(a) FCFS
(b) SSTF
(c) C-Scan?

12. Explain the following terms :
(a) RAID
(b) Implementation of access matrix.

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Paper Code : ECS-501

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

Paper ID : 110511 Roll No.

B. TECH

(Odd Sem.-V) Theory Examination, 2016-17

Operating System

Time : 3 : 00 Hr.] [Maximum Marks : 100

Note : Attempt questions from all sections as per directions.

Section-A

1. Attempt all parts of this section. Answer in brief : 2×10=20
(a) What is real time operating system?
(b) Define the services provided by the operating system.
(c) Write down the difference between multiprocessing and multiprogramming operating system.
(d) What is the cause of thrashing?
(e) What do you understand by critical section?
(f) Explain the difference between Monolithic and Microkernel system.
(g) Differentiate between User thread and Kernel thread.
(h) What is I/O buffering?
(i) What is SPOOLING?
(j) Why is it called as "multitasking in the logical extension of multiprogramming"?

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Section-B

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

2. What do you mean by Belady's anomaly? Which algorithm suffers from Belady's anomaly?

3. Explain paged segmentation with its advantages and disadvantages. In a paged segmented system, a virtual consists of 32 bits of which 12 bits are for displacement, 11 bits are segment number and 9 bits are page number. Calculate the following :
   (i) Page size
   (ii) Max segment size
   (iii) Max number of pages
   (iv) Max number of segments.

4. What is thrashing? When it does occur? Describe the actions taken by the operating system when a page fault occurs.

5. What is paging? Describe how logical address is translated to physical address in a paged system. Further give reasons as to why page sizes are always kept in powers of 2.

6. What is the difference between 'preemptive and non-preemptive scheduling'? Discuss the Multilevel feedback queue scheduling algorithm?

7. Write a short note on interprocess communication.

8. Describe the Banker's algorithm for Safe allocation. Consider a system with five processes and three resource types and at time T the following snapshot of the system has been taken :

Process ID	Allocated			Maximum			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	1	1	2	4	3	3	3	1	0
P2	2	1	2	3	2	2			
P3	4	0	1	9	0	2			
P4	0	2	0	7	5	3			
P5	1	1	2	11	2	3			

   (i) Determine the total amount of resources of each type.
   (ii) Compute the Need matrix.
   (iii) Determine if the state is safe or not using Banker's algorithm.
   (iv) Would the following request be granted in the current state?
      (x) P1 < 3, 3, 1 >
      (y) P2 < 2, 1, 0 >

9. When do page faults occur? Describe in detail the actions taken by the operating system when a page faults occur.

Section - C

Attempt any two questions. Each question carries equal marks. 15×2=20

10. Discuss various file allocation strategies for disk space management. What criteria should be used in deciding which strategy is best utilized for a particular file?

11. 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 :

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