Roll No.

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

MAKE-UP EXAMINATION - 2023

Course Code: BCA 203

Course Name: Database Management Systems

Program & Sem: BCA & III

Date: 20-JAN-2023

Time: 9:30AM to 12:30PM

Max Marks: 100

Weightage: 50%

Instructions:
  (i) ***Read Questions carefully before answer the questions.***
  (ii) ***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

$A \rightarrow BC, BC \rightarrow DE, D \rightarrow F, CF \rightarrow G.$ [CO4] [10 M]

 a. Find Closure of attribute A, BC
 b. Candidate Key
 c. Prime Attributes
 d. 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]

 a) Find out this relation is in currently which normal form –3M
 b) List out all the candidate keys present in this relation – 3M
 c) List out all Prime attributes and Non-Prime attributes. -- 3M
 d) 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]