5E5105

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5E5105

B. Tech. V Sem. (Main/Back) Exam., Nov.-Dec.-2016
Computer Science & Engineering
5CS5A Operating Systems
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks Main: 26
Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT – I

Q.1 (a) What are the different services provided by the operating system? Explain all of them in detail? [8]

(b) What are the five major activities of an operating system with regard to file management? [8]

OR

Q.1 (a) What are the two models of interprocess communication? What are the strengths & weakness of the two approaches? [8]

(b) What are the difference between user level threads & kernel Level threads, under what circumstances is one type better than the other? [8]

UNIT – II

Q.2 (a) In – connection with interprocess communication explain the following: [8]

(i) Race Condition

(ii) Critical Condition

(iii) Sleep & Wake up

(iv) Sleeping Barber's Problem

(b) Define scheduling criteria? Explain Quencing diagram for the CPU scheduling in detail? [8]

OR

Q.2 (a) Describe the difference between short term, medium term, & long term scheduling? rtuonline.com [8]

(b) Consider the following set of processes, with the arrival times and the CPU burst times given in milliseconds. [8]

PROCESS	ARRIVAL TIME	BURST TIME
P1	0	5
P2	1	3
P3	2	3
P4	4	1

What is the average turn around time for these processes with the preemptive shortest remaining process time first algorithm?

UNIT – III

Q.3 (a) Explain Banker's Algorithm for deadlock avoidance with an example? [8]

(b) Apply deadlock detection algorithm to the following data & show the results: [8]

$$\text{Available} = (2, 1, 0, 0)$$

$$\text{Request} = \begin{pmatrix} 2 & 0 & 0 & 1 \\ 1 & 0 & 1 & 0 \\ 2 & 1 & 0 & 0 \end{pmatrix}$$

$$\text{Allocation} = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 2 & 0 & 0 & 1 \\ 0 & 1 & 2 & 0 \end{pmatrix}$$

OR

Q.3 (a) With the help of neat diagram Explain Memory hierarchy in detail? [8]

(b) Explain the difference between Paging & Segmentation? [8]

UNIT – IV

Q.4 (a) Write Short note on Page Replacement Algorithms in Detail? [8]

(b) Let 620 frames are split between two processes, one of 100 pages & one of 1270 pages. Find the number of frames allocated for each process if proportional allocation method is used? [8]

OR

Q.4 (a) What is Belady's Anamoly? In which algorithm does it occur? [8]

(b) Consider the following segment table. [8]

SEGMENT	BASE	LENGTH
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

Calculate the physical address for the following logical addresses?

UNIT – V

Q.5 (a) Define file system? Explain file operations in detail? [8]

(b) Explain the classification of Allocation Methods? [8]

OR

Q.5 (a) Explain the Concept of spooling with all its types and its advantages & disadvantages? [8]

(b) Suppose the head of moving head disk is currently servicing a request at track 60. If the queue of request is kept in FIFO order, what is the total head movement to satisfy these requests for the following disk scheduling algorithm: [8]

(i) FCFS

(ii) SSFT

REQUEST SEQUENCE	TRACK NUMBER
1	56
2	170
3	35
4	120
5	10
6	140
