**SARDAR VALLABHBHAI PATEL INSTITUTE OF TECHNOLOGY, VASAD**

**DEPT: INFORMATION TECHNOLOGY/ COMPUTER ENGINEERING**

**SUBJECT: DATABASE MANAGEMENT SYSTEMS**

**SUBJECT CODE: 2130703**

**B.E. 3rd Semester**

**Question bank for mid semester Exam**

1. What is database and DBMS? What are the advantages of DBMS?
2. What are the different types of DBMS?
3. What is file system management? What are the advantages and disadvantages of file system management?
4. Explain different components of database environment with a neat diagram?
5. Explain all DBMS functions in detail.
6. Explain costs and risks of database approach.
7. Explain in detail range of applications.
8. With neat sketch explain the structure of DBMS?
9. Explain the characteristics of people who deal with databases?
10. What are the different types of data models? Explain them in detail.
11. Explain different data models based on degree of abstraction.
12. What is E-R model? Explain.
13. Explain different keys and integrity constraints available in DBMS.
14. What is a relationship? Explain different types of relationships in detail.
15. Explain different Codd’s relational database rules.
16. What is an entity? What are strong and weak entities and associative entities?
17. What is an attribute? Explain different types of attributes.
18. What is a degree of relationship? Explain various degrees of relationships in detail.
19. Explain step wise procedure of how do you develop an ER diagram using an example of tiny college.
20. What are various database design challenges while developing an ER diagram.
21. Explain the steps involved in the database design?
22. A university database contains information about teachers and courses. Teachers teach courses , each of the following situations concerns the teachers relationship set. For each situation Draw an ER diagram that describes it.

1).  Every teacher must teach some course.

2).  Teacher can teach the same course in several semesters, and each offers must be recorded.

3).  Every Professor must teach some course.

4).  Explain about weak entries, class hierarch and aggregation.

1. What is normalization?  Explain 1st, 2nd and 3rd normal forms with examples.
2. Explain Boyce-Codd normal form, 4th normal form with examples..
3. Define FD and Attribute closure.
4. Define different Normal forms with examples.
5. Explain specialization hierarchy and inheritance.
6. Explain subtype discriminator, disjoint and overlapping constraints and completeness constraints.
7. Explain when to use primary keys, composite primary keys.
8. Explain attribute inheritance with example.
9. Explain different DDL, DML AND DCL commands in detail with examples.
10. Explain different data types in SQL? Explain the syntax of creating a table..
11. Explain the complete syntax of select statement? What are the different comparision and logical operators used in it.
12. Explain some special operators used in SQL.
13. What are order by, group by and having clauses? Explain them with suitable examples.
14. What are aggregate functions? Explain them in detail with examples.
15. What are views or virtual tables? Explain their creation.
16. Explain different types of joins with suitable examples.
17. Define relation schema and a relation instance.
18. Write the syntax for the following commands:

1)      Creating a table

2)      Inserting values into it

3)      Selecting values from a table

4)      Deleting row from a table

1. Define a View?
2. Answer each of the following questions  briefly:

The questions are based on the following relational scheme

Emp (eid: integer, enami: String, age: integer, salary:real

Works (eid: integer, did: integer, Pet-time: integer )

Dept ( did: integer, dnaname : string, budget : real, managerid: integer).

1).  Write the SQL Statements required to create the above relations including appropriate versions of all primary key and foreign key constraint.

2).  Write an SQL Statement to give every employee a 15% raise.

3).  Write the conceptual Evolution strategy for select statement?

1. Explain the following operators in relational Algebra.

1).  Selection  2) Projection   3) Set operators   4) join

1. What are relational set operators? Explain with examples.
2. Explain join operators with using and on clauses.
3. Explain different SQL functions of various categories with suitable examples.
4. What is data independence ? Explain the difference between physical and logical

data independence with example.

1. What are the responsibilities of a DBA ?
2. Explain following Term with suitable example

(1) Primary Key (2) Candidate Key (3) Super Key (4) On delete cascade (5) entity (6) attribute (7) Relationalship

1. Write down the query for the following table where primary keys are underlined.

Person(ss#, name, address)

Car(license, year, model)

Accident(date, driver, damage-amount)

Owns(ss#, license)

Log(license, date, driver)

(1) find the total number of people whose cars were involved in accidents in 2009.

(2) Find the number of accidents in which the cars belonging to “S.Sudarshan”

(3) Add a new customer to the database.

(4) Add a new accident recorded for the Santro belonging to “KORTH”

1. Consider the employee data. Give an expression in SQL for the following query :

Employee(employee-name, street,city)

Works(employee-name, company-name,salary)

Company(company-name, city)

Manages(employee-name, manager-name)

(1) find the name of all employees who work for State Bank.

(2) Find the names and cities of residence of all employees who work for State Bank.

(3) Find all employee in the database who do not work for State Bank.

(4) Find all employee in the database who earn more than every employee of UCO Bank.

1. Draw E – R Diagram for the School Management System and Library Management System
2. Consider following schema and write SQL for given statements.

Student(Rollno, Name, Age,Sex,City)

Student\_marks(Rollno,Sub1,Sub2,Sub3,Total,Average) Write query to

(i) Calculate and store total and average marks from Sub1, Sub2 & Sub3.

(ii) Display name of students who got more than 60 marks in subject Sub1.

(iii) Display name of students with their total and average marks.

(iv) display name of students who got equal marks in subject Sub2

1. Explain database system architecture with diagram in detail.
2. What is constraint in database? Explain types of constraints with suitable example.
3. Explain generalization and specialization in ER diagram with suitable example.
4. Explain BCNF with example.
5. Explain aggregation operation of ER diagram.
6. Explain how to find closure of a set of attributes?
7. we have following relations:

**Supplier**(S#,sname,status,city) **Parts**(P#,pname,color,weight,city)

**SP**(S#,P#,quantity) Answer the following queries in SQL.

(i) Find name of supplier for city = ‘Delhi’.

