ODE: GR20A2075

GR 20

SET -1

II B.Tech II Semester Regular Examinations, August/September 2023

OPERATING SYSTEMS
(Common to CSE, IT, AIML & DS)

Max Marks: 70

3 hours

uctions:

Question paper comprises of **Part-A** and **Part-B**
Part-A (for 20 marks) must be answered at one place in the answer book.
Part-B (for 50 marks) consists of **five questions with internal choice,** answer all questions.
CO means Course Outcomes. **BL** means Blooms Taxonomy Levels.

PART – A
(Answer ALL questions. All questions carry equal marks)

10 * 2 = 20 Mark

a.	Define system call.	[2]	CO1	BL1
b.	Compare preemptive scheduler and non-preemptive scheduler.	[2]	CO1	BL2
c.	What is critical section problem?	[2]	CO2	BL1
d.	Define deadlock.	[2]	CO2	BL1
e.	Explain directory structure.	[2]	CO3	BL2
f.	What is Virtual Memory? Why is it required?	[2]	CO3	BL1
g.	Explain about swap space management	[2]	CO4	BL2
h.	Explain the objectives for a file management system.	[2]	CO4	BL2
i.	What are the principles of protection?	[2]	CO5	BL1
j.	Distinguish between security and threat.	[2]	CO5	BL4

PART – B
(Answer ALL questions. All questions carry equal marks)

5 * 10 = 50 Marks

a)	What are the different types of operating systems? Explain them in detail.	[5]	CO1	BL2
b)	Explain FCFS and SJF scheduling algorithm with illustrations.	[5]	CO1	BL2

OR

CODE: GR20A2075

3. a) Explain about the structure of OS. [5]

b) Following is the snapshot of a CPU [5]

Process	CPU Burst	Arrival Time
P1	10	0
P2	29	1
P3	03	2
P4	07	3

Draw the Gantt chart and calculate the turnaround time and waiting time of the jobs for FCFS (First Come First Served and RR (Round Robin with time quantum 10) scheduling algorithms.

4. a) What is a semaphore? Explain how producer-consumer problem is solved using semaphores with example pseudo code. [5]

b) How can deadlock be detected and recovered? Explain in detail with relevant example [5]

OR

5. a) What are the problems in concurrency in OS? [5]

b) Explain the 4 conditions that must hold for deadlock. [5]

6. a) Explain briefly about optimal Page replacement algorithm. [5]

b) A process refers to 5 pages, A, B, C, D, and E in the order- A; B; C; D; A; B; E; A; B; C; D; E. If the page replacement algorithm is LRU, calculate the number of page faults with empty frames of size 4? [5]

OR

7. a) Explain the terms in Memory Partitioning with examples: i) Fixed Partitioning ii) Dynamic partitioning. [5]

b) What is the need of demand paging? Explain briefly. [5]

8. a) Explain about linked allocation method of a file. [5]

b) Explain the following with relevant diagrams: [5]
a) Single level directory structure.
b) Tree-structured directory structure.

OR

9. a) What is a Directory? Write short note on Directory implementation. [5]

b) Explain about the free space management. [5]

10 a) What is access matrix? What are various methods to implement it? [5]

b) Explain in detail about the security problem. [5]

OR

11 a) What is meant by authentication? Why simple password protection is the most common authentication scheme in use today? Discuss the weakness inherent in the password protection scheme. [5]

b) Write a short note on system and network threats.

*****