

DURATION: - 2½ hrs

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MARKS:- 75

- Note: - (1) All questions are compulsory.  
 (2) Figures to the right indicate full marks  
 (3) Answer to each question must be on a new page

**Q.1) Attempt the following (Any 3)**

- 1) Define operating system. Explain the need for operating system.
- 2) List and explain services of O.S.
- 3) What are the functions of O.S.
- 4) Explain process scheduling in detail.
- 5) List and explain kernel control object.

15M

- CO1-U
- CO1-U
- CO1-R
- CO1-U
- CO1-U

**Q.2) Attempt the following (Any 3)**

- 1) Compare process and threads.
- 2) Explain types of threads.
- 3) Explain window process object attributes.
- 4) Write a short note on decker's algorithm.
- 5) Explain thread state in detail.

15M

- CO2-A
- CO2-U
- CO2-U
- CO2-U
- CO2-U

**Q.3) Attempt the following (Any 3)**

- 1) Explain conditions for deadlock occurrence.
- 2) Write a short note on semaphores.
- 3) Explain atomic operations with advantages.
- 4) Write a short note on swapping.
- 5) Consider the following snapshot of the system.

15M

- CO3-U
- CO3-U
- CO3-U
- CO3-U
- CO3-A

Process	Allocation			Max	Requirement		
	A	B	C		A	B	C
PO	0	0	1	1	1	1	
P1	2	0	0	3	2	3	
P2	1	3	2	4	3	1	
P3	1	0	1	0	0	1	
P4	0	0	1	3	2	1	

Let ABC be the resources with instance of A is 7, B is 3 and C has 6

- 1) What is the content of matrix need?
- 2) Is the system in a safe state? Prove it

**Q.4) Attempt the following (Any 3)**

15M

- 1) Differentiate between long-term short-term and medium-term scheduling.
- 2) Write a short note on the Round Robin Scheduling.
- 3) Write a short note on Real-Time Scheduling.
- 4) Explain Linux scheduling.
- 5) Consider following three periodic real-time task to be scheduling using RMD on uniprocessor  
 Task T1=(E1=30,P1=120), Task T2(E2=40, P2=140), Task T3=(E3=100,P3=300) is the task set scheduled?

- CO4-A
- CO4-U
- CO4-U
- CO4-U
- CO4-AE

Q.5) Attempt the following (Any 3)

15M

- 1) Write a short note on DMA.
- 2) Write a short note on FCFS scheduling algorithm.
- 3) Write a short note on disk cache.
- 4) What are the file attribute? Explain in detail.
- 5) Explain various operations on file.

COS-U

COS-U

COS-U

COS-UR

COS-U

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