

Anjuman Islam Janjira Degree College of Science Murud-Janjira, Raigad-402401 Affiliated to University of Mumbai	
Class: -S.Y.B.Sc. C.S.	Subject :- Principles of Operating System
Semester:- III	Vertical :- Major (MJ5)
Exam Event:- Winter2025 (SH)	Marks: - 30
Date: - 11/10/2025	Duration: - 01:00 Hour

- N.B. –**
- 1 – All questions are compulsory.**
 - 2 – All questions have internal choice.**
 - 3 – Figures to the right indicate full marks.**



Q1. Answer the following question. (Any 2 out of 4)

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- 1) Write functions of an Operating System.
- 2) Explain how each type of system call—Process Control, File Management, Device Management, Information Maintenance, and Communications—is used by programs to perform their operations
- 3) Create a general structure of a typical process.
- 4) Draw the Gantt Chart for the given processes using Round Robin scheduling with the given time quantum of 4. For Processes: P1, P2, P3 Arrival times (AT): 0,0,0 Burst times (BT): 24,3,3 and evaluate the average WT and TAT.

Q2. Answer the following question. (Any 2 out of 4)

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- 1) Explain how a resource allocation graph can show a deadlock situation.
- 2) Compare FIFO and LRU page replacement strategies in terms of page fault frequency for highly localized reference patterns.
- 3) Given the reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2 Simulate the FIFO page replacement algorithm for 3 and 4 frames. Count the page faults for each case and find Belady's anomaly.
- 4) Explain the difference between read-only and read-write sharing

Q3. Answer the following question. (Any 2 out of 4)

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- 1) Explain the client-server and peer-to-peer computing environment.
- 2) Create the Gantt chart for the Processes: P1, P2, P3 with their Arrival times (AT): 1,2,0, Burst times (BT): 3,2,5 and Priority: 3(highest),2,1. Calculate average WT and TAT using priority scheduling algorithm.
- 3) Compare the advantages and disadvantages of segmentation versus paging in memory management.
- 4) The disk queue contains requests for cylinders: 82, 170, 43, 140, 24, 16, 190 The disk head is at cylinder 50 moving toward higher-numbered tracks. Using the SCAN algorithm, find the total head movement.