

**PGDCSA Sem.-1 Examination**  
**Relational Database & Mgmt Systems**  
**January-2025**

Time : 3-00 Hours]

[Max. Marks : 50

**Instructions:**

1. Write each session in separate answer book.
2. Numbers to the right indicate full marks of the question.

**SESSION – I**

- Q-1 Attempt the following (any three) 9**
1. Write the functions need to be performed by DBA.
  2. Explain different levels of Data abstraction with appropriate figure.
  3. Define the followings  
i. Domain ii. Entity iii. Attribute
  4. Define: Data Model. Only write name of 3 types of data model.
- Q-2 Attempt the following 10**
- A company database needs to store information about employees (identified by ssn, with salary and phone as attributes), departments (identified by dno, with dname and budget as attributes), and children of employees (with name and age as attributes). Employees work in departments; each department is managed by an employee; a child must be identified uniquely by name when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company.
- Draw an ER diagram that captures above information.
- Q-3 Attempt the following (any three) 6**
1. What is DBMS? Explain disadvantages of DBMS.
  2. Differentiate with example: simple and composite attribute.
  3. What is a data dictionary? What are its contents?
  4. Distinguish between logical and physical data independence.

(P.T.○)

Q-4 Attempt the following (any three)

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1. Define the following with example  
i. Super Key ii. Candidate Key iii. Primary Key iv. Foreign Key
2. Define: normalization? Explain Insert, Update and Delete anomalies with appropriate example.
3. Normalize the following table data up to BCNF. Write only table name with attribute at each Normal Form. Do not write data value in each normal form.

Proj-ID	Proj-Name	Proj-Mgr-ID	Emp-ID	Emp-Name	Emp-Dpt	Emp-Hrly-Rate	Total-Hrs
100	E-commerce	789487453	123423479	Hemant	MIS	65	10
			980808980	Jayesh	TechSupport	35	6
			234809000	Akhil	TechSupport	35	6
			542298973	Jatin	TechDoc	30	12
110	Distance-Ed	820972445	432329700	Manoj	MIS	65	5
			689231199	Rajesh	TechSupport	35	12
			712093093	Harish	TechDoc	30	8
120	Cyber	980212343	834920043	Lalit	Engineering	80	4
			380802233	Hardik	TechSupport	35	11
			553208932	Om	TechDoc	30	12
			123423479	Hemant	MIS	65	07
130	Nitts	550227043	340783453	Shailesh	MIS	65	07

4. Write all the 6 rules of Armstrong's axioms.

Q-5 Write SQL statement for the following database (any five)

10

Company (comp\_id, comp\_name, comp\_add, comp\_city, head\_office)  
Employee (emp\_id, name, gender, address, city, designation, basic, comp\_id, birth\_date, join\_date)

- 1 Display all the company name which first letter is 'R'
- 2 Display all the employee whose gender is 'female'.
- 3 Display employee name and company name where the employees are working.
- 4 List information about all female employees whose designation is 'Manager'.
- 5 Add a column email in the employee table.
- 6 Display all the employee who has more than 10 years of experience.
- 7 Display employee details whose salary is maximum.

OR

Q-5 List various fundamental relation algebra operators and explain any four with appropriate example. 10

Q-6 Do as directed

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1. State True or False:  
Every primary key is always also a super key.
2. State True or False:  
A relation is in 3NF is always in BCNF.
3. What do you mean denormalization?