

Exam. Code : 105705

Subject Code : 1447

B.Sc. Information Technology 5th Semester

OPERATING SYSTEM

Paper—II

Time Allowed—3 Hours] [Maximum Marks—100

Note :— Attempt *five* questions in all, selecting at least *one* question from each section. The *fifth* question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. What do you mean by an operating system ? What are its various functions ? Discuss in detail the concept of Multi-programming Operating System.
2. What is process ? How a process is different from a program ? Explain various process states and draw the process state diagram.

SECTION—B

3. How paging is different from segmentation ? Discuss in detail the segmentation technique of memory management.
4. Explain the various page replacement algorithms with the help of suitable examples.

SECTION—C

5. Explain in detail the structure of a disk.
6. What is a file ? What are the attributes of a file ? What operations are performed on files ? Explain various file allocation methods with the help of examples.

SECTION—D

7. How deadlocks are detected and how recovery is made from deadlocks ? Explain in detail.
8. Consider a system that contains five processes P1, P2, P3, P4, P5 and the three resource types A, B and C. Following are the resources types : A has 10, B has 5 and the resource type C has 7 instances :

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

Answer the following questions using the Banker's algorithm :

- (a) What is the reference of the need matrix ?
- (b) Determine if the system is safe or not.
- (c) What will happen if the resource request (1,0,0) for process P1, can the system accept this request immediately ?