10  
Operating System.
- (b) What is multiprogramming operating system ? Explain functions 10  
of Multiprogramming supervisor.

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6. (a) Explain with eg. different scheduling policies. **10**  
 (b) What is Deadlock? Explain deadlock detection algorithm. **10**
7. (a) An OS contains 3 resource classes. The number of resources units **10** in these classes is 7, 7, 10 resp. The current allocation state is as shown below:—

Process	Allocated resources			Maximum requirement		
	r1	r2	r3	r1	r2	r3
p1	2	2	3	3	6	8
p2	2	0	3	4	3	3
p3	1	2	4	3	4	4

- (i) is current allocation state safe ?  
 (ii) could the following request be granted in the current state ?  
 p3 requests (0,1,0).
- (b) With eg. explain FIFO and LRU page replacement algorithms. **10**  
 For your eg. which algorithm is better.