

5E5105

Roll No.

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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? [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? <http://www.rtuonline.com> [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