

ANNA UNIVERSITY

B E/B Tech.
(Regulation 2008)
EE 9029 Operating Systems

Answer All Questions

Time 3 Hours

Reg. No.

Max Marks 100

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PART A

1. What are the different components of an operating system?
2. What is multiple queue scheduling?
3. What is a spin lock?
4. Define deadlock
5. Which method of memory allocation will completely avoid internal fragmentation? How?
6. Define Belady's anomaly.
7. Define a file in relation to data storage in computers.
8. What is a stable storage in the computer parlance?
9. Give the different network topologies
10. What is a distributed system? Why should files be replicated in it?

PART B

11. i) For the data below, calculate the average waiting time and average TAT by FCFS, SRJF and Preemptive Priority. Draw Gantt chart in each case. Show the results in proper tabular form. 12

Process id	Arrival time	Priority	CPU burst
0	0	2	8
1	3	3	4
2	5	1	10

11. ii) suggest some improvements in the above algorithms 4
12. a i) Bring out clearly what is race condition, critical section problem, and spin locking. 6
12. a ii) Give bakery algorithm and show how it works 10
- OR
12. b i) What is producer consumer problem? Give an algorithm to solve it using semaphores. 6
12. b ii) Show how the various semaphore constructs work in the above case? 10

13. a) Using Banker's algorithm and check whether the given state is safe or not. Give bankers algorithm 16

Pid	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	4	1	4	1	3
P1	3	1	0	4	2	1			
P2	3	0	2	7	1	2			
P3	2	1	1	2	2	2			
P4	0	1	2	4	3	3			

OR

13. b) Explain briefly, the following memory management schemes. Single contiguous, fixed equal, segmentation, and paging. What are the advantageous and disadvantages of each? 16

14. a i) What is thrashing? How is it handled in an OS 6

14. a ii) Differentiate between optimal algorithm and LRU in page replacement. What is MFU in this connection? How can you justify it? 10

OR

14. b i) Give the various file attributes and operation? 4

14. b ii) What are the various directory structures and their merits and demerits? 6

14. b iii) What are the various file protection methods? 6

15. a i) What are the processing scheduling, disc scheduling and memory management algorithms used in Unix 8

15. a ii) Give a short history of the development of operating systems 8

OR

15. b i) "If wealth is lost, nothing is lost. If health is lost, something is lost. If character is lost, everything is lost". Comment on this in relation to disk space management in computers 8

15 b. ii) For the following I/O queue calculate the total head movement, using SSTF, SCAN, C-SCAN & LOOK. The head is presently at 55. The cylinders of the disc are numbered from 0 to 199.

The queue is 98, 145, 37, 122, 14, 124, 70, 65, and 67. 8