	BMSCOLLEGEOF ENGINEERING
	(Autonomous Institute,AffiliatedtoVTU)
	Department of Information Science and Engineering

INTERNALS - III

Course Code: 19IS4PCDBM	CourseTitle:Database Management Systems	
Semester: IV 'A','B'&'C'	MaximumMarks: 40	Date: 21/06/20
FacultyHandlingtheCourse:	**SLR, SK & Dr. RR**	
Instructions: *Internal choices provided in Part C.*		

PART-A

No.	Question1	Marks
A.	Differentiate between a schedule, serial schedule and serializable schedule with an example for each.	5

PART-B

No.	Question2	Marks
A.	Consider the following transactions and schedule. Is this schedule conflict-serializable? Determine all the possible serialized schedules-if its conflict serializable.	5
B.	For the given schedule of T1,T2 & T3: S:R1(A);R2(B);R3(C);R1(B);R2(C);R3(D);W1(A);W2(B);W3(C); i) Add shared locks, exclusive locks and unlock actions. Position a shared lock immediately infront of each action that is not followed by a write action of the same element by the same transaction. Place an exclusive lock in front of every other read or write action. Place the necessary unlocks at the end of every transaction. ii) Interpret what happens when each schedule is run by a scheduler that supports shared and exclusive locks.	5

C.	Consider a relation R(A,B,C) and suppose R contains the following four tuples: i) For each of the following functional dependencies, state whether or not the dependency is satisfied by this relation instance. **A B C** 1 2 2 1 3 2 1 4 2 2 5 2 (a) A → B (b) A → C (c) B → A (d) B → C (e) C → A (f) C → B (g) AB → C (h) AC → B (i) BC → A ii) **A B C** 1 2 3 1 2 4 5 2 3 5 2 6 Specify all completely nontrivial functional dependencies that hold on this instance of given relation R(A,B,C) above.	5	

PART- C
(Answer two questions:3A is mandatory)

No.	Question3	Marks
A.	i) With Exclusive Locks show whether the given schedule S yields a 2PL schedule or not. ii) With shared and exclusive locks Is the schedule S a 2PL schedule ? **S: r1(A), r2(A), r3(B), w1(A), r2(C), r2(B), w2(B), w1(C)**	10

B.	Consider the given functional dependencies-
	  i) $AB \rightarrow CD$
	  ii) $AF \rightarrow D$
	  iii) $DE \rightarrow F$
	  iv) $C \rightarrow G$
	  v) $F \rightarrow E$
	  vi) $G \rightarrow A$
	
	Compute the closure of the attributes: $\{ CF \}^+$, $\{ BG \}^+$, $\{ AF \}^+$, $\{ AB \}^+$.Find the minimal key.
		10

	(OR)	
C.	Consider the following two transactions: **T1:r1(A);r1(B);inc1(A);inc1(B);** **T2:r2(A);r2(B);inc2(A);inc2(B);** i)How many interleaving of these transactions are serializable? ii) If the order of increment in T2 were reversed i.e.,inc2(B) followed by inc2(A),how many serializable interleaving would be there?	10