

Operating System

P. Pages : 3

Time : Three Hours



NJR/KS/18/4435

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Distinguish between multi-tasking, multi-programming and multi-processor system. **6**
- b) What is system call? Discuss various types of system calls. **7**

OR

2. a) Discuss the various services provided by operating system. Justify your answer by giving real life example. **7**
- b) Write notes on **any three**. **6**
- i) Distributed system.
 - ii) Real time system.
 - iii) Batch system
 - iv) Hand held system
3. a) Discuss various access methods for file with its advantages. **6**
- b) Explain linked allocation and indexed allocation strategies. **7**

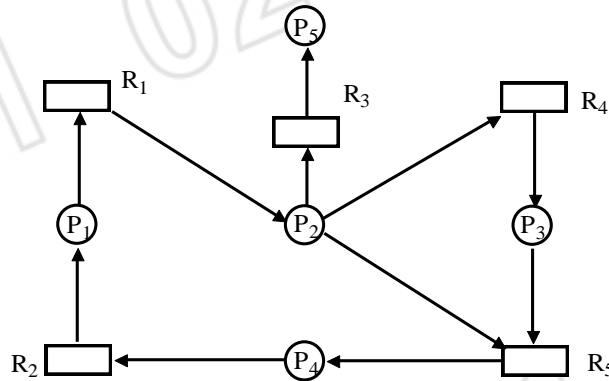
OR

4. a) None of the disk scheduling disciplines, except FCFS, is truly fair (saturation may occur) **6**
- i) Explain why this assertion is true.
 - ii) Explain why fairness is an important goal in a time sharing system.
- b) Suppose a disk drive has 400 cylinders, numbered from 0 to 399. The drive is currently serving a request at cylinder 142, and the previous request was at cylinder 124. **1+2+2+2**
- The queue of pending request in FIFO order is,
84, 147, 99, 176, 94, 150, 102 175, 130
starting from the current head position. What is the total distance that the disk arm moves to satisfy all the pending requests for the following algorithm.
- i) FCFS
 - ii) SSTF
 - iii) SCAN
 - iv) LOOK

10. a) Discuss Bonded-Builder problem and Readers-Writers problem in brief. 3+4
 b) Write note on monitors with its usage. 6
11. a) Deadlocks can be described more precisely in terms of a directed graph. Justify your answer with example. 6
 b) Explain how deadlock can be prevented. 7

OR

12. a) Convert the following resource allocation graph into wait for graph. 5



- b) Consider the following situation of system

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P ₀	0	0	1	2	0	0	1	2	1	4	2	0
P ₁	1	0	0	0	1	7	5	0				
P ₂	1	3	5	4	2	3	5	6				
P ₃	0	6	3	2	0	6	5	2				
P ₄	0	0	1	4	0	6	5	6				

Answer the following questions using Banker's algorithm.

- i) What is the content of need matrix. 2
 ii) Is the system in safe state ? Give the safe sequence. 3
 iii) If the request from process P₁ arrives for (0, 4, 2, 0) can it be granted immediately ? 3
