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RNLKWC/IVS/DMS/ C10T/22

**End Semester Examination, 2022**

**Semester - IV**

**BCA (Hons.)**

**Database Management System**

**PAPER - C10T**

*Full Marks : 40*

*Time : 2 Hours*

**Gr. - A**

1. ***Attempt any five questions :*** **5x2=10**
- a) What do you mean by 'Cascading Roll back' ?
  - b) What is the advantage of sparse index ?
  - c) What do you mean by concurrency control of a transaction ?
  - d) What is dependency preserving ?
  - e) Why normalization is needed ?
  - f) Distinguish between instance and schema.
  - g) What do you mean by the term aggregation ?
  - h) Differentiate between database and file system.

**Gr. - B**

- Attempt any four questions :*** **4x5=20**
- 2. Find the candidate keys of the following relation :  
R (A, B, C, D, E, F)  
 $F = \{AB \rightarrow C, C \rightarrow DE, E \rightarrow F, D \rightarrow A, C \rightarrow B\}$ .
  - 3. What is BCNF? Why BCNF is stricter than 3NF ?
  - 4. What is Loss-less join decomposition? Check whether the following decomposition is loss-less or Lossy :

*(Turn Over)*

R (A, B, C, D),  $F = \{A \rightarrow B, B \rightarrow C, C \rightarrow D\}$  with decomposed relations

$R_1$  (A, B),  $R_2$  (B, C), and  $R_3$  (C, D)

5. What are the benefits of indexing technique? What is the difference between single-level indexing and multi-level indexing?
6. Consider the following relational schema :  
 Book (Book\_id, Title, Publisher\_name)  
 Book\_author (Book\_id, Author\_name)  
 Book\_copies (Book\_id, Branch\_id, No\_of\_copies)  
 Write the following queries in SQL
  - (i) Retrieve the author name of book having title 'DBMS'.
  - (ii) Retrieve the total number of titles of each publisher.
  - (iii) Retrieve total number of titles.
7. Draw an E-R diagram for a hospital with a set of patients and a set of medical doctors, with each patient a log of the various conducted tests is also associated.

**Gr. - C**

***Attempt any one question :*** **1x10=10**

8. Define 2NF and 3NF. Find the highest normal form of the following relation :  
 R (A, B, C, D, E) with FD  
 $F = \{AB \rightarrow CDE, D \rightarrow A\}$ .
9. With suitable example, explain super key, candidate key, primary key, alternate key and composite key. 2+2+2+2+2