

Total No. of Questions : 8]

SEAT No. :

**P9140**

**[6179]-266**

[Total No. of Pages : 2

**S.E. (Artificial Intelligence & Machine Learning)**  
**DATABASE MANAGEMENT SYSTEM**  
**(2019 Pattern) (Semester - IV) (218554)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Neat diagrams must be drawn wherever necessary.*
- 2) Figures to the right side indicate full marks.*
- 3) Assume Suitable data if necessary.*

**Q1) a)** Consider the following schema for a company database **[8]**

Employee (Name, SSN, Address, Sex, Salary, Dno)  
Department (Dname, Dnumber, MGRSSN, MGRSTART Date)  
Dept-Locations (Dnumber, Dlocations)  
Project (Pname, Pnumber, Plocations, Dnum)  
Works-On (ESSN, PNo, Hours)  
Dependent (ESSN, Dependent-name, Sex, Bdate, Relationship)  
Give the queries in SQL:

- i) Retrieve the names and address of employees who work for “Research” Department.
  - ii) List all the project names on which employee “Smith” is working.
  - iii) Retrieve all employees in Dept. 5 whose salary is between 30,000 and 40,000.
  - iv) Retrieve the name of each employee who works on all the projects controlled by department number 5.
- b) Compare stored procedure and functions from PL-SQL. **[5]**
- c) What is the significance of views in SQL? Give SQL statement to update data. **[5]**

OR

**Q2) a)** Use the schema and answer the queries in SQL. **[8]**

SAILORS(Sid, Sname, rating, age)  
BOATS(bid, bname, color)  
RESERVES (sid, bid, day)

- i) Find names of sailors who reserved green boat
  - ii) Find the colors of boats reserved by “Ramesh”
  - iii) Find names of sailors who have reserved a red or a green boat.
  - iv) Find the names of the sailors who have reserved a red boat
- b) What is trigger? How it works? Explain with the help of example. **[5]**
- c) Explain with an example aggregate functions and grouping used with SQL. **[5]**

**P.T.O.**

- Q3)** a) Define BCNF. How does it differ from 3NF? What is it considered a stronger form of 3NF? Explain with appropriate example. [8]  
 b) What do you mean by equivalent minimal set of functional dependencies? Explain with example. [5]  
 c) What do you mean by [4]  
     i) Insertion Anomaly  
     ii) Deletion Anomaly

OR

- Q4)** a) Which are various measures of query cost? Explain with example. [8]  
 b) What is the dependency preservation property for decomposition? Why is it important? [5]  
 c) Explain each of the following with example. [4]  
     i) 1NF  
     ii) 2NF

- Q5)** a) What is schedule? What are the various ways for Serializability checks? [6]  
 b) What is deadlock? Explain how deadlock detection and prevention is done. [6]  
 c) When schedule can be called as recoverable schedule? Explain with example. [6]

OR

- Q6)** a) What is concept of Transaction? Which properties transaction must ensure? Explain each property. [6]  
 b) Compare two protocols used for concurrency control. [6]  
 c) Write short note on : Shadow paging. [6]

- Q7)** a) Explain architecture of parallel databases. [6]  
 b) How atomicity is ensured in distributed databases? Explain protocol used for it. [6]  
 c) Write short note on NoSQL databases. [5]

OR

- Q8)** a) What are various data distribution strategies in distributed databases? [6]  
 b) Explain 2 tier and 3 tier architecture of databases with suitable diagram. [6]  
 c) Write short note on XML databases. [5]

