

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026***Fourth Semester**Artificial Intelligence and Data Science***UADTL24401 – OPERATING SYSTEMS***Regulations – 2024**Duration : 3 Hrs**Maximum : 100 Marks***PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	List any two objectives of Operating Systems.	L1	1	2
2.	Differentiate between system calls and system programs.	L2	1	2
3.	What are the different types of schedulers?	L2	2	2
4.	Define semaphore and its use in OS.	L1	2	2
5.	What is thrashing? How is it controlled?	L2	3	2
6.	Differentiate between segmentation and paging.	L2	3	2
7.	Define disk scheduling. List any two algorithms.	L1	4	2
8.	Mention any two directory structures used in file systems.	L1	4	2
9.	Define virtualization. Give an example.	L1	5	2
10.	Mention any two features of Android OS.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain the structure and functions of an Operating System.	L2	1	8
	ii Discuss the types of system calls with examples.	L2	1	8
	Or			
	b i Explain various Operating System Services.	L2	1	8
	ii Explain Operating System roles in process management.	L2	1	8
12.	a Solve the following using FCFS and SJF scheduling algorithms	L3	2	16

Process	Arrival Time	Priority	Burst Time
P1	0	1	8
P2	1	2	4
P3	2	3	9
P4	3	4	5

Find: Gantt chart, Average Turnaround Time, and Average Waiting Time.

Or

- b Considering a system with five processes P₀ through P₄ and three resources of type A, B, C. Resource type A has 10 instances, B has 5

Process	Allocation	Max	Available
	A B C	A B C	A B C
P ₀	0 1 0	7 5 3	3 3 2
P ₁	2 0 0	3 2 2	
P ₂	3 0 2	9 0 2	
P ₃	2 1 1	2 2 2	
P ₄	0 0 2	4 3 3	

instances and type C has 7 instances. Suppose at time t₀ following snapshot of the system has been taken:

1. What will be the content of the Need matrix?
2. Is the system in a safe state? If Yes, then what is the safe sequence?

13. a Compare and contrast paging and segmentation schemes with suitable examples.

Or

- b Solve the following:
Given a memory with 3 frames, and the reference string:
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2
Implement FIFO, Optimal and LRU page replacement algorithms.
Calculate page faults in each case.

14. a Explain the directory structure and allocation methods used in file system implementation.

Or

- b Explain the Disk scheduling algorithms and their performance.

15. a Compare iOS and Android OS in terms of architecture, features, and application management.

Or

- b Analyze various types and components of Virtual Machines. Discuss their implementation in modern systems.