BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC **SEMESTER : VI**
BRANCH: MATHEMATICS AND COMPUTING **SESSION: SP/2023**

SUBJECT: CS303 OPERATING SYSTEMS

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Illustrate the process control block with an example.	[5]	1	2
Q.1(b)	How the operating system manages processes using a 5-state process model? Explain.	[5]	1	2
Q.2(a)	Discuss different types of threads and its basic operations with advantages and disadvantages.	[5]	2	2
Q.2(b)	Specify the Round Robin scheduling algorithm. Consider the following scenario of processes with time quantum = 2:	[5]	2	3

Process	Arrival Time	Execution Time
P_1	0	9
P_2	1	5
P_3	2	3
P_4	3	4

Draw the Gantt chart for the execution of processes, showing their start time, end time, using round robin scheduling. Calculate turnaround time, normalized turnaround time, waiting time for each process and average turnaround time, average normalized turnaround time and average waiting time for the system.

Q.3(a)	How do you avoid race conditions? Explain with a suitable diagram.	[5]	3	2
Q.3(b)	Specify the characteristics of deadlock. Explain different methods for handling deadlocks.	[5]	3	2
Q.4(a)	Explain the effect of dynamic partitioning using 64Mbyte main memory.	[5]	4	3
Q.4(b)	Illustrate the use of pages and frames using 16-bit addressing with logical address 2527, page size of 1K and four processes A, B, C and D having sizes 4K, 3K, 4K and 5K respectively.	[5]	4	3
Q.5(a)	Discuss the organization of I/O function.	[5]	5	1
Q.5(b)	Define basic disk I/O parameters with design objectives. Explain how these parameters are relevant to different disk scheduling algorithms?	[5]	5	2

::::::25/04/2023::::::M