DBMS Final YEAR- Semester

Database Management Systems (SRM Institute of Science and Technology)

B.Tech. DEGREE EXAMINATION, NOVEMBER 2017

Third/ Fourth/ Fifth Semester

15IT302J – DATABASE MANAGEMENT SYSTEMS

(For the candidates admitted during the academic year 2015 – 2016 onwards)

Note:

(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.

(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours

Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

1. The descriptive property possessed by each entity set is _____.
   (A) Relation (B) Attribute
   (C) Model (D) Dataflow

2. The level of data abstraction which describes how data is actually stored is _____.
   (A) Conceptual level (B) Physical level
   (C) File level (D) View level

3. The database design that consists of multiple tables that are linked together through matching data stored in each table is called _____.
   (A) Hierarchical database (B) Network database
   (C) Relational database (D) Object oriented database

4. Which one of the following is not a role of database administrator?
   (A) Converting query form to relational algebra (B) Schema definition
   (C) Granting user authority to database (D) Acting as liaison with users

5. An abstraction concept for building composite object from their component object is called _____.
   (A) Specialization (B) Normalization
   (C) Generalization (D) Aggregation

6. Which of the following is the syntax for views where 'V' is view name?
   (A) Create view V as query name (B) Create "Query expression" as view
   (C) Create view V as query expression (D) Create view query expression

7. The _____ operations, denoted by, allows us to find tuples that are in one relation but are not in another.
   (A) Union (B) Set difference
   (C) Difference (D) Intersection

8. An attribute in a relation is a foreign key if the _____ key from one relation is used as an attribute in that relation
   (A) Candidate (B) Primary
   (C) Super (D) Sub

9. Create table manager (ID number (5), name varchar 2 (20), budget number (10)); inorder to ensure that the value of budget is non-negative, which of the following should be used?
   (A) Check (budget >0) (B) Check (budget <0)
   (C) Alter (budget >0) (D) Alter (budget <0)

10. All aggregate functions except _____ ignore null value in their input collection
    (A) Count (attribute)
    (B) Count (*)
    (C) AVG
    (D) SUM

11. Select emp_name from department where dept_name like '_____ CSE'; which one of the following has to be added into the blank to select the dept_name which has 'CSE' as its ending string?
    (A) %
    (B) -
    (C) ||
    (D) $

12. In SQL, the word 'natural' can be used with _____.
    (A) Inner join
    (B) Left outer join
    (C) Right outer join
    (D) Full outer join

13. Functional dependencies are the types of constraints that are based on _____.
    (A) Superset key
    (B) Key
    (C) Key-revised
    (D) Atomicity

14. Which forms simplifies and ensures that there is minimal data aggregates and repetitive groups?
    (A) 1 NF
    (B) 2 NF
    (C) 3 NF
    (D) BCNF

15. Tables in second normal form _____.
    (A) Eliminate all hidden dependencies
    (B) Eliminate the possibility of insertion anomalies
    (C) Have a composite key
    (D) Have all non-key fields depends on primary key

16. Which of the following is not an Armstrong's axiom?
    (A) Reflexivity rule
    (B) Pseudo transitivity rule
    (C) Augmentation rule
    (D) Transitivity rule

17. In order to maintain transactional integrity and database consistency, what technology does a DBMS deploy?
    (A) Triggers
    (B) Pointers
    (C) Locks
    (D) Cursors

18. When transaction Ti requests a data item currently held by Tj, Ti is allowed to wait only if it has a timestamp larger than that of Tj. Otherwise, Tj is rolled back is called _____.
    (A) Wait-die
    (B) Wait
    (C) Wait-wound
    (D) Wound-wait

19. With multiple disks, we can improve the transfer rate as well by _____ data across multiple disks.
    (A) Striping
    (B) Dividing
    (C) Mirroring
    (D) Swapping

20. The _____ scheme uses a page table containing pointers to all pages, the page table itself and all updates pages are copied to new location
    (A) Shadow copy
    (B) Shadow paging
    (C) Update log record
    (D) Rollback

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

21. Compare FPS and DBMS.

22. Diagrammatically explain the overview of query processing steps.

23.i. Write a SQL query to display all record whose first name ends with letter 'n'.

ii. Find out the average salary of all the employees in each department. Write a query for the above scenario.

24. Brief about 3NF with an example.

25. Explain about shared and exclusive lock modes.

26. What is deferred DB modification? Give an example.

27. Compare primary key, candidate key and super key with example.

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

28. a. Explain about the functional components of database system with neat sketch.

