

II B.Tech II Semester Regular Examinations, July/August 2022

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

Time: 3 hours
Instructions:

Max Marks: 70

1. Question paper comprises of **Part-A** and **Part-B**
2. **Part-A** (for 20 marks) must be answered at one place in the answer book.
3. **Part-B** (for 50 marks) consists of **five questions with internal choice**, answer all questions.

PART – A

(Answer ALL questions. All questions carry equal marks)

10 * 2 = 20 Marks

- a. Write the objectives of operating systems. [2]
- b. Differentiate between long term and short term Scheduler [2]
- c. Define bounded waiting. [2]
- d. How to detect a deadlock? [2]
- e. Compare dynamic loading and dynamic linking. [2]
- f. State the benefits of a virtual memory system. [2]
- g. Name any four file operations. [2]
- h. List the different free disk-space management techniques. [2]
- i. Write the format of an access matrix. [2]
- j. How Denial-of-service attack is resolved? [2]

PART – B

(Answer ALL questions. All questions carry equal marks)

5 * 10 = 50 Marks

2. (a) Describe process state transition diagram. [10]
(b) Assume the following are the jobs to execute with one processor:

Job	Burst Time(ns)	Priority
1	4	2
2	3	1
3	2	3
4	4	1
5	3	2

The jobs are assumed to have arrived in the order 1,2,3,4 and 5. Give the Gantt-Chart illustrating the execution of these jobs and turn-around times of each job using Round robin(Quantum=2), Shortest Remaining Time First(SJF with non-preemption) and Shortest Job First.

OR

3. (a) With a neat diagram explain the Computer System Architecture.
(b) Explain the view of the operating-system services with a neat diagram.
4. (a) Give Peterson's solution for critical section problem.
(b) Write about critical section problem? Discuss the requirements of solution to the critical section problem.

OR

5. (a) Define deadlock? what are the four conditions necessary for a deadlock situation to arise? how it can be prevented?
(b) How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail.
6. (a) Differentiate Logical Versus Physical Address Space
(b) Describe contiguous memory allocation concept with advantages and disadvantages

OR

7. (a) Explain briefly the performance of demand paging with necessary examples.
(b) Consider there are 3 page frames which are initially empty. If the page reference string is 1, 2, 3, 4, 2, 1, 5, 3, 2, 4, 6, Find the number of page faults using the optimal replacement policy.
8. (a) Exemplify swap space management?
(b) Write about disk attachment with neat diagrams.

OR

9. (a) Describe the following Directory Implementation methods.
i) Linear List ii) Hash Table
(b) Discuss about Layered file system.

10. Explain the Implementation of Access Matrix

OR

11. (a) Discuss about the Trojan Horse
(b) Write about system and network threats.
