Exam Number: _____

# KADI SARVA VISHWAVIDYALAYA
# B.E. 3rd SEM (ATKT) EXAMINATION MAY 2023

**Subject Name: Database Management Systems (DBMS)** **Subject Code: CT306-N**
**Date: 18/05/2023 (Thursday)** **Time: 10:000 AM to 01:00 PM** **Total marks: 70**

**Instructions:**

1. **Answer each section in separate Answer sheet.**
2. **All questions are compulsory.**
3. **Indicate clearly, the options you attempt along with its respective question number.**
4. **Use the last page of main supplementary for rough work.**

## Section-I

| | | |
|---|---|---|
| Q.1 (A) | What is DBMS? Explain any four real time application of DBMS. | (5) |
| Q.1 (B) | Explain the following terms:<br>1. Entity 2. Attribute 3. Weak Entity Sets 4. Relationship 5. Mapping Cardinalities. | (5) |
| Q.1 (C) | Explain DDL and DML with example. | (5) |
| | **OR** | |
| Q.1 (C) | What is Candidate key? Explain Primary Key and Foreign key with example. | (5) |
| | | |
| Q.2 (A) | What is Relational Algebra? Explain different operation of Relation Algebra. | (5) |
| Q.2 (B) | What is Aggregate function in SQL? List and explain all in brief. | (5) |
| | **OR** | |
| Q.2 (A) | What is function dependency? Explain type of Function Dependency with example. | (5) |
| Q.2 (B) | Explain different database users. | (5) |
| | | |
| Q.3 (A) | Draw E – R Diagram for the: College Management System | (5) |
| Q.3 (B) | What is normalization? What is the need for normalization? Explain 1NF, 2NF and 3NF? | (5) |
| | **OR** | |
| Q.3 (A) | Draw E – R Diagram for the: Online Shopping System | (5) |
| Q.3 (B) | Given FD's for relation R{A,B,C,D,E,F}. Find closure of FD sets by applying Armstrong axioms?<br>$A \rightarrow B, A \rightarrow C, CD \rightarrow E, CD \rightarrow F, B \rightarrow E$ | (5) |

## Section-II

| | | |
|---|---|---|
| Q.4 (A) | Consider following schema and write SQL for given statements.<br>Student(RollNo, Name, Age, Sex, City, Mobile, Marks)<br>Write query to<br>(i) Display name of students whose are living in the city 'Ahmedbad'.<br>(ii) Display name of students who got more than 60 marks.<br>(iii) Add the new column named 'DOB' to Student table.<br>(iv) Display all the details of only Male students.<br>(V) Drop the table Student | (5) |
| Q.4 (B) | Explain Query Optimization Process. | (5) |
| Q.4 (C) | What is Join? Explain different Join Operation with example. | (5) |
| | **OR** | |
| Q.4 (C) | Explain Transaction Control Commands. | (5) |
| | | |
| Q.5 (A) | Define Transaction. Draw and explain state diagram of Transaction | (5) |
| Q.5 (B) | Write short note on: Two phase locking protocol. | (5) |
| | **OR** | |
| Q.5 (A) | Explain the concept of ACID properties in DBMS | (5) |
| Q.5 (B) | What is concurrency? What are the three problems due to concurrency? How the problems can be avoided, explain for one of the three problems. | (5) |
| | | |
| Q.6 (A) | Explain Hashing and b-trees structure in dbms | (5) |
| Q.6 (B) | What is indexing in DBMS? Explain the type of indexing in dbms. | (5) |
| | **OR** | |
| Q.6 (A) | Differentiate between web database and distributed database. | (5) |
| Q.6 (B) | What is security of data? Explain data encryption. | (5) |