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Mid Semester Exam

Fourth Semester

Roll no.....

Mar-2020

B.Tech.COE

CO202 Database Management System

Duration: 1.5 Hrs.

Max Marks: 30

NOTE: Attempt all the questions. Assume the missing data if any.

Q1. Given the relational schemas: (4)

employee(empno, name, office, age)

books(isbn, title, authors, publisher)

loan(empno, isbn, date)

Write the following queries in relational algebra.

- Find the names of employees who have borrowed a book published by TMH.
- Find the names of employees who have borrowed more than five different books published by TMH.

Q2. List four significant differences between a file processing system and a DBMS? (4)

Q3. a) Explain generalization and serialization with suitable example. (2)

b) Differentiate between primary key and partial key using example. (2)

Q4. Consider the following relation schema and set of functional dependencies (5x2=10)

$R = (A, B, C, D, E, F, G, H).$

$BE \rightarrow GH$

$G \rightarrow FA$

$D \rightarrow C$

$F \rightarrow B$

- a) Can there be a key that does not contain D? Explain.
- b) Is the schema in BCNF? Explain.
- c) Use one cycle of BCNF algorithm to decompose R into two sub-relations. Are the sub-relations in BCNF?
- d) Show that decomposition is lossless
- e) Is your decomposition dependency preserving? Explain.

Q5. Write short notes on the following: (any four) (4x2=8)

- a) Minimal Cover
- b) Derived attributes
- c) Referential Integrity
- d) Mapping Cardinality
- e) Database Administrator

END