



Faculty of Engineering  
Mid Sem I Examination March -2023  
CS3CO36 Operating System

Programme: B.Tech.

Duration: 1.5 Hrs.

Branch/Specialisation: CSE

Maximum Marks: 30

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

	Marks	BL	CO	PO	PSO
Q.1 i. For real time operating systems, interrupt latency should be a) Zero                      b) minimal c) maximum      d) depends on scheduling	1	BL <sub>01</sub>	CO <sub>01</sub>	PO <sub>01</sub>	PSO <sub>04</sub>
ii. Which system call can be used by a parent process to determine the termination of child process a) wait                      b) exit      c) fork                      d) get	1	BL <sub>01</sub>	CO <sub>01</sub>	PO <sub>02</sub>	PSO <sub>02</sub>
iii. The number of processes completed per unit time is known as a) Output                      b) Throughput c) Efficiency      d) Capacity	1	BL <sub>01</sub>	CO <sub>01</sub>	PO <sub>02</sub>	PSO <sub>01</sub>
iv. The interval from the time of submission of a process to the time of completion is termed as a) waiting time                      b) turn around time c) response time                      d) throughput	1	BL <sub>02</sub>	CO <sub>02</sub>	PO <sub>03</sub>	PSO <sub>02</sub>
v. Which scheduling algorithm allocates the CPU to the process that request the CPU first a) FCFS                                      b) SJF c) Round Robin                      d) Priority	1	BL <sub>02</sub>	CO <sub>02</sub>	PO <sub>01</sub>	PSO <sub>03</sub>
vi. With respect to operating system which of the following is not a valid process state	1	BL <sub>01</sub>	CO <sub>02</sub>	PO <sub>03</sub>	PSO <sub>02</sub>



a) Ready  
c) Running

b) Waiting  
d) starving

- Q.2 i. Write down the difference between multiprogramming and time-sharing operating system. 2 BL<sub>01</sub> CO<sub>01</sub> PO<sub>02</sub> PSO<sub>03</sub>
- ii. Explain Real time operating system along with its types. 2 BL<sub>02</sub> CO<sub>01</sub> PO<sub>01</sub> PSO<sub>02</sub>
- iii. Explain Process Control Block. 3 BL<sub>02</sub> CO<sub>02</sub> PO<sub>03</sub> PSO<sub>04</sub>
- iv. Differentiate preemptive and non preemptive scheduling with example. 5 BL<sub>03</sub> CO<sub>02</sub> PO<sub>01</sub> PSO<sub>02</sub>
- OR v. Explain the process states with diagram in detail. 5 BL<sub>02</sub> CO<sub>01</sub> PO<sub>02</sub> PSO<sub>04</sub>
- Q.3 i. Explain process scheduling. 2 BL<sub>01</sub> CO<sub>02</sub> PO<sub>01</sub> PSO<sub>02</sub>
- ii. Consider the set of 5 processes whose arrival time and burst time are given below- 4 BL<sub>02</sub> CO<sub>01</sub> PO<sub>03</sub> PSO<sub>01</sub>

Process Id	Arrival time	Burst time
P1	0	5
P2	1	3
P3	2	1
P4	3	2
P5	4	3

Calculate the average waiting time and average turn around time using round robin CPU scheduling and consider time quantum = 2 unit.

- iii. Explain Semaphore in detail. Also define its types. 6 BL<sub>02</sub> CO<sub>02</sub> PO<sub>03</sub> PSO<sub>13</sub>
- OR iv. Explain Reader Writers Problem in detail along with its pseudocode. 6 BL<sub>03</sub> CO<sub>01</sub> PO<sub>02</sub> PSO<sub>04</sub>

\*\*\*\*\*