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 **Presidency University**

**Bengaluru**

 **SCHOOL OF ENGINEERING**

**MAKE-UP EXAMINATION SEP- 2023**

**Course Code**: BCA 203

**Course Name:** Database Management Systems

**Program & Sem**: BCA & III

**Date**: 30-SEP-2023

**Time**: 9:30AM to 12:30PM

**Max Marks**: 100

**Weightage**: 50%

 **Instructions:**

1. ***Read Questions carefully before answer the questions.***
2. ***Question Paper Contains three Parts.***

**Part A [MEMORY RECALL]**

**Answer all the Questions. Each question carries TWO marks. (20Qx2M=40M)**

1. What is DBMS? Mention its two Characteristics. [CO1]

2. Mention two differences between Physical and Logical data independence. [CO1]

3. What are advantages of using DBMS over Traditional File System. [CO1]

4. List any two DDL commands. [CO2]

5. Explain Self Join [CO2]

6. Differentiate between Primary and Foreign Key. [CO2]

7. What is data Redundancy? [CO3]

8. What is data dictionary? [CO4]

9. Consider the relation R (ABCD) with FD set is {A->B, B->C, C->D, D->A}. Write all the the candidate key? [CO4]

10. Attribute which is not part of any candidate key is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [CO4]

11. The “all-or-none” property is commonly referred to as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [CO4]

12. Create table faculty (fid int, fname varchar(20)); What type of statement is this? [CO2]

13. what is cardinality?

14. What is the full form of SQL? [CO2]

15. what is the Syntax to drop the existing table ? [CO2]

16. A double rectangle in an ER diagram indicates \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [CO1]

17. Differentiate between schema and instance?

18. \_\_\_\_\_\_\_\_\_\_\_\_is the one who grant and authorizes data access in DBMS. [CO1]

19. Right hand side of functional dependency is known as? [CO4]

20. If F is a set of functional dependencies, then the closure of F is denoted by \_\_\_\_\_ [CO4]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries Ten marks. (3Qx10M=30M)**

**21.**  Draw an ER diagram for a Company Management System, keeping following points in mind. Company organized into DEPARTMENT. Each department has unique name and a particular employee who manages the department. Start date for the manager is recorded. Department may have several locations. A department controls a few PROJECT. Projects have a unique name, number, and a single location.Company’s EMPLOYEE name, ssno, address, salary, sex and birth date are recorded. An employee is assigned to one department, but may work for several projects (not necessarily controlled by her dept). Number of hours/weeks an employee works on each project is recorded; The immediate supervisor for the employee. Employee’s DEPENDENT is tracked for health insurance purposes (dependent name, birthdate, relationship to employee). Include different type of attributes, cardinality, participation, and weak entity set also. [CO1][10M]

**22.**  Consider a relation R ( A , B , C , D , E , F , G ) with the functional dependencies

 **A → BC, BC → DE, D → F, CF → G.** [CO4] [10 M]

### Find Closure of attribute A, BC

### Candidate Key

### Prime Attributes

### Non-Prime Attributes

**23.** Consider following schema for hospital management system:

Patients(patient\_id,fname,patient\_type,age,dr\_id)

Doctors(dr\_id,fname,gender,designation)

Bill(bill\_no,patient\_name,dr\_name,admit\_date,release\_date,amount,patient\_id)

Staff(staff\_id,name,dept,gender,dr\_id)

Write SQL queries for following questions:   [CO2] [5x3=15M]

1. Retrieve bill amount for patient with ID=1004, after 15% discount is given on bills with amount over 30000.
2. Retrieve patient name, doctor name and bill amount for patients treated on or before 31 May 2021.
3. Retrieve patient ID,patient name, and duration for which he/she was admitted to hospital as ‘Duration’ if duration is more than 2 months.
4. Find staff names under a doctor whose name starts with ‘R’ or ands with ‘A’.
5. Update table staff as new doctor with ID=2007 joins in place of doctor with ID=2004.

**PART-C [Problem Solving]**

**Answer all the Questions. Each question carries Ten marks. (2Qx15M=30M)** 24. In the given relation R (PQRSTUVWXY) with following functional dependencies P🡪 ST, P🡪R, Q🡪U, U🡪VW, S🡪XY. [CO4] [15 M]

1. Find out this relation is in currently which normal form –3M
2. List out all the candidate keys present in this relation – 3M
3. List out all Prime attributes and Non-Prime attributes. -- 3M
4. Decompose this relation till BCNF – 6M

25. Define Transaction and transaction states with example? Explain acid properties and problems with concurrent transaction? [CO5] [15 M]