Total No. of Questions – [06] Total No. of Printed Pages: 2

G.R. No.	

DECEMBER 2021 - ENDSEM EXAM

T. Y. B. TECH. (E&TC) (SEMESTER - I)

COURSE NAME: OPERATING SYSTEMS

COURSE CODE: ETUA31183A

(PATTERN 2018)

Time: [1 Hour] [Max. Marks: 30]

Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6.**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1 a) Illustrate deadlocks with suitable example? Describe various methods for dead lock prevention. [4]

b) Analyze resource allocation graph with example. [6]

OR

Q.2 a) Illustrate necessary conditions for occurrence of deadlock. [4]

b) A single processor system has three resource types X, Y and Z, which are shared by three processes. There are 5 units of each resource type. Consider the following scenario, where the column alloc denotes the number of units of each resource type allocated to each process, and the column request denotes the number of units of each resource type requested by a process in order to complete execution. Check system is deadlock free? If yes find safe sequence. [6]

	Alloc			Maximum		
	X	**Y**	**Z**	**X**	**Y**	**Z**
P0	1	2	1	1	0	3
P1	2	0	1	0	1	2
P2	2	2	1	1	2	0

Q.3 a) Describe Segmentation with suitable diagram. [4]

b) Consider the following page reference string [6]
1,2,3,4,2,1,5,6,1,2,3,7,6,3,2,1,3,6.
The number of page frames=3. Calculate the page faults and page hit ratio for:

1. Optimal 2. LRU

OR

Q.4 a) Show strange behavior of FIFO page replacement with suitable example. [4]

b) Consider the following segment table - Identify which of the following logical address will produce trap addressing error. [6]

Segment number	Segment offset
(i)1	11
(ii)2	100
(iii)3	425.

Calculate the physical address if no trap is produced.

Segment No.	Base	Length
1	2300	14
2	90	100
3	1327	580

Q.5 a) Discuss Briefly Secondary storage management. [4]

b) Consider a disk with 200 tracks and the queue has random requests from different processes in the order: [6]
55, 58, 39, 18, 90, 160, 150, 38, 184
Initially arm is at 100. Calculate the Average Seek length using SCAN algorithm.

OR

Q.6 a) Discuss briefly disk Space Management [4]

b) Consider a disk with 200 tracks and the queue has random requests from different processes in the order: [6]
55, 58, 39, 18, 90, 160, 150, 38, 184
Initially arm is at 100. Calculate the Average Seek length using C-SCAN algorithm.