

QUESTION 2017

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the following:

- i) Virtual memory is
- a) an extremely large main memory
 - b) an extremely large secondary memory
 - ✓ c) an illusion of extremely large storage provision
 - d) a type of memory used in super computers
- ii) The time required for read-write head to travel to target cylinder called
- a) latency time
 - ✓ b) seek time
 - c) transfer time
 - d) none of these
- iii) The number of processes completed per unit time is known as
- a) output
 - ✓ b) throughput
 - c) efficiency
 - d) capacity
- iv) Context switching is
- a) part of spooling
 - b) part of polling
 - c) part of interrupt handling
 - ✓ d) part of interrupt servicing

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- v) Which of the following is also known as multilevel adaptive scheduling?
a) Multilevel queue scheduling
c) Multilevel feedback queue scheduling
✓b) Multilevel scheduling
d) none of these
- vi) Which of the following requirements must be met by a solution to critical-section problem?
a) Bounded waiting
c) Mutual exclusion
b) Progress
✓d) all of these
- vii) Which of the following algorithms suffers from Belady's anomaly?
a) Optimal page replacement
✓c) FIFO page replacement
b) LRU page replacement
d) none of these
- viii) FIFO scheduling is
a) Preemptive scheduling
c) Deadline scheduling
✓b) Non-preemptive scheduling
d) Fair share scheduling
- ix) The time elapsed between the job submission and its completion is
a) Response time
✓c) Turnaround time
b) Waiting time
d) Terminal response time
- x) Dispatcher of an OS
a) invokes a pager during page fault
b) is a scheduler
c) gives control of CPU to the process selected by long term scheduler
✓d) gives control of CPU to the process selected by short term scheduler
- xi) Which of the following is used for implementing control synchronization?
a) Semaphore
c) Monitors
✓b) Precedence graph
d) Peterson's algorithm

Group – B

(Short Answer Type Questions)

2. a) What is an Operating System? What are the functions of Operating System?
b) Explain "multitasking is logical extension of multiprogramming".
a) 1st Part: See Topic: INTRODUCTION AND SYSTEM STRUCTURE, Long Answer Type Question No. 1(1st part).
2nd part: See Topic: INTRODUCTION AND SYSTEM STRUCTURE, Short Answer Type Question No. 5.
b) See Topic: INTRODUCTION AND SYSTEM STRUCTURE, Short Answer Type Question No. 6 (1st part).
3. Describe shared resource system and message passing system.
See Topic: PROCESS SYNCHRONIZATION, Short Answer Type Question No. 10.
4. a) Discuss Belady's anomaly.
b) What is "thrashing"?
a) See Topic: MEMORY MANAGEMENT, Long Answer Type Question No. 1 (a).
b) See Topic: MEMORY MANAGEMENT, Short Answer Type Question No. 7.

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5. Differentiate between external fragmentation and internal fragmentation.
See Topic: MEMORY MANAGEMENT", Short Answer Type Question No. 4.

8. What is race condition? Explain Peterson solution for avoiding race condition.
1st part: See Topic: PROCESS SYNCHRONIZATION", Short Answer Type Question No. 3(1st part).
2nd part: See Topic: PROCESS SYNCHRONIZATION", Short Answer Type Question No.11.

Group – C
(Long Answer Type Questions)

7. Suppose that the following processes arrive for execute at the time indicated:

Process	Arrival Time	Duration
P1	0	6
P2	2	4
P3	3	7
P4	5	2

Draw Gantt chart and determine average waiting time using
(i) FCFS, (ii) RR, (iii) SJF (preemptive) algorithm.
See Topic: CPU SCHEDULING, Long Answer Type Question No. 7.

8. a) Consider the following resource allocation state involving processes P0, P1, P2, P3, P4 and P5 and resources R0, R1, R2 and R3:

Process	Allocation				Max				Available			
	R0	R1	R2	R3	R0	R1	R2	R3	R0	R1	R2	R3
P ₀	1	0	0	2	2	3	5	3	1	2	3	3
P ₁	0	0	2	0	2	1	3	5				
P ₂	1	0	3	0	1	2	3	2				
P ₃	1	2	3	4	2	3	3	6				
P ₄	1	0	0	3	2	4	5	6				
P ₅	0	1	3	2	3	5	7	8				

Answer the following questions using Banker's algorithm.

- What is the content of matrix need?
 - Is the system in a safe state?
 - If a request from process P1 arrives for (5, 2, 7, 9) can the request be granted immediately?
- b) Differentiate between process switching and context switching.
c) Under which condition does page fault occur?
a) See Topic: DEADLOCK, Long Answer Type Question No. 7.
b) See Topic: PROCESS MANAGEMENT, Short Answer Type Question No. 8.
c) See Topic: MEMORY MANAGEMENT, Short Answer Type Question No. 2(3rd part).

9. a) What is critical section problem? What are the requirements that the solution to critical section problem must satisfy?
b) What is semaphore? How is it accessed? Explain the Dining philosopher's problem and give the solution of it using monitor.
a) See Topic: PROCESS SYNCHRONIZATION, Long Answer Type Question No. 6 (a).
b) See Topic: PROCESS SYNCHRONIZATION, Long Answer Type Question No. 6 (b).

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10. Consider the following page reference string:

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page faults would occur using FIFO, Optimal, LRU and LFU replacement algorithm? Assume four frames.

See Topic: MEMORY MANAGEMENT, Long Answer Type Question No. 8.

11. Write short notes on any three of the following:

- a) Multi-Queue Scheduling
- b) Resource Allocation Graph (RAG)
- c) Round Robin Scheduling Method
- d) Readers-Writers Problem
- e) Virus and Worm.

a) See Topic: CPU SCHEDULING, Short Answer Type Question No. 2.

b) See Topic: DEADLOCK, Long Answer Type Question No. 10.

c) See Topic: CPU SCHEDULING, Long Answer Type Question No. 8 (b).

d) See Topic: PROCESS SYNCHRONIZATION, Long Answer Type Question No. 3.

e) See Topic: PROTECTION & SECURITY, Long Answer Type Question No. 2 (b).