

322456 (22)

BE (4th Semester)

Examination, Nov.-Dec., 2021

Branch : CSE

OPERATING SYSTEM (NEW)

Time Allowed : Three Hours

Maximum Marks : 80

Minimum Pass Marks : 28

- Note :** (i) Sub question (a) is compulsory. Attempt any two subparts from (b), (c) and (d).
- (ii) All questions carry equal marks.

UNIT - I

- Q. 1. (a) What is Evolution of operating system ? 2
- (b) What are the various objective and function of operating system explain in detail. 7

(2)

(c) Explain real time and distributed operating system in detail. 7

(d) (i) Explain the logical structure of operating system ? 3½

(ii) What are the system components of operating system ? 3½

UNIT - II

Q. 2. (a) Define "Process". 2

(b) What is "critical section" ? Give the software solution for solving the critical section problem. 7

(3)

(c)

Process	Burst Time	Arrival Time	Priority
P1	4	0	4
P2	3	1	1
P3	2	3	3
P4	2	4	2

Calculate Average waiting time, Turn around time, Throughput and processor utilization using SRTF, SJF & Priority (preemptive and Non-preemptive)

7

(d) Write short notes on :

7

(i) Long Term Scheduler

(ii) Medium or mid term scheduler

(iii) Short term scheduler

(4)

UNIT - III

- Q. 3. (a) How Deadlock occur's in Real Life ? 2
- (b) What are the necessary conditions for deadlock occurrence ? Explain. 7
- (c) Differentiate between deadlock avoidance and prevention. 7
- (d) Consider the following snapshot of a system. 7

Process	Allocation	Max Need	Available
	A B C	A B C	A B C
P0	0 1 0	7 5 3	3 3 2
P1	2 0 0	3 2 2	
P2	3 0 2	9 0 2	
P3	2 1 1	2 2 2	
P4	0 0 2	4 3 3	

(5)

Answer the following using Banker's Algo.

- (i) What is the context of need matrix ?
- (ii) Is the system in safe state ?
- (iii) (1) Suppose that process P1 request 1 additional instance of resource type A & 2 instance of resource type C. Can the request be granted ?
- (2) The request for (3, 3, 0) by P4.

UNIT - IV

- Q. 4.** (a) What is thrashing ? 2
- (b) Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3. How many page fault will occur for

(6)

(i) FIFO

(ii) LRU

(iii) Optimal page replacement algorithm.

Assume frame size is 3, 4.

7

(c) Explain paging and segmented paging

concept.

7

(d) Write short notes on :

7

(i) Virtual Memory

(ii) Cache Memory

UNIT - V

Q. 5. (a) What do you understand by character and

block device.

2

(7)

(b) What are the various operations performed on file and also discuss the access mechanism of file system. 7

(c) Discuss the various protection issues related with file system ? 7

(d) Suppose the moving head disk with 200 tracks is currently servicing a request for track no. 143 and has just finished a request for track no. 125. If the queue of request is kept in FIFO order

86, 147, 91, 177, 94, 150.

What is the total head movement for the following scheduling scheme : 7

(8)

- (i) FCFS
- (ii) SSTF
- (iii) SCAN
- (iv) C-SCAN
- (v) LOOK
- (vi) C-LOOK

