

K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

NOV 2022

(B. Tech) Program: Information Technology

Examination: SY Semester: IV

Course Code: IUITC403 and Course Name: OS

Duration: 03 Hours

Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight:	12		
i)	Discuss different functions of OS?	2	CO1	U
ii)	Discuss the process. Draw process state diagram?	2	CO2	U
iii)	How process control block helps in context switching?	2	CO2	U
iv)	Discuss the concept of critical and remainder section of process.	2	CO3	U
v)	Explain internal fragmentation with example.	2	CO4	U
vi)	Compare logical and physical address.	2	CO4	U
vii)	Differentiate between RAID 1 and RAID 2 level.	2	CO5	U
viii)	Discuss distributed operating system.	2	CO6	U
Q.2	Solve any four questions out of six.	16		
i)	Discuss distributed operating system.	4	CO1	U
ii)	Explain thread. Compare process and thread with example.	4	CO2	U
iii)	Demonstrate how Peterson's algorithm will help to achieve mutual exclusion.	4	CO3	A
iv)	Compare Real-Time and Batch Operating System	4	CO6	An
v)	Explain thrashing. Elaborate its effect on processing performance.	4	CO4	U
vi)	Discuss various file allocation methods.	4	CO5	U

Q1 viii) Discuss where we can use embedded system.
(2 marks CO6)

Q.3	Solve any two questions out of three.	16																										
i)	Explain Context-Switch? Describe the actions taken by a kernel to context switch between processes with neat diagram	8	CO1	U																								
ii)	Use following Scheduling algorithm to calculate ATAT &AWT for the following process: a. Pre-emptive and Non-Pre-emptive SJF b. Round Robin	8	CO2	U																								
<table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Process</th> <th>Arrival Time</th> <th>Burst Time</th> <th>Priority</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>0</td> <td>8</td> <td>3</td> </tr> <tr> <td>P2</td> <td>2</td> <td>1</td> <td>1</td> </tr> <tr> <td>P3</td> <td>2</td> <td>3</td> <td>2</td> </tr> <tr> <td>P4</td> <td>3</td> <td>2</td> <td>3</td> </tr> <tr> <td>P5</td> <td>4</td> <td>6</td> <td>4</td> </tr> </tbody> </table>		Process	Arrival Time	Burst Time	Priority	P1	0	8	3	P2	2	1	1	P3	2	3	2	P4	3	2	3	P5	4	6	4			
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iii)	Apply Reader-Writer problem with all conditions and write solution using semaphore.	8	CO3	A																								
Q.4	Solve any two questions out of three.	16																										
i)	There are 7 pages and 4 frames. Calculate number of page fault/page miss and page fault ratio using FIFO, LRU, Optimal methods. Reference queue is given as follows. 1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6	8	CO4	A																								
ii)	Assume that the disk head is initially positioned over track 100. For the disk request of 27,129,110,186,147,41,10,64, and 120. How disk scheduling is carried out for FCFS, SSTF, C-SCAN, C-LOOK. Calculate seek time and tracing of requests.	8	CO5	A																								
iii)	Discuss the features of Mobile OS. Sketch and explain memory management in Mobile OS.	8	CO6	An																								

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