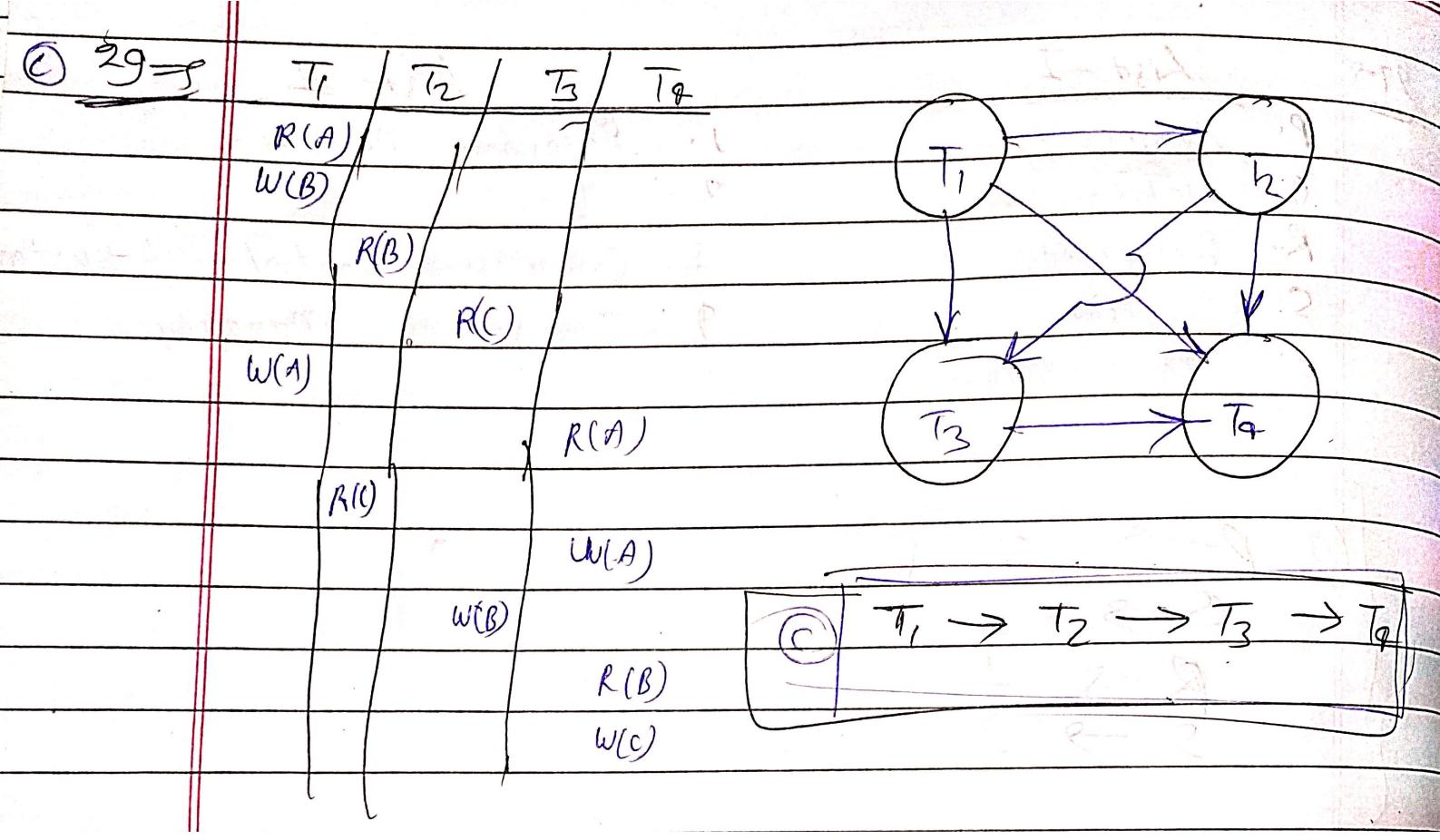


29. Consider the non serial schedule S : R₁(A), W₁(B), R₂(B), R₃(C), W₁(A), R₄(A), R₂(C), W₄(A), W₃(B), R₄(B), W₄(C).

The given non serial schedule is conflict equivalent to the following serial schedule.

