

**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

Q.1

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1. For select operation the \_\_\_\_\_ appear in the subscript and the \_\_\_\_\_ argument appears in the parenthesis after the sigma.  
a) Predicates, relation    b) Relation, Predicates    c) Operation, Predicates    d) Relation, Operation
2. The number of entities to which another entity can be associated via a relationship set is expressed as:  
a) Entity    b) Cardinality    c) Schema    d) Attributes
3. 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))
4. Process of analyzing relation schemas to achieve minimal redundancy and insertion or update anomalies is classified as  
a) normalization of data    b) denomination of data    c) isolation of data    d) de-normalization of data
5. The number of entities to which another entity can be associated via a relationship set is expressed as:  
a) Entity    b) Cardinality    c) Schema    d) Attributes
6. Data independence means :  
a) Data is defined separately and not included in programs.  
b) Programs are not dependent on the physical attributes of data.  
c) Programs are not dependent on the logical attributes of data  
d) Both (b) and (c)

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

- (A) Explain the concept of generalization and specialization with example.
- (B) Illustrate with example the use of aggregate operators supported by SQL.
- (C) Discuss the concept of normalizations and explain its types.

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

- 1) Consider the following schema, write relational algebra queries for the following  
Suppliers (sid, sname, address)  
Parts (pid, pname, color)  
Catalog (sid, pid, cost)  
i) Find the sids of suppliers who supply every part.  
ii) Find the name of suppliers who supply some red parts.  
iii) Find the IDs of suppliers who supply only red parts.  
iv) Find the sids of suppliers who supply some red part or are at 221 Park street.
- (B) Draw an ER diagram for small college database comprising the entity types DEPARTMENT, COURSE, STUDENT and LECTURER. Each department has many lecturers, one of whom is head of department. A lecturer belongs to only one department. Each department offers many different courses, each of which is taught by a single lecturer. A student may enrol for many courses offered by different department.

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