

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**

**Mid Semester Examination – Oct 2019**

**Course: B. Tech in Computer Science and Engineering      Sem: V**

**Subject Name: Database Systems      Subject Code: BTCOC501**

**Max Marks: 20      Date: - 23-09-2019      Duration: - 1 Hr.**  
**05-10-2019**

**Instructions to the Students:**

1. Attempt all questions as per the instructions.
2. Assume suitable data wherever necessary.
3. Draw necessary diagram.

(Level/CO)      Marks

6

1. The attribute *name* could be structured as an attribute consisting of first name, middle initial, and last name. This type of attribute is called  
a) Simple attribute      b) Composite attribute      c) Multivalued attribute      d) Derived attribute
2. A super key is a set of one or more attributes that, taken collectively, allow us  
a) to identify uniquely an entity in the entity set      b) to make the key most powerful for faster retrieval  
c) to increase effectiveness of database access      d) none of the above

3. The set of all possible values of data item is called :  
a) Domain      b) Attribute      c) Tuples      d) None

4. A relation is in 1NF if it doesn't contain any \_\_\_\_\_  
a) Determinants      b) Repeating groups      c) Null values in primary key fields      d) Functional dependencies
5. The operation which only selects some of the columns from table and neglect the remaining columns is classified as  
a) OR operation      b) AND operation      c) TABLE operation      d) PROJECT operation
6. Using Relational Algebra the query that finds customers, who have a balance of over 1000 is  
a)  $\Pi$  Customer\_name( $\sigma$  balance > 1000 (Deposit))      b)  $\sigma$  Customer\_name( $\Pi$  balance > 1000 (Deposit))  
c)  $\Pi$  Customer\_name( $\sigma$  balance > 1000 (Borrow))      d)  $\sigma$  Customer\_name( $\Pi$  balance > 1000 (Borrow))

**Q.2 Solve Any Two of the following.**

- (A) Define functional dependency? List out and explain the Armstrong's inference rules of functional dependencies with suitable example.

- (B) What do you mean by a key? Explain the different types of keys in dbms ?

- (C) Illustrate with suitable diagram the three level-schema architecture. Why do we need mapping between schema levels?

**Q.3 Solve Any One of the following.**

- (A) Consider the following schema, write relational algebra queries for the following  
Suppliers (sid, sname, address)  
Parts (pid, pname, color)  
Catalog (sid, pid, cost)

- a. Find the sids of suppliers who supply red part.
- b. Find the name of suppliers who supply parts costing <150.
- c. Find the IDs of suppliers who supply red or green parts.
- d. Find the sids of suppliers who supply some red part or are at 221 Park street.

(B)

Consider the following attribute and normalize the table upto 3NF.

| Emp code | Dept code | Mgr code | Course code | Courses Title |
|----------|-----------|----------|-------------|---------------|
|----------|-----------|----------|-------------|---------------|

FDs mentioned for the above relation are :

Emp\_code → Dept\_code  
Emp\_code → Mgr\_code  
Course\_code → Course\_Title

\*\*\* End \*\*\*