- (a) T₁ → T₃ → T₂ → T₄
- (b) T₂ → T₁ → T₃ → T₄
- (c) T₁ → T₂ → T₃ → T₄
- (d) Not Serializable



30. Consider a non serial schedule S has executed in the following order.

S: $W_3(C)$, $R_1(A)$, $W_1(A)$, $R_1(B)$, $W_2(B)$,
 $W_2(C)$, $R_3(A)$, Commit3, $W_1(C)$, commit1,
Rollback2.

The above given schedule is

- (a) Recoverable schedule
- (b) Cascading rollback schedule
- (c) Cascadeless rollback schedule
- (d) Non recoverable schedule

① 30 →

	T_1	T_2	T_3	
			$w(c)$	
$R(A)$				
$w(c_A)$		<u>Rollback</u>		
$R(c_B)$				
		$w(c_B)$		
		$w(c)$		
			$R(A)$	
			commit	
$w(c)$				
commit				

if T_1 fails after T_3
 commit → requires to
 rollback both
 $T_1 \neq T_3$

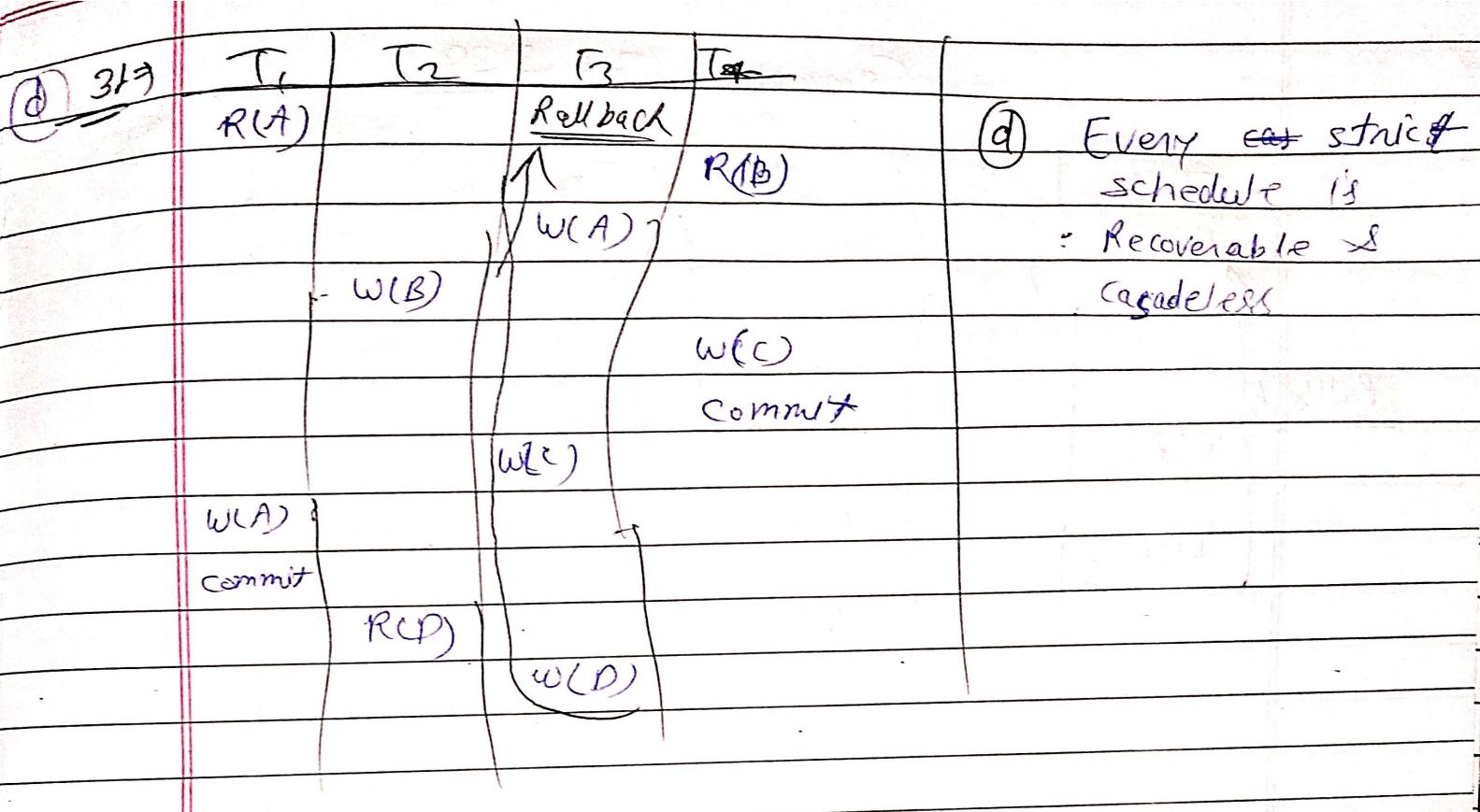
② Non-recoverable

31. Consider a non serial schedule S has 4 transactions and the execution of operation is given below:

S: R₁(A), R₄(B), W₃(A), W₂(B), W₄(C), Commit₄, W₃(C), W₁(A), Commit₁, R₂(D), W₃(D), Rollback₃;

The above given Schedule is _____.