(ii) Find suppliers whose name start with ‘AB’

(iii) Find all suppliers whose status is 10, 20 or 30.

(iv) Find total number of city of all suppliers.

(v) Find s# of supplier who supplies ‘red’ part.

(vi) Count number of supplier who supplies ‘red’ part.

(vii) Sort the supplier table by sname.

**And From The Same Do The Followings**

(i) Delete records in supplier table whose status is 40.

(ii) Add one field in supplier table.

**And From The Same Do The Followings**

(i) Find name of parts whose color is ‘red’

(ii) Find parts name whose weight less than 10 kg.

(iii) Find all parts whose weight from 10 to 20 kg.

(iv)Find average weight of all parts.

(v) Find S# of supplier who supply part ‘p2’

(vi) Find name of supplier who supply maximum parts.

(vii) Sort the parts table by pname.

**And From The Same Do The Followings**

(i) Delete records in parts table whose color is ‘blue’.

(ii) Drop one field in parts table.

(iii) Explain rollback command.

1. Solve following queries with following table, where underlined attribute is

primary key.

**Person**(ss#, name, address), **Car**(license, year, model)

**Accident**(date, driver, damage-amount), **Owns**(ss#, license)

**Log**(license, date, driver)

1. Find the name of a person whose license number is ‘12345’.

2. Display name of driver with number of accidents done by that driver.

3. Add a new accident by ‘Ravi’ for ‘BMW’ car on 01/01/2013 for damage

Amount of 1.5 lakh rupees.

1. Construct E-R diagram for a hospital with a set of patients and medical doctors.

Associate with each patient a log of various tests suggested by doctors and

Examinations conducted. Use Specialization and Generalization in your

Diagram.

1. Construct E-R diagram for a bank which has many branches and it supports

Different types of accounts. It also provides loans to customers. Use

Specialization and Generalization in your diagram.

1. Consider following schema and write SQL for given statements.

• student( rollno, name, branch)

• exam(rollno, subject\_code, obtained\_marks , paper\_code)

• papers(paper\_code, paper\_satter\_name, university)

( i ) Display name of student who got first class in subject ‘130703’.

(ii) Display name of all student with their total mark.

(iii) Display list number of student in each university.

(iv) Display list of student who has not given any exam..

1. With example explain various mapping cardinalities and total participation.
2. Consider following schema and represent given statements in relation algebra form.

\* Branch(branch\_name,branch\_city)

\* Account(branch\_name, acc\_no, balance)

\*Depositor(Customer\_name, acc\_no)

( i ) Find out list of customer who have account at ‘abc’ branch.

( ii ) Find out all customer who have account in ‘Ahmedabad’ city and balance is greater than 10,000.

(iii) find out list of all branch name with their maximum balanlce.

1. we have following relations:

EMP(empno, ename, jobtitle, managerno, hiredate, sal, comm, deptno)

DEPT(deptno, dname, loc) Answer the following queries in SQL.

i) Find the Employees working in the department 10, 20, 30 only.

ii) Find Employees whose names start with letter A or letter a.

iii) Find Employees along with their department name.

iv) Find Employees whose manager is KING.

v) Find the Employees who are working in Smith's department

vi) Find the Employees who get salary more than Allen’s salary.

vii)Display employees who are getting maximum salary in each department.

1. Implement following relation using SQL query.

Student(stud\_no,stud\_name,sub1,sub2,totalmark,percentage)

1. Create the table, add 5 records and display the data
2. Calculate total mark and percentage and also arrange the students on

ascending order of total mark and also make a view of it.

c. Update the mark of sub1 of student\_no=111 with 50 and also

d. Calculate totalmark and percentage accordingly.

1. Implement following relation using SQL query.

Employee(emp\_no,emp\_name,department,city,salary)

(1) Find all the employee whose emp\_no is lessthan 100 and salary more than 25000 and department is “Account”

(2) count the no of employee and Sum the salary of all employee

(3) Delete the employee having minimum salary.

1. Consider following schema and write SQL for given statements.

Student (Roll No, Name, Age, Sex, City)

Student marks (RollNo, Sub1, Sub2, Sub3, Total, and Average)

Write query to

(i) Display name and city of students whose total marks are greater than 225.

(ii) Display name of students who got more than 60 marks in each subject.

(iii) Display name of city from where more than 10 students come from.

(iv) Display a unique pair of male and female students.

1. Consider the relational schema where the primary keys are underlined:

EMPLOYEE (person-name, street, city)

WORKS (person-name, company-name, salary)

COMPANY (company-name, city)

MANAGES (person-name, manager-name)

Give an expression in the relational algebra to express each of the following queries:

1. Find the name of all employees who work for TCS.
2. Find the names and cities of residence of all employees who works for TCS.
3. Find the names, street addresses and cities of residence of all employees who work for TCS and earn more than RS.500000 per annum.
4. Find the name of all employees in this database who live in the same city as the company for which they work.
5. Find the name of all employees who live in the same city and the same street as do their managers.
6. Find the name of all employees in this database who do not work for TCS.
7. Find the name of all employees who earn more than every employee of Infosys.
8. Assume that the companies are located in several cities. Find all companies located in every city in which TCS is located.
9. Modify the database so that Ravi now lives in Mumbai.
10. Give all employees a 10% salary raise.
11. Delete all tuples in the WORKS relation for employees of Infosys.
12. Find the sum of the salaries of all employees in the WORKS relation.