

Marks: 15

Time: 20 Min

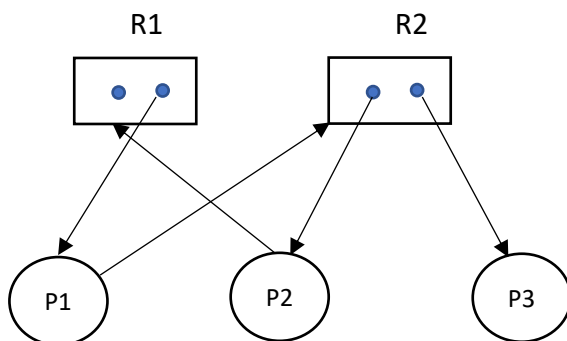
Name:	ID:	Section:
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1. Determine if the following sentences are true or false. For any false sentence, write its correct form. 1.5*4 = 6

- i. A dead lock is bound to happen in an unsafe state. (F)
There is a possibility of deadline in an unsafe state.
- ii. The RAG algorithm is a deadlock prevention algorithm. (F)
It is a deadlock avoidance algorithm.
- iii. Mutual exclusion must hold for a deadlock to occur. (T)
- iv. A claim edge is from a resource to a process. (F)
It is from a process to a resource.

2. Consider, $P=\{P1, P2, P3\}$ and $R=\{R1, R2\}$ with both R1 and R2 have 2 instances. Draw a Resource Allocation Graph with the following conditions. Determine if there is a deadlock in the graph. 2 + 1

- i. P1 is holding R1 and requesting R2.
- ii. P2 is holding R2 and requesting R1.
- iii. P3 is holding R2.



There is a cycle (P1, R2, P2, R1, P1), but no deadlock.

3. Assume, there are three processes: P1, P2, P3. Also, there are three resources with the following instances: A (5), B(2), C(3). Now, consider following Allocation and Maximum Matrix:

P1	1	1	1
P2	1	0	1
P3	1	0	1

Allocation Matrix

P1	3	1	2
P2	2	1	1
P3	2	0	2

Maximum Matrix

- i. Determine the need and the available matrices. 1.5 + 1.5

Need			
	a	b	c
P1	2	0	1
P2	1	1	0
P3	1	0	1

Available			
	a	b	c
	2	1	0

3

- ii. Determine the safe sequence (if any).
 Safe sequence: P2, P1, P3