- (a) Recoverable schedule
- (b) Cascading rollback Schedule
- (c) Cascadeless rollback schedule
- (d) Both (a) and (c)



32. Data: Consider a non serial schedule S is having 3 transactions and operation of those transactions are executed as below:

S: R2 (A), W2(B), R1(A), R3(A), W2(C), commit2, R1(B), R3(C), W1(B), commit1, W2 (C) commit3,

Assertion [A]: The given schedule S is strict schedule.

Reason [R]: The schedule S is allowed under Rigorous 2PL.

Choose:

- (a) Both (a) and (r) are true and (r) is the correct reason for (a).
- (b) Both (a) and (r) are true but (r) is not the correct reason for (a).
- (c) Both (a) and (r) are false.
- (d) (a) is true but (r) is false.

(d) 32

	T_1	T_2	T_3	$\sqcap(A)$
		$R(A)$		
		$W(B)$		
	$R(A)$			
		$R(A)$		$\times(R)$
		$W(C)$		The schedule S is allowed under rigorous 2PL
		Commit		
	$R(B)$			
		$R(C)$		
	$W(B)$			
	Commit			
		$W(C)$		
			Commit	

The given schedule S is strict schedule.

$\times(R)$ The schedule S is allowed under rigorous 2PL

(d) (a) True, (R) False

Common data for 33 & 34

Consider the following schedule S has 4 Transactions.

S:R₁(A) , R₂(B), Commit₂, R₃(C), W₁(A), R₃(A), W₁(B), Rollback₁, W₃(A), R₄(B).

33. What is category of this schedule based on recoverability?

- (a) Recoverability schedule
- (b) Cascading rollback schedule

- (c) Non recoverable schedule
- (d) Cascadeless rollback schedule

34. The given schedule is allowed under which of the following protocol.

- (a) Basic Timestamp protocol
- (b) Thomas Write Rule
- (c) Basic 2PL
- (d) None of protocols given.

Common 33 & 38

	T_1	T_2	T_3	T_{out}
	$R(A)$			
\uparrow Rollback		$R(B)$ Commit		
	$W(A)$		$R(C)$	
	$W(B)$		$R(A)$	
			$W(A)$	
				$R(B)$

(a) 33 What is the category of this schedule based on recoverability?

(a) As there is no dirty read (WR) operation in the given schedule \therefore it is both recoverable & consistent.

(c) 39 Given schedule is allowed under which protocol?

(c) Basic 2 PC

35.

T_1	T_2
$w_1(x)$	$r_2(x)$
$w_1(x)$	c_2
c_1	

- (a) recoverable, cascade less
- (b) not recoverable, cascade less
- (c) recoverable, not cascade less
- (d) not recoverable, not cascade less

(d) 35?

	T_1	T_2
	$W(x)$	
		$R(x)$
	$W(x)$	
		Comm
	Comm	

(d)

not recoverable \Rightarrow
not cascaderable

because T_2 commit before
 T_1 commits.

36. If isolation level in transactions is set as

“read committed”, then

- (1) Dirty reads are not allowed
 - (2) Unrepeatable reads are allowed
 - (3) Phantom rows are not allowed
 - (4) Phantom rows are allowed
-
- (a) 1, 2, 3 are correct
 - (b) 1, 2, 4 are correct
 - (c) 2, 3, 4 are correct
 - (d) None of the above

