B.E./B.TECH. Degree Examination, January 2021

Semester - IV

CS16402 – Database Management System

(Regulation 2016)

Time: Three hours Maximum: 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. Consider an application for Club membership. There are many clubs at different locations. A club can have many members. Each member belonging to a particular club has a unique identity number. The member id can be same for different clubs. The below relations are created.

   Club (ClubId, Name, Location)

   Member (ClubId, MemberId, Name, Address)

   Identify the Foreign key for Club relation.

   a) Foreign key does not exist

   b) Foreign key exists

2. A functional dependency is a relationship between or among

   a) Entities b) Rows c) Attributes d) Tables

3. A relation is in 2NF if:

   a) All the values of non-key attributes are dependent fully on the candidate key.

   b) Any non-key attribute that are dependent on only part of the candidate key should be moved to another relation where the partial key is the actual full key.

   c) It must be already in the 1NF.

   d) All of the above.

4. Which of the following statements are TRUE regarding subqueries? (Choose two)

   a) A subquery can retrieve zero or more rows

   b) Only two subqueries can be placed at one level

   c) A subquery can appear on either side of a comparison operator

   d) There is no limit on the number of subquery levels in the WHERE clause of a SELECT statement

5. When is a transaction said to roll back?
6. Differentiate Dense Index and Sparse Index.
7. What is the use of RAID?
8. What is OLAP?

PART B - (4 X16 = 64 marks)

09. (a) Construct an E-R diagram for Banking system with all possible notations and state any assumptions that you make. **(16)**

(OR)

(b) Consider the following relations for an Order-processing Database Application in a Company: **(16)**

CUSTOMER (CUSTNO, CNAME, CITY)

ORDER (ORDERNO, ODATE, CUSTNO, ORD_AMT)

ORDER_ITEM (ORDERNO, ITEMNO, QTY)

ITEM (ITEMNO, ITEM_NAME, UNIT_PRICE)

a. Create the above relations and identify the primary key, foreign key
b. Display the customer name whose name starts with 'A'
c. Count the number of customers whose CITY is 'Chennai'
d. Display the name of the customer along with CITY who ordered items for more than Rs.1000.

10. (a) With suitable examples, show how functional dependency plays a major role in the process of normalization. **(16)**

(OR)

(b) Illustrate two phase locking protocol with an example. **(16)**

11. (a) Construct a B+ tree with the following (order of 3) **(16)**

1, 3, 5, 7, 9, 2, 4, 6, 8, 10

(OR)

(b) Compare and contrast static and dynamic hashing with suitable examples. **(16)**

12. (a) Illustrate the use of distributed databases with real time examples. **(16)**

(OR)

(b) Show how mobile databases are used in real time with examples. **(16)**