Total No. of Questions : 12]

SEAT No. :

P2283

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[4758]-102

T.E. (IT)

OPERATING SYSTEM

(2008 Course) (Semester - I) (314441)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagram will get full marks.***

SECTION - I

Q1) a) Describe operating system as a resource manager. **[8]**

b) List a explain system calls for process management in Unix O.S. **[8]**

OR

Q2) a) Expalin the following type of O.S. with strengths & limitations. **[8]**

i) Distributed O.S.

ii) Real time O.S.

b) List the command line arguments in shell script & explain with example. **[8]**

Q3) a) Consider the following snapshot. **[8]**

Process	AT	BT
P1	0	3
P2	1	1
P3	5	2
P4	6	3
P5	7	5

P.T.O.

i) Draw Gantt chart to show execution of shortest remaining time next, RR(tq = 2).

ii) Calculate Avg. Turn around time & waiting time.

iii) What is ideal state?

b) What is granularity in multiprocessor scheduling. Explain in brief different categories. **[8]**

OR

Q4) a) Differentiate between process & program. Explain with neat digram contents of process control block. **[8]**

b) Describe Real time scheduling. **[8]**

Q5) a) Explain following terms: **[10]**

i) Critical section.

ii) Race condition.

iii) Semaphore.

iv) Muley.

b) Explain deadlock detection algorithm with example. **[8]**

OR

Q6) a) What is reader writer problem? Write a semaphore solution for reader writer problem explain how critical section problem is resolved. **[10]**

b) What is mutual exclusion & list the requirements of mutual exclusion. **[8]**

SECTION - II

Q7) a) Explain internal and external fragmentation. **[8]**

b) Free memory holes of sizes 100K, 500K, 200K, 300K, and 600K are available. The processes of size 200K, 417K, 112K and 426K are to be allocated. How processes are to be placed in **[8]**

i) First Fit

ii) Best Fit

iii) Worst Fit

iv) Next Fit

c) What is thrashing? **[2]**

OR

Q8) a) A process contains following virtual pages on disk and is assigned a fixed allocation of three frames in main memory. Show successive pages residing in the three frames using FIFO, LRU, and Optimal. Reference string: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. **[8]**

b) Explain segmentation in detail with suitable diagram. **[6]**

c) Describe the following term in brief: **[4]**

i) Principle of locality

ii) Belady's anomaly?

Q9) a) Assume the disk head is initially positioned over track 53. For the disk track request 98, 183, 37, 122, 14, 124, 65, 67 show head movement of cylinders using FCFS, SSTF, SCAN. **[8]**

b) What are the different buffering ways in I/O buffering? **[8]**

OR

Q10)a) What is RAID? Explain the advantages and disadvantages of RAID. Also explain seven RAID levels in brief. **[10]**

b) Draw and explain UNIX I/O structure and explain in detail role and implementation of buffer cache in UNIX I/O subsystem. **[6]**

Q11)a) What is the difference between passive and active security threats? **[6]**

b) Describe two approaches to intrusion detection. What does audit record contain? **[6]**

c) Write note on Protection Domain. **[4]**

OR

Q12)a) Explain with the diagram the taxonomy of malicious programs. **[8]**

b) Explain protection policy and mechanism in details. **[8]**

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