b) 36 →

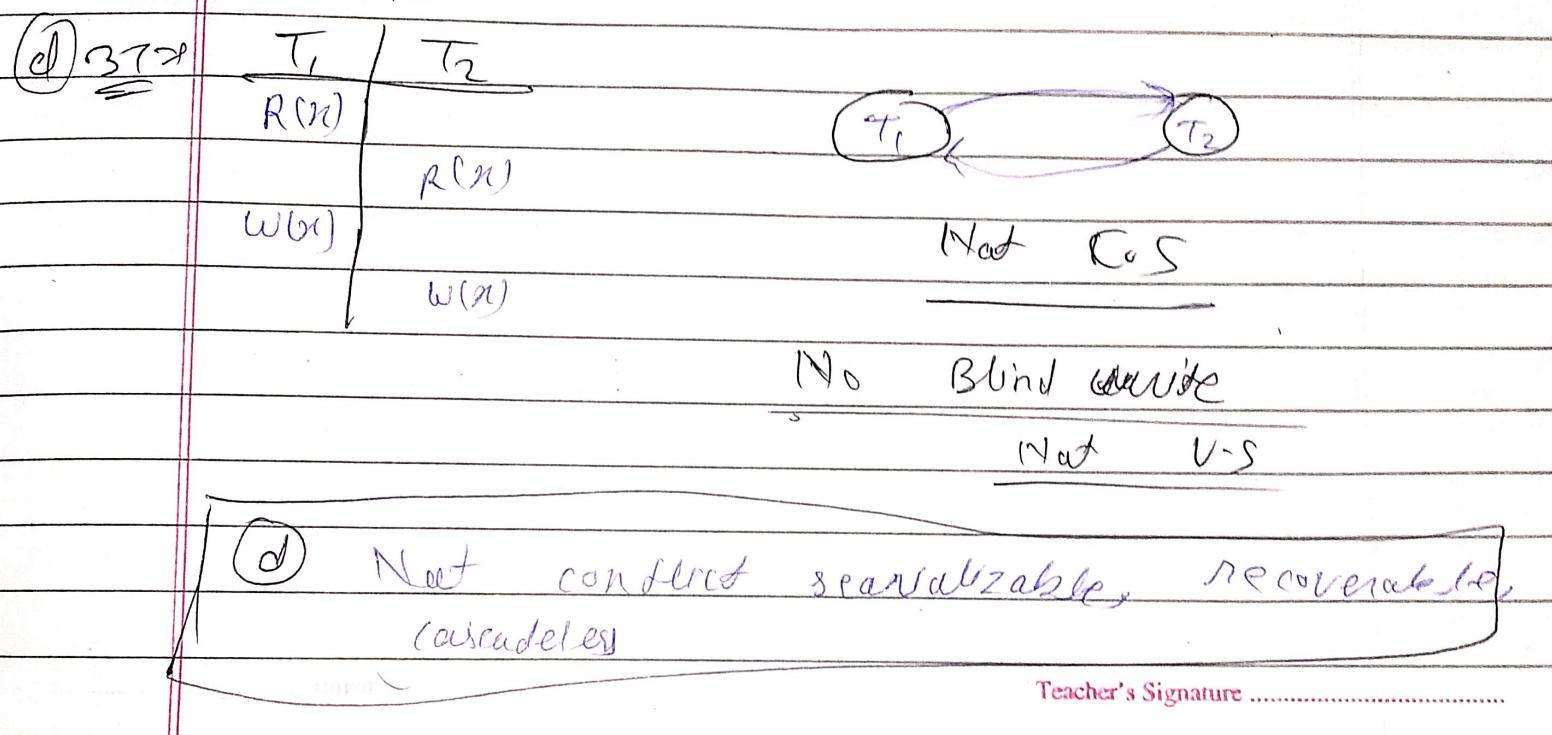
isolation level in transactions is set as
"read committed" then

- (1) Dirty read not allowed
- (2) Unrepeatable reads are allowed
- X (3) Phantom rows are not allowed
- (4) Phantom rows are allowed

b)

1, 2, 4 correct

37. $T_1 : R(x), T_2 : R(x), T_1 : W(x), T_2 : W(x)$,
find the characteristic of the schedule
- (a) Conflict serializable, recoverable, cascadeless
 - (b) Conflict serializable, not recoverable, cascadeless
 - (c) Conflict serializable, recoverable, not cascadeless
 - (d) Not Conflict serializable, recoverable, cascadeless



38. In multiple granularity protocol at a particular data item, transaction T_1 is holding shared intension exclusive lock. At the same data item, transaction T_2 is allowed to request which of the following locks?
- (a) intension exclusive
 - (b) intension shared lock
 - (c) shared lock
 - (d) excessive lock

(b) 38 =

(b) If node is locked in SIX mode by T_1 , then other transaction T_2 can lock the same data item in IS mode.

(b)

Intension shared (IS) lock