

(Please write your Enrollment Number)

Enrollment No. _____

End-Term Examination- ONLINE MODE
(CBCS/Non-CBCS)(SUBJECTIVE TYPE)

<Programme Name B.Tech. IT > <3 SEM>
(DEC, 2021)

(SET B)

Subject Code:< BIT 201 >

Subject: < DBMS >

Time : 1 Hour 15 minutes

Maximum Marks : 30

Note: Q. 1 is compulsory. Attempt any one question from the rest.

Q1

(5*3=15)

(a) The following functional dependencies are given: $AB \rightarrow CD$, $AF \rightarrow D$, $DE \rightarrow F$, $C \rightarrow G$, $F \rightarrow E$, $G \rightarrow A$

Verify the following and state if true or false.

- $\{CF\}^+ = \{ACDEFG\}$
- $\{AE\}^+ = \{ACDEFG\}$

What is a candidate key for the relation $R(A, B, C, D, E, F, G)$

(b) For the relation $R(A, B, C, D)$ and FD set: $\{A \rightarrow B, A \rightarrow BC, C \rightarrow D\}$, can we derive

- $A \rightarrow C$
- $B \rightarrow D$
- $BC \rightarrow D$

(c) Show that $A \rightarrow B$ is a relationship $A:B::N:1$

Q2

(7.5+7.5= 15)

(a) Consider three transactions T_1 , T_2 and T_3 with timestamp in the order $T_1 < T_2 < T_3$. There are two resources A and B . What is the result of each of the following schedules

- $r_1(A)$; $r_2(A)$; $r_3(A)$; $w_1(B)$; $w_2(B)$; $w_3(B)$;
- $r_1(A)$; $w_3(A)$; T_3 commit; $r_2(B)$; $w_2(A)$;
- $r_1(A)$; $w_2(A)$; $w_3(A)$; $r_2(A)$;

(a) Draw a dependency graph for the schedule $r_1(A)$; $w_2(A)$; $r_2(A)$; $w_3(A)$; and determine if it is serializable. Apply 2PL to the schedule and use the "total allocation" scheme to prevent deadlock.

Q3

Consider the following schema of a car renting agency

(7.5+7.5= 15)

Vehicle(Vno, Vmake, Vtype, Vprice)

Driver(Dno, License Year, Experience, State)

Drives(Dno, Vno, Date, Start time, End Time)

There are two proposals to define primary keys for Vehicle (a) Vno, Vmake and (b) Vno. Which one would you choose and why?

a. Write SQL queries to do the following

- Find all vehicles whose price is greater than 2 lakhs and order these by their make in ascending order