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

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Regular) - December- 2025
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)	What is the main purpose of an operating system?	[1M]
	b)	Define a system call.	[1M]
	c)	What is turnaround time in CPU scheduling?	[1M]
	d)	List any two conditions required for a deadlock to occur.	[1M]
	e)	Define critical section.	[1M]
	f)	What is interprocess communication?	[1M]
	g)	Define paging and segmentation.	[1M]
	h)	What is demand paging?	[1M]
	i)	What is a directory structure?	[1M]
	j)	Define file protection.	[1M]

PART-B **(50 Marks)**

2.	Explain the various types of system calls and their purposes in an operating system.	[10M]
	OR	
3.	Discuss the components and services of an operating system with suitable examples.	[10M]
4.	Compare and contrast preemptive and non-preemptive scheduling algorithms.	[10M]
	OR	
5.	Explain the conditions that lead to deadlocks and describe the resource allocation graph method for detection.	[10M]
6.	Explain the producer-consumer problem and demonstrate its solution using semaphores.	[10M]
	OR	
7.	Explain Interprocess Communication (IPC) and describe how it is implemented in a single computer system.	[10M]
8.	Explain the concept of virtual memory and discuss different page replacement algorithms.	[10M]
	OR	
9.	Describe paging and segmentation schemes with neat diagrams.	[10M]
10.	Explain file operations and directory structure in an operating system.	[10M]
	OR	
11.	Discuss file access methods and their uses.	[10M]

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