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SEAT No. :

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S.Y. B.Sc.

COMPUTER SCIENCE

CS-202-MJ-T : Database Management System - I
(Rev. 2024 Pattern) (Semester - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.

Q1) Answer the following questions (Any 8 out of 10) : [8 × 1 = 8]

- a) What is a Candidate Key?
- b) What is a Functional Dependency?
- c) What is use of aggregate function MAX () and COUNT ().
- d) List DDL and DCL commands in SQL?
- e) Define 3NF
- f) Give Advantages of DBMS.
- g) Justify true or false "Every Primary key is Candidate key".
- h) What is data inconsistency?
- i) What is a file system?
- j) Differentiate between strong and weak entity.

Q2) Answer the following questions (Any 4 out of 5) : [4 × 2 = 8]

- a) List the different types of users of a DBMS and explain any one of them.
- b) What are set operations in SQL? Explain any one set operations with example.
- c) Explain Order by Clause with example.
- d) What is DML? Explain in brief.
- e) State the symbols used in E-R D to represent i) Entity ii) Relationship iii) Attribute.

P.T.O.

Q3) Answer the following questions (Any 2 out of 3) :

[2 × 4 = 8]

- a) Consider the following relations:

Doctor (dno, d_name, specialization, charges)

Hospital (hno, h_name, city)

Doctor & Hospital are related with **Many to One** relationships.

Create a relational database in 3NF & solve the following queries in SQL.

- i) Find the names of Doctors who are working with "SopanDev" Hospital.
- ii) Find the Hospitals from "Saswad" City.
- iii) Find the doctors whose specialization is 'Dental' in 'Poona Hospital'

- b) Consider the following relation:

R (A, B, C, D, E) and the set of FD's defined on

R as : F = {A→B, CD→E, A→C, B→D, E→A}

Compute the closure of F i.e. F⁺

- c) Consider the following Entities and Relationships & solve the queries:

Proj (Pno, pname, ptype, duration)

Emp (eno, ename, qualification, salary)

Relation between **Proj** and **Emp** is **Many to Many**.

- i) Find the employees who are working on 'ROBOTICS' project.
- ii) Find Maximum number of Employees works on one project.
- iii) Update- increase the salary of every Employee by 15%.
- iv) Display project name and count of employees working on each project.