Roll No. ..... [Total No. of Pages: 02]

B.Tech (CSE)
RELATIONAL DATABASE MANAGEMENT SYSTEMS- I
SUBJECT CODE: BTCS-502
Paper ID: A 2098

Time: 03 Hours Maximum Marks: 60

Instruction to Candidates:

1) **Section- A** is Compulsory consisting of ten questions carrying two marks each.
2) **Section-B** contains five questions carrying five marks each and students have to attempt any **four** questions.
3) **Section-C** contains three questions carrying ten marks each and students has to attempt any **Two** questions.

Section-A

Q1) *(10x2=20)*

a) What are the basic properties of a transaction?

b) Explain advantages of normalized database.

c) What is sparse and dense index in file organization?

d) Explain BCNF with example.

e) Explain any two aggregate function of SQL.

f) Explain Commit and Rollback Command.

g) Difference between Weak Entity set and strong entity set.

h) What are views? How it provides security.

i) Explain Wait-For- Graph.

j) Explain redundancy in terms of DBMS with example?

Section – B

(4x5=20)

Q2) Explain in detail:

a) Bell LaPadula Model
b) Digital signature

Q3) Consider a relation R with five attributes A, B, C, D, E having following dependencies

A->B, BC->E and ED->A

a) List all keys for R.

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b) In which normal form table is, Justify your answer.

Q4) Differentiate between Network model, Hierarchal model and relational model.

Q5) *a)* Differentiate between view serializability and conflict serializability.

b) What are problems with traditional file processing system? Compare file system with database management system.

Q6) Draw an ER diagram for a bank. Each bank can have multiple branches and each branch can have multiple accounts and loans. List all the entities and relationships between them. Also list all the constraints. State all the assumptions made.

Section - C

(2x10=20)

Q7) *a)* Show that two-phase locking protocol ensures conflict serializability and that transaction can be serialized according to their lock points.

b) Define functional dependency. Explain trivial and non-trivial FD with example.

Q8) *a)* Explain the architecture of DBMS with the help of a diagram.

b) "If a relation is broken into BCNF, it will be lossless and dependency Preserving" Prove or disprove the above statement with help of an example.

Q9) *a)* What are the advantages and disadvantages of hash indices relative to B-Tree indices?

b) What is 5NF? How is it related to Join dependency? Explain with the help of an example.

End