Indian Institute of Information Technology, Sri City, Chittoor

Part-B and SET - 2

End Semester Examination

Database Management System

Maximum Marks: 30 Date: 3 Dec 2021

Time Duration: 60 min Time: 11 AM

Instructions:

1. Closed book exam, includes textbooks, notes, and online resources.
2. Write the solutions clearly and legibly in A4 sheets, **using pen (NOT pencil)** and the scanned copy of your solutions should submit in the assigned classroom.
3. Naming format of the scanned copy should be **Roll No + '_' + Set No+'_'+DBMS.pdf (e.g. S20200010XYZ_Set1_DBMS.pdf).**
4. Write your name, roll no., and set number on each page of the answer sheets.
5. All questions are compulsory. Answer questions in brief and to the point only.
6. Follow all other instructions given by the invigilator during the exam.

Q1). Given the relation schema a R = (A, B, C, D, E, F, G, H) and its set of functional dependencies

F = { E → F, EFGH→ A, AB → C, AB → D, BEGH→ AC }

1) Find all the candidate keys of the relation.
2) Find the minimal cover for given set of FDs
3) Decompose the above minimal cover into a lossless BCNF decomposition for the given relation R. Show your steps clearly.

Total Marks [4+5+4=13]

Q2). Execute the following schedule (series of actions) using the Strict 2PL protocol and discuss the deadlock detection with the help of wait-for-graph. Show each step clearly with appropriate justification.

T1:R(A); T2:R(B); T3:W(B); T1:W(A); T2:W(A); T1:W(B); T4:W(C); T3:R(C); T4: Commit; T1: Commit; T3: Commit; T2: Commit.

Total Marks [5]

Q3 Consider the following database:

Employee(Eid, Ename, Salary)
Project(Pid, Pname, Supervisor)
Works(Eid, Pid, Location)

a. Write a Tuple Relational Calculus query to retrieve Eid's works for some project 'A' projects and some project 'B'.
b. Write a Tuple Relational Calculus query to retrieve Eid's works for every project.
c. Write a Domain Relational Calculus query to retrieve the name of each employee who works for some projects supervised by 'S'.
d. Write a Domain Relational Calculus query to retrieve the name and salary of employee works for some project 'P'.

Total Marks [3+3+3+3=12]