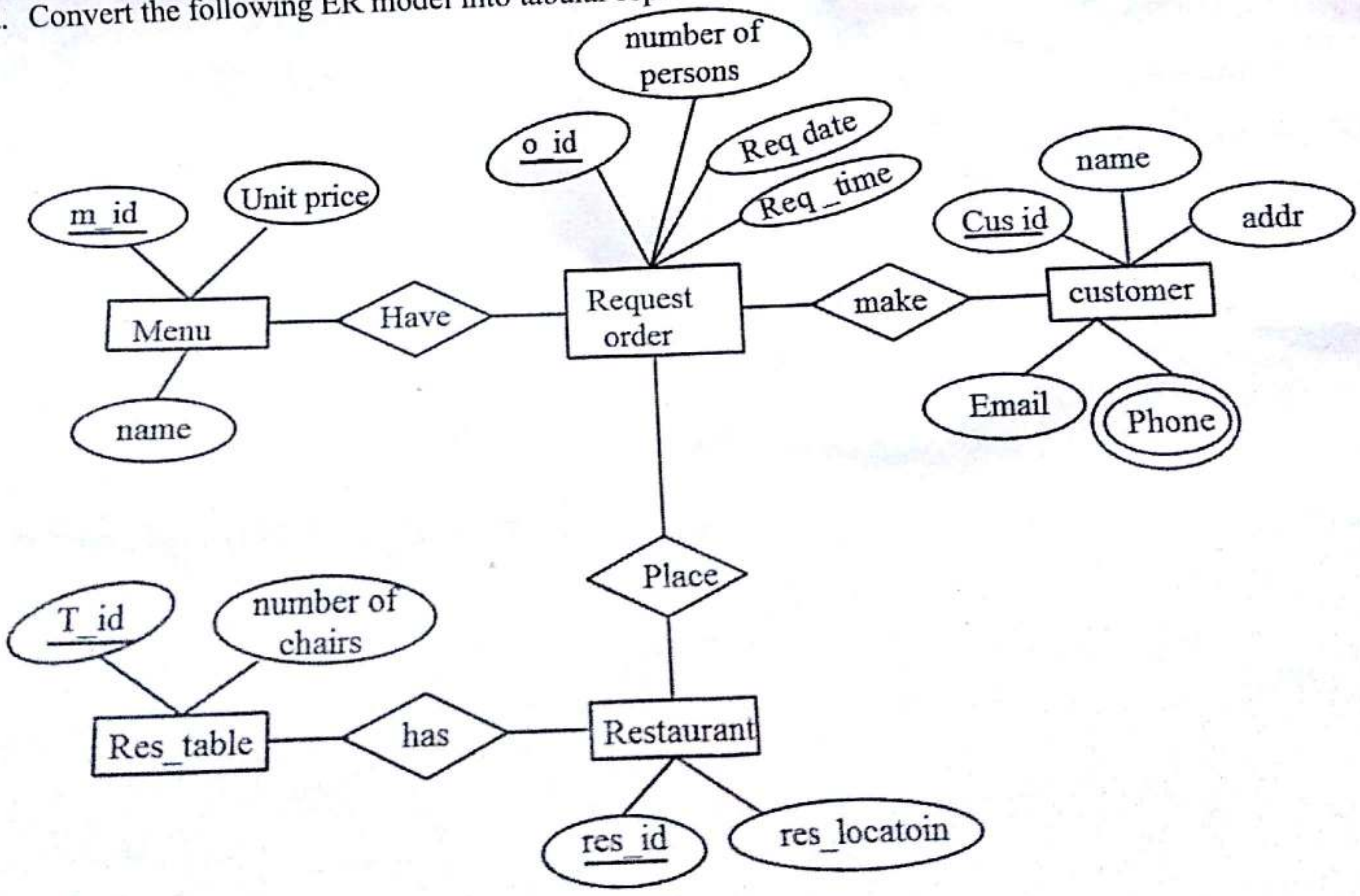
(OR)

b. Construct an ER model for the following case study:

Requirements of the company: The company is organized into departments. Each department has a name, ID, and an employee who manages the department. We can keep track of the start date of the department manager.

- Each department controls the number of projects. Each project has a name, number and it is located at a single location.
- Each employee has SSN, date_of_birth, salary, sex and address. Each employee works for one department but may work on several projects.
- Each employee may have a number of dependent. For each dependent, we keep track of their name, sex, birthdate and relationship to employee.

29. a. Convert the following ER model into tabular representation



(OR)

b. Write short note on
   (i) Views
   (ii) Select, project and rename operations of relational algebra with an example.

30. a.i. Explain about embedded SQL with suitable example. (8 Marks)

ii. Brief about check and default constraints with suitable examples. (4 Marks)

(OR)

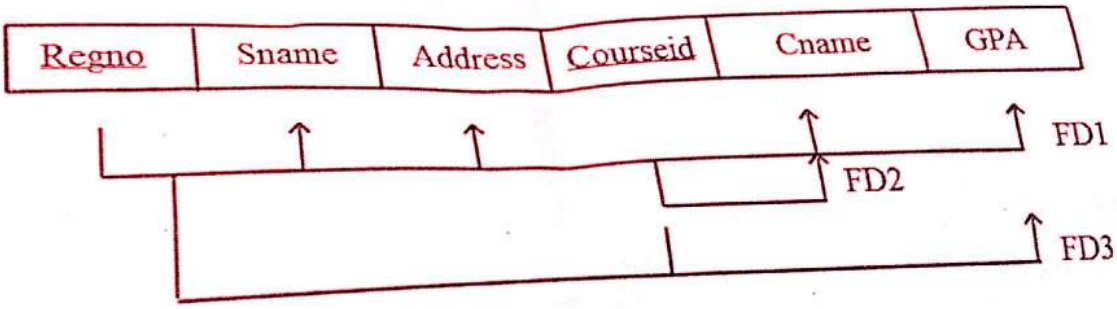
b. Write SQL statements for the following:
Table structure:
Sales person: (Sid, name, age, salary)
Customer: (Cid, Cname, city)
Order: (O_id, order data, Cid, Sid, amount)
   (i) Display the name of salesperson who are in the age group ranges from 35 to 48
   (ii) Change the customer city as "Bangalore" the customer who places the order on '01-JUN-2017'
   (iii) Find the number of salesperson whose salary greater than average salary
   (iv) Display the name of salespersons whose name contains 'a' and 'n'
   (v) Find the sum of the amount as total amount for each customer where the total amount is greater than 10000
   (vi) Find the names of salesperson who have two or more orders.

31. a. Explain about 1NF and 2 NF, 3 NF with suitable examples.

(OR)

b. For the following schema find 3NF:

Student



32. a. Explain about two phase locking protocols. Also explain how it ensures serializability.

(OR)

b. Write short notes on
   (i) Transaction properties
   (ii) Deadlock prevention schemes

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