(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 110409 Roll No. | | | | | | | | | |

B.TECH.

Theory Examination (Semester-IV) 2015-16

OPERATING SYSTEM

Time : 3 Hours *Max. Marks : 100*

Note: Attempt questions for all Sections as per directions.

Section-A

Attempt all parts of this section. Anser in brief.

(2×10 = 20)

1. (a) What is SPOOLING?

(b) Write a brief note on multiprocessor scheduling.

(c) What is the need for Process Control Block (PCB)?

(d) Define Multithreading.

(e) Differentiate concurrent execution and parallel execution.

(f) What do you understand by critical section?

(g) How is a system call handled by the system?

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(h) Draw process state transition diagram.

(i) What do you mean by Kernel?

(j) Define the multilevel feedback queues scheduling.

Section-B

2. Attempt any five questions from this section. (5×10 = 50)

(a) State the cause of thrashing and discuss its solution.

(b) What are the different techniques to remove fragmentation in case of multiprogramming with fixed partitions and variables partitions?

(c) Discuss the performance criteria for CPU Scheduling.

(d) Consider the following reference string 12342156212376321236. How many page faults will occur for:

(i) FIFO

(ii) LRU Page Replacement algorithm?

Assuming three and four frames in each case and frames are initially empty.

(e) Give the solution of Readers - Writers problem by using the concept of Semaphore.?

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(f) Explain the following methods.

(i) Bit vector (ii) Linked List

(iii) Grouping (iv) Counting

(g) Consider the processes, CPU burst time and Arrival time given below:

Processes	CPU burst time	Arrival time
PI	8	0
P2	4	1
P3	9	2
P4	5	3

Draw the Gantt chart and calculate the following by using **SRTF CPU** Scheduling Algorithm, (i) Average Waiting Time, (ii) Average Turn Around time.

(h) Consider the following snapshot of the system:-

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
PI	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

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Answer the following questions using the banker's algorithm:-

(i) What is the content of the matrix **Need**?

(ii) Is the system in a **safe state**? If yes then find the **Safe sequence**.

(iii) If a request from process PI arrives for (0, 4, 2, 0) can the request be granted immediately?

Section-C

Attempt any two questions from this section. (2×15 = 30)

3. What is directory? Explain any two ways to implement the directory.

4. Suppose the moving head disk with 200 tracks is currently serving a request for track 143 and has just finished a request for track 125. If the queue of request is kept in FIFO order 86. 147. 91, 177. 94. 150. What is total head movement for the following scheduling:

   (i) FCFS (ii) SSTF (iii) C-SCAN

5. Write short notes on:

   (i) I/O Buffering

   (ii) Sequential File

   (iii) Indexed File

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