AR 20

Reg. No

Time: 3 hrs   Maximum: 70 Marks

Answer ALL Questions
The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)   **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions   [CO#]   [PO#]

a. A process which is copied from main memory to secondary memory on the basis of requirement is known as   CO1   PO1

  (i) paging   (ii) demand paging

  (iii) threads   (iv) segmentation

b. Thread is a _____   CO2   PO1

  (i)   Process   (ii)   Light weight process

  (iii)   Process with data   (iv)   Process with variables

c. Buffering is _____ compared to spooling.   CO3   PO1

  (i)   Less efficient   (ii) more efficient

  (iii)   equally efficient   (iv) none of the options

d. If the page size decreases, the internal fragmentation is _____?   CO4   PO1

  (i)   Decreases   (ii) Increases

  (iii)   Remains constant   (iv) none of the mentioned

e. System calls are essential for   CO3   PO1

  (i) process   (ii) thread

  (iii) both process and thread   (iv) None of the mentioned

f. Physical Address is 17600 and logical address is 228. What is value of relocation register?   CO2   PO2

  (i)   17372   (ii)   17472

  (iii)   17482   (iv)   17382

g. Services of the operating system can be accessed by _____   PO2

  (i)   (i) Pages   (ii)   (ii) System calls

  (iii)   (iii) Assembly instructions   (iv)   (iv) Directory

h. Which one is difficult to implement?   CO3   PO1

  (i)   Fixed Partitioning   (ii)   Variable partitioning

  (iii)   Both fixed and variable (iv)   None of the above
  partitioning

i. In round Robin Scheduling difference between finished time and arrival time is   CO2   PO1

  (i)   Response time   (ii)   Delay time

  (iii)   Waiting Time   (iv)   Turn around time

j. "Wait" and "signal" are _____   CO2   PO2

  (i)   Processes   (ii)   Threads

  (iii)   semaphores   (iv)   atomic operations

PART – B: (Short Answer Questions)   **(2 x 10 = 20 Marks)**

Q.2. Answer *ALL* questions   [CO#]   [PO#]

  a. Define inter process communication.   CO1   PO1

  b. What is Time Sharing system?   CO2   PO1

  c. Provide is the concept of "Monitor".   CO2   PO2

  d. Briefly Explain contiguous memory allocation.   CO1   PO1

  e. If there are 400 tracks in a disk with the constant depending upon the disk drive is 0.004.   CO4   PO3
Find out Seek time if start up time is 0.6 ms.

  f. Define time quantum. Where it is used?   CO4   PO1

  g. Draw the RAG for a circular wait condition.   CO3   PO1

  h. Provide the concept of the rotational latency.   CO3   PO1

  i. If the size of the RAM is 32 MB and process size is 4 MB. If I/O utilisation is 0.8 then   CO3   PO3
what is CPU utilisation?

  j. Differentiate between Trashing and demand paging.   CO2   PO1

PART – C: (Long Answer Questions)   **(10 x 4 = 40 Marks)**

Answer *ALL* questions   Marks   [CO#]   [PO#]

3. a. Explain about PCB.   5   CO1   PO1

  b. How process state transition happens? Explain in detail with process state diagram.   5   CO1   PO1

<div align="center">(OR)</div>

  c. Explain in detail about the significance of system calls with system call architecture.   5   CO2   PO1

  d. Differentiate between process and thread.   5   CO2   PO1

4. a. The process with their burst time has been given in the table below. Apply both **SJF**   5   CO2   PO3
and FCFS Algorithm and calculate average turnaround time, average waiting time
and average first response time. Compare the performance.

Process	Burst Time(ms)
P1	25
P2	52
P3	43
P4	3
P5	9

  b. The process with their burst time has been given in the table below. Apply **Shortest**   5   CO2   PO3
Time Remaining First Algorithm and calculate average turnaround time, average
waiting time and average first response time.

| Process	Arrival Time (ms)	Burst Time(ms)
P1	0	5
P2	1	3
P3	2	4
P4	4	1

(OR)

c. What is priority scheduling? Explain in detail about priority scheduling with one example. | 5 | CO3 | PO1

d. The process with their burst time has been given in the table below. Apply ROUND ROBIN Algorithm and calculate average turnaround time, average waiting time and average first response time. All the process arrives at 0. Time quantum is 7 ms. | 5 | CO3 | PO1

Process	Burst Time (ms)
P1	35
P2	7
P3	12

5. a. Explain about significance of Paging? Explain in detail about the memory mapping using paging. | 5 | CO3 | PO1

b. Explain about the contiguous and non-contiguous memory allocation with proper diagram. | 5 | CO3 | PO1

(OR)

c. Explain about Bankers algorithm with proper example. | 5 | CO3 | PO1

d. | 5 | CO3 | PO3
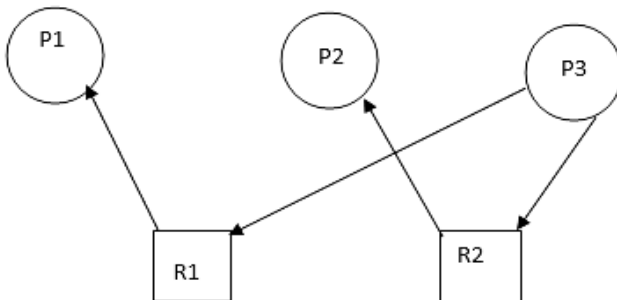
Explain the scenario of the above RAG. When deadlock will be there and when deadlock will be vanished?

6. a. Explain about SCAN and SSTF Algorithm for Disk Scheduling. | 5 | CO2 | PO1

b. Differentiate between logical address and physical address. How Physical address is generated? Explain with the diagram. | 5 | CO4 | PO1

(OR)

c. Explain about producer consumer problem in detail. | 5 | CO4 | PO1

d. Provide the concept in detail about the two-process solution for critical section problem. | 5 | CO4 | PO1

--- End of Paper ---