# QUESTION 2017

## Group – A
## (Multiple Choice Type Questions)

**1. Choose the correct alternatives for any *ten* of the following:**

i) Relational algebra is a ..... language.

a) non-procedural
✓b) procedural
c) programming
d) none of these

ii) Which of the following clauses is used to enforce a condition on a SQL statement containing "group by" clause?

a) Where
✓b) Having
c) Order by
d) none of these

iii) What is the cardinality of a table with 100 rows and 10 columns?

a) 1000
✓b) 100
c) 10
d) 10000

iv) The main goal of indexing is to

✓a) search an item faster from a table
b) insert an item faster into a table
c) delete an item faster into a table
d) none of these

v) The collection of information stored in a database at a particular moment is called as

a) Schema
✓b) instance of the database
c) data domain
d) independence

vi) Grant and revoke are ..... statements

a) DDL
✓b) TCL
c) DCL
d) DML

vii) Referential integrity is directly related to

a) relational key
✓b) Foreign key
c) Primary key
d) Candidate key

viii) Generalization is a ..... approach

✓a) bottom up
b) top down
c) both (a) & (b)
d) none of these

ix) Any relation that is not part of the logical model but is made visible to a user as a virtual relation, is called as

a) relation
✓b) view
c) tuple
d) none of these

x) Normalization removes

a) dependency of data
b) uniqueness of data
✓c) redundancy of data
d) none of these

xi) Which is the SQL command to remove rows from a table?

a) REMOVE
✓b) DELETE
c) TRUNCATE
d) all of these

**Group – B**

**(Short Answer Type Questions)**

2. Explain the different levels of abstraction of the data base management system

**See Topic: INTRODUCTION, Short Answer Type Question No. 12.**

3. What is constraint? Explain domain constraint and Entity Integrity constraint

**See Topic: RELATIONAL MODEL, Short Answer Type Question No. 12.**

4. What is Relationship? Explain different degrees of relationship.

**See Topic: ENTITY-RELATIONSHIP MODEL, Short Answer Type Question No. 7.**

5. "All primary keys are the super keys but converse is not true."– Clarify. Define multi-valued attribute and composite attribute with suitable example.

**See Topic: RELATIONAL MODEL, Short Answer Type Question No. 4(a).**

6. Consider the following tables with their functional dependencies:

Professor (Professor_code) → (Head_of_dept, Percent_time)
(Department, Professor_code) → (Head_of_dept, Percent_time)
(Department) → (Head_of_dept)
(Head_of_dept, Professor_code) → (Department, Percent_time)

It is assumed that –

i) A professor can work in more than one department
ii) The percentage of the time he spends in each department is given
iii) Each department has one Head_of_dept

Normalize the table up to BCNF

**See Topic: FUNCTIONAL DEPENDENCIES AND NORMALIZATION, Short Answer Type Question No. 10.**

## Group – C
### (Long Answer Type Questions)

7. a) Explain the ACID properties for a transaction.
b) Explain all the states of a transaction with example for each state.
c) What is a schedule? Give an example of a serial schedule with two transactions.

**a) See Topic: TRANSACTION & CONCURRENCY CONTROL, Short Answer Type Question No. 1.**
**b) See Topic: TRANSACTION & CONCURRENCY CONTROL, Short Answer Type Question No. 2.**
**c) See Topic: TRANSACTION & CONCURRENCY CONTROL, Short Answer Type Question No. 3.**

8. Consider the following two schemas:
EMPLOYEE (EMP#, ENAME, JOB, HIREDATE, MANAGER#, SALARY, COMM, DEPT#)
DEPARTMENT (DEPT#, DNAME, LOCATION)
Perform the following queries on the tables (write appropriate SQL statement):
i) List the name, salary and PF amounts of all employees (PF is calculated at 10% of the basic)
ii) List the number of employees and average salary in DEPT#20
iii) List the department number and total salary payable in each department
iv) List the names of the employees who are more than 20 years old in the company
v) List the names of the employee whose name either starts or ends with 'S'.

**See Topic: SQL, Long Answer Type Question No. 3.**



9. a) Differentiate between hierarchical, network and relational model
b) Draw an E-R Diagram for a library management system.
c) Explain the following terms with example: Aggregation, Specialization, Generalization, Derived Attribute, Unary Relationship

**a) See Topic: INTRODUCTION, Long Answer Type Question No. 2(a).**
**b) See Topic: ENTITY-RELATIONSHIP MODEL, Long Answer Type Question No.7.**
**c) Aggregation, Specialization, Generalization, Derived Attribute: See Topic: INTRODUCTION, Long Answer Type Question No. 5.**
**Unary Relationship: See Topic: ENTITY-RELATIONSHIP MODEL, Short Answer Type Question No. 7.**

10. a) Proof with an example that a relation in BCNF is in 3NF, but the converse is not true.
b) Find out the candidate Keys for the following relation R:
R (A,B,C,D,E,H) , F = {A→B, BC→D, E→C, D→A}
c) For relation R(L, M, N, O, P) the following FD's hold:
M→O, NO→P, P→L, L→MN
R is decomposed into R1 = (L, M, N, P) and R2 = (M, O)
i) Is the above decomposition lossless-join decomposition? Explain
ii) Is the above decomposition dependency preserving? Explain.

**a) See Topic: FUNCTIONAL DEPENDENCIES AND NORMALIZATION, Short Answer Type Question No. 14.**

**b) See Topic: RELATIONAL MODEL, Long Answer Type Question No. 8.**

**c) See Topic: FUNCTIONAL DEPENDENCIES AND NORMALIZATION, Long Answer Type Question No. 11.**

11. Write the short notes any three of the following:

a) Primary Indexing

b) Database approach and the file based approach

c) Natural join and Equi join

d) B-Tree

e) Strong entity and weak entity

**a) See Topic: STORAGE STRATEGIES, Long Answer Type Question No. 5(f).**

**b) See Topic: STORAGE STRATEGIES, Long Answer Type Question No. 5(g).**

**c) See Topic: RELATIONAL MODEL, Long Answer Type Question No. 9 (f) & (g).**

**d) See Topic: STORAGE STRATEGIES, Long Answer Type Question No. 5(h).**

**e) See Topic: ENTITY-RELATIONSHIP MODEL, Long Answer Type Question No. 8 (b).**