Student Name: University Roll No.:	Printed Pages: 01

School of Engineering
First Theory Sessional Examination
Even Semester (AS: 2024-25)

B. Tech: CSE / CS (AI) **[Year: 2nd] [Semester : 4th]**

Course Title: Operating Systems Course Code: NCS4402	Max Marks: 30 Time: 1*hr.*

Instructions: 1-Mention any assumptions made.
2-Notations have usual meaning.

	SECTION 'A' **Q.N.1. Attempt all parts of the following:**	**Course Objective**	**Marks**
a)	Define an operating system.	CO1	1
b)	List any two functions of an operating system.	CO1	1
c)	What is the difference between a batch operating system and a time-sharing operating system?	CO1	1
d)	What is a process control block (PCB)?	CO1	1
e)	Explain what context switching is in an operating system.	CO1	1
	SECTION 'B' **Q.N.2. Attempt any two parts of the following:**	**Course Objective**	**Marks**
a)	Explain the concept of process management in an operating system. What are the different process states?	CO1	7.5
b)	Describe the classification of operating systems. Compare a real- time operating	CO1	7.5

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	system (RTOS) with a network operating system.		
c)	Explain the different types of system calls in an operating system.	CO1	7.5
SECTION 'C' **Q.N.3. Attempt any one parts of the following:**		**Course Objective**	**Marks**
a)	What is CPU scheduling? Explain the various CPU scheduling algorithms and compare their performance criteria.	CO1	10
b)	What is multi-threading? Discuss the benefits of multi-threading and explain the different types of threads. Also, explain the threading issues faced in an operating system.	CO1	10
c)	Use Preemptive Shortest Job First (SJF) to schedule the processes.	CO1	10

Process	Arrival Time (ms)	Burst Time (ms)
P1	0	8
P2	1	4
P3	2	9
P4	3	5

(a) Calculate the following for each process:

Turnaround Time and Waiting Time

(b) Calculate the Average Waiting Time and Average Turnaround Time.

Table 1: Mapping between COs and questions

COs	Questions Numbers	Total Marks
CO1	1(a) 1(b) 1(c) 1(d) 1(e) 2(a) 2(b) 2(c) 3(a) 3(b) 3(c)	57.5

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