Total No. of Questions : 5]

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.

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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. $\mathbf{F^+}$

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.

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Q4) **Answer the following questions (Any 2 out of 3) :** **[2 × 4 = 8]**

a) Explain specialization & generalization with suitable diagrams.

b) "Diamond" is an agency for flat booking and it has number of builders and agents who are jointly working. A customer can get a flat for residential or commercial purpose. If customer is approached through an agent the agency and builders are giving some commission to the agent. Agent shows various flats and sites within various location Draw ER Diagram for above case study.

c) "Suyog Hotel" has many rooms. Rooms are classified as AC and Non-AC. Hotel provides the discount to customers who visit the hotel more than once. Hotel also has food section and laundry section. This facility gives to customer as per customer's requirement. Every room of hotel has TV and telephone facility, which charge with the total cost of room. Draw an E-R diagram for above case study.

Q5) **Answer the following questions (Any 1 out of 2) :** **[1 × 3 = 3]**

a) Explain the concept of data abstraction in DBMS.

b) What are Armstrong's Axioms? State and explain them.

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