

MCA 2nd Semester Examination

Operating Systems (CBS)

MCA-204/MCA-C24

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, select one question from each section, and question 9 is compulsory. All question carry equal marks.

SECTION - A

1. Write a short note on following:
 - (a) Parallel systems
 - (b) Time Sharing systems
 - (c) Real time systems (3×4=12)
2. What do you mean by operating system services? List them all. (12)

SECTION - B

3. What is CPU scheduling? Discuss multilevel queue and multilevel feedback queue algorithm of CPU scheduling. (12)
4. Consider the following snapshot of a system:

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using the banker's algorithm:

- (i) What is the content of the matrix Need?
- (ii) Is the system in a safe state?
- (iii) If request from process P1 arrives for (0, 4, 2, 0), can the request be granted immediately? (12)

SECTION - C

5. Attempt the following:
 - (a) Best fit, first fit and worst fit.
 - (b) Paging Hardware diagram with TLB and its working. (2×6=12)
6. Explain demand paging in detail. (12)

SECTION - D

7. What is free space management? Explain various techniques used for free space management. (12)
8. What is disk scheduling? Explain various disk scheduling algorithms. (12)

SECTION - E

9. Explain the following.
 - (a) Hardware protection
 - (b) Thread
 - (c) Semaphore
 - (d) Deadlock
 - (e) External fragmentation
 - (f) Linked allocation (2×6=12)