

Con. 203-13.

CG-2331

(2½ Hours)

[Total Marks : 60]

N.B. :(1) All questions are **compulsory**.(2) Figures to **right** indicate **full marks**.(3) Illustrations, **indepth** answers and **diagrams** will be **appreciated**.(4) Mixing of **sub-questions** is **not allowed**.1. Attempt any **two** :—

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- Define OS. Write a short note on Multiprocessor systems.
- Define the term system call. Mention different types of system calls handled by OS.
- Explain the concept of process and diagrammatically explain 5 state process model.
- Discuss Layered Approach of OS and mention how it is different than Kernel based approach.

2. Attempt any **two** :—

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- Explain semaphore and its types. Also explain operations on semaphore.
- Define Thread and mention different issues related to Thread.
- Explain Round Robin CPU scheduling algorithm. Consider the following where time slice = 10. Find average waiting time.

Process	CPU Burst Time
P ₁	10
P ₂	32
P ₃	44
P ₄	25
P ₅	23

- Explain critical section problem in brief.

3. Attempt any **two** :—

12

- Consider the following snapshot of a system :—

	Allocation			Max		
	R ₁	R ₂	R ₃	R ₁	R ₂	R ₃
P ₁	2	0	0	2	0	1
P ₂	1	2	0	2	5	2
P ₃	0	1	1	1	4	2
P ₄	0	0	1	2	0	1

available

0	2	0
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- Compute the content of need Matrix
- Find the Safe sequence.

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- (b) Write a short note on Dining Philosopher problem and provide a solution using Monitor.
- (c) Describe FIFO algorithm of Page Fault. Page Reference string is : 2, 3, 2, 1, 5, 2, 4, 5, 3, 2, 5, 2. Find page faults using FIFO assuming 3 and 4 frames. Does your result reflect Belady's anomaly ?
- (d) Explain First fit and Worst fit techniques related to memory management with suitable examples and diagrams.

4. Attempt any two :—

12

- (a) Explain any two allocation methods related to files.
- (b) Consider the request queue : 23, 89, 132, 42, 187. Current head position is 100. Find average seek time using FCIS and SSTF algorithm.
- (c) Define virus and explain various types of virus.
- (d) Define the following Terms :—
 - (i) Seek time
 - (ii) Rotational delay
 - (iii) Fragmentation
 - (iv) Cipher Text.
 - (v) Encryption
 - (vi) Firewall.

5. Attempt any two :—

12

- (a) What is Process Control Block ? Explain various components of the same.
- (b) What are the different techniques available for process scheduling and explain any two.
- (c) Write short notes on :
 - (i) Polling
 - (ii) Interrupts.
- (d) Explain the following concepts :
 - (i) Dynamic loading
 - (ii) Paging.

