

Code No.: CS303PC

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H.T.No.

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS

II-B.TECH-I-Semester End Examinations (Supply) - February- 2024

OPERATING SYSTEMS

(Common to CSE, IT, CSC, CSD & CSM)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) Distinguish between symmetric and asymmetric multi processor systems. [2M]
- b) Define Operating System. List out the objectives of an operating system. [2M]
- c) What is critical section problem? [2M]
- d) What is a preemptive and non preemptive scheduling? [2M]
- e) Define safe state and unsafe state? [2M]
- f) What are the various methods for protection and access control? [2M]
- g) Define paging and segmentation. [2M]
- h) Write the differences between internal fragmentation and external fragmentation. [2M]
- i) Define mounting what is the need for mounting in a file system. [2M]
- j) What are the various attributes that are associated with an opened file? [2M]

PART-B

(50 Marks)

2. a) What are the major activities of an operating system with regard to the file management? [5M]
 - b) Define essential properties of distributed operating system? [5M]
- OR**
3. a) Discuss various services of an operating system? [5M]
 - b) Explain the simple and layered approach of operating system in detail? [5M]
4. a) Explain in detail Inter Process Communication models. [5M]
 - b) Explain the Round Robin scheduling algorithm with a suitable example. [5M]
- OR**
5. a) By illustrating the structure of process P1, explain the Petersons solution to critical Section problem. [5M]
 - b) Illustrate the software based solution to the Critical Section problem. [5M]
6. a) How to Recover From Deadlock situations? Discuss in detail. [5M]
 - b) Explain deadlock avoidance process using Resource-Allocation-Graph. [5M]
- OR**
7. a) Analyze about the functionalities of capability based systems. [5M]
 - b) Discuss about revocation of access rights. [5M]

8. a) Consider the following page reference string: [5M]
1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6
How many page faults would occur for the optimal page replacement algorithm?
Assuming three frames and all frames are initially empty.
- b) Discuss various issues related to the allocation of frames to processes. [5M]

OR

9. a) 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? [5M]
- b) Explain Fixed Partitioning in Memory Partitioning with examples. [5M]
- 10.a) Suppose the head of a moving head disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and has just finished a request at track 125. If the queue of requests is kept in FIFO order: 86, 147, 91, 177, 94, 150, 102, 175, 130. [5M]
- b) What is the total head movement to satisfy these requests for the FCFS disk scheduling algorithms? [5M]

OR

11. a) What is a Directory? Write short note on Directory implementation. [5M]
- b) Explain about linked allocation method of a file. [5M]
