Code No.: R22CS303PC | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Regular) - December- 2024
OPERATING SYSTEMS
(Common for CSE, IT, CSC, CSD, CSM)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 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 **(10 Marks)**

1. a) Define Operating System with example. [1M]
   b) What is Real time OS? [1M]
   c) What is the need for CPU Scheduling? [1M]
   d) Define Deadlock. [1M]
   e) Define Semaphores. [1M]
   f) List out conditions for Critical Section. [1M]
   g) What is Page fault? [1M]
   h) Define Segmentation. [1M]
   i) List out the various File types. [1M]
   j) What are different types of directory structures? [1M]

PART-B **(50 Marks)**

2. Explain different types of OS. [10M]

OR

3. Explain different operations performed by the operating system. [10M]

4. Following is the snapshot of a CPU [10M]

Process	CPU Burst Time	Arrival Time
P1	10	0
P2	28	1
P3	8	2
P4	9	3

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

OR

5. Explain the following systems calls: [10M]
   i. fork ii. exit iii. wait iv. waitpid v. exec

6. Explain Peterson's solution for critical section problem. [10M]

OR

7. Explain Message Passing in detail. [10M]

8. Discuss in detail about Page Replacement Algorithms with an example. [10M]

OR

9.a) What is the need of demand paging? Explain briefly. [5M]
   b) Explain in detail Contiguous Memory Allocation. [5M]

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

OR

11. List and Explain File access methods with neat diagrams. [10M]

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