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**Assignment –3
(Based on Unit IV)
MCA-III Semester**

Course Code: MCA 107

Course Name: Database Management Systems

1. Test the serializability of the schedule with a precedence graph. CO5 BTL6

Schedule	Transaction T ₁₇	Transaction T ₁₈	Transaction T ₁₉
Read(A)	Read(A)		
A := f ₁ (A)	A := f ₁ (A)		
Read(C)	Read(C)		
Write(A)	Write(A)		
A := f ₂ (C)	A := f ₂ (C)		
Read(B)		Read(B)	
Write(C)	Write(C)		
Read(A)		Read(A)	
Read(C)			Read(C)
B := f ₃ (B)		B := f ₃ (B)	
Write(B)		Write(B)	
C := f ₄ (C)			C := f ₄ (C)
Read(B)			Read(B)
Write(C)			Write(C)
A := f ₅ (A)		A := f ₅ (A)	
Write(A)		Write(A)	
B := f ₆ (B)			B := f ₆ (B)
Write(B)			Write(B)

2. For the following set of transactions T1, T2, and T3, apply the timestamp ordering algorithm for the given schedule: CO5 BTL6

Transaction T1	Transaction T2	Transaction T3
	Read Z	
	Read Y	
	Write Y	
		Read Y
		Read Z
Read X		
Write X		
		Write Y
		Write Z
	Read X	
Read Y		
Write Y		
	Write X	

Also, determine whether the above-given schedule is conflict serializable.

3. Consider the following schedule: CO5 BTL5

T1	T2	T3
	R(A)	
	R(B)	
W(A)		
	W(C)	
R(C)		
		W(C)
W(B)		
	W(B)	
		W(B)

Write the sequence of valid views a serializable schedule. Justify the answer as well.

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| 4. Elaborate Locking protocol system with secured and exclusive locks. | CO5 | BTL6 |
| 5. Discuss Two-Phase Locking System. Why it is needed in concurrency control schemes. | CO5 | BTL6 |
| 6. Explain the concept of log-based recovery in transactions. | CO5 | BTL6 |
| 7. Database Security is the process of transforming data into an unreadable form for anyone who does not know the key. Justify this statement. | CO5 | BTL6 |
| 8. Discuss the properties of object-oriented database management systems. | CO5 | BTL6 |