Seat No. / Enrolment No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering – SEMESTER – 3 (NEW) – EXAMINATION – Summer-2025

Subject Code: 4331603 **Date: 15-05-2025**

Subject Name: Database Management

Time: 02:30 PM TO 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make Suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of simple calculators and non-programmable scientific calculators are permitted.**
5. **English version is authentic.**

			Marks
Q.1	**(a)**	Define the followingterms. 1) Metadata 2) Schema 3) Data dictionary. નીચેનાશબ્દોવ્યાખ્યાયિતકરો .1) મેટાડેટા2) સ્કીમા3) ડેટાડિક્શનરી.	**03**
	(b)	Write down advantages of Database Management system. ડેટાબેઝમેનેજમેન્ટસિસ્ટમનાફાયદાલખો.	**04**
	(c)	Explain Responsibilities of DBA. DBA નીજવાબદારીઓસમજાવો.	**07**
		OR	
	(c)	What is data abstraction? Explain three level ANSI SPARC architecture in detail. ડેટાએબ્સ્ટ્રેક્શનશુંછે? ત્રણસ્તરની ANSISPARC આર્કિટેક્ચર ને વિગતવાર સમજાવો.	**07**
Q.2	**(a)**	Differentiate Schema vs Instance સ્કીમાંઅનેઇન્સ્ટન્સનોતફાવતસમજાવો.	**03**
	(b)	Explain Specialization with example. સ્પેશ્યલાઈઝેશનઉદાહરણસાથેસમજાવો.	**04**
	(c)	What is ER diagram? Explain different symbols used in E-R diagram with example. ER ડાયાગ્રામશુંછે? ER ડાયાગ્રામમાં વપરાતા વિવિધ પ્રતીકોને ઉદાહરણ સાથે સમજાવો.	**07**
		OR	
Q.2	**(a)**	Differentiate DA vs DBA. DA અને DBA નોતફાવતસમજાવો.	**03**
	(b)	Explain Generalization with example. Generalization ઉદાહરણસાથેસમજાવો.	**04**
	(c)	What is attribute? Explain different types of attributes with example. Attributeશુંછે? વિવિધપ્રકારનાAttributesઉદાહરણસાથેસમજાવો.	**07**
Q.3	**(a)**	Explain the GRANT and REVOKE statement in SQL. SQL માંGRANTઅનેREVOKEસ્ટેટમેન્ટસમજાવો.	**03**
	(b)	Explain following Character functions. 1) INITCAP 2) SUBSTR નીચેનાCharacter functionસમજાવો .1) INITCAP 2) SUBSTR	**04**
	(c)	Consider following tables and write answers for the given queries. stud_master (enroll_no, name, city, dept) 1. Display all the student detail who study in IT dept 2. Retrieve all information about name where name begin with ‘p’. 3. Insert new student to a table. 4. Add a new column gender to a table stud_master. 5. Count the number of rows for stud_master table.	**07**

6. Display all the student detail in descending order of enroll_no
7. Destroy table stud_master along with data.

નીચેદર્શાવિલટેબલમાટે SQLક્વેરીલખો.

stud_master (enroll_no, name, city, dept)

1. Display all the student detail who study in IT dept
2. Retrieve all information about name where name begin with ‘p’.
3. Insert new student to a table.
4. Add a new column gender to a table stud_master.
5. Count the number of rows for stud_master table.
6. Display all the student detail in descending order of enroll_no
7. Destroy table stud_master along with data.

OR

Q.3 **(a)** Explain equi join with example in SQL. **03**

SQL માંequi join ઉદાહરણસાથેસમજાવો.

(b) Explain following Aggregate functions. 1) MAX 2) SUM **04**

નીચેનાAggregate function સમજાવો .1) MAX 2) SUM

(c) Write SQL queries for the following table: **07**

PRODUCT_Master: (prod_no, prod_name, profit, quantity, sell_price, cost_price)

1. Create table PRODUCT_Master.
2. Insert one record in this table.
3. Find out product having profit greater than 20000.
4. Delete product having quantity less than 5.
5. Add 2% profit in product having sell price is greater than 5000.
6. Add new field total_price to PRODUCT_Master.
7. Find out product name having no duplicate data.

નીચેદર્શાવિલટેબલમાટે SQLક્વેરીલખો.

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7. Find out product name having no duplicate data.

Q.4 **(a)** Explain fully functional dependency with example. **03**

fully functional dependency ઉદાહરણસાથેસમજાવો.

(b) Consider a following relational schema & give Relational Algebra Expressions for following queries. **04**

Employee (Emp_name, Emp_id, birth_date, Post, salary)

(i) List out all Employees having Post=” Clerk”.

(ii) Find out only Emp_id and Emp_name having salary greater than 2000 and post =’Manager’.

નીચેદર્શાવિલરિલેશનલસ્કીમાંનેધ્યાનમાંલઇદરેકક્વેરીમાટેરિલેશનલએલજીબ્રાએ ક્સપ્રેસનલખો.

Employee (Emp_name, Emp_id, birth_date, Post, salary)

(i) List out all Employees having Post=” Clerk”.

(ii) Find out only Emp_id and Emp_name having salary greater than 2000 and post =’Manager’.

(c) What are the criteria of 2NF? Find out different functional dependencies in given relation and normalize it into 2NF. **07**

Student_ID	Course_ID	Student_Name	Course_Name
S01	C01	ABC	PHP
S02	C03	DEF	JAVA
S03	C05	GHI	CSS
S01	C02	ABC	HTML

2NF નાક્રિટેરિયાશુંછે? આપેલરિલેશન માટે વિવિધ ફંકશનલ ડિપેન્ડન્સી દર્શાવો અને રેલશન ને 2NF માં નૉર્મલાઇઝકરો.

Student_ID	Course_ID	Student_Name	Course_Name
S01	C01	ABC	PHP
S02	C03	DEF	JAVA
S03	C05	GHI	CSS
S01	C02	ABC	HTML

OR

Q.4 **(a)** Explain 3NF with example. **03**

3NFઉદાહરણ સાથે સમજાવો.

(b) Consider a following Relational Schema and give Relational Algebra Expression for the following Queries. **04**

Students (Name, SPI, DOB, Enrollment No)

i) List out all students whose SPI is greater than 7.0.

ii) List name, DOB of student whose enrollment number is 007.

નીચે દર્શાવેલ રિલેશન લસ્કી માંને ધ્યાનમાં લઇ દરેક ક્વેરી માટે રિલેશન લએલ જીબ્રા એક્સપ્રેસન લખો.

Students (Name, SPI, DOB, Enrollment No)

i) List out all students whose SPI is greater than 7.0.

ii) List name, DOB of student whose enrollment number is 007.

(c) What are the criteria of 1NF? Normalize given table into 1NF with two different techniques. **07**

EnrollmentNo	Name	Subjects
001	DEF	Maths,Physics,Chemistry
002	XYZ	History,Biology,English

1NF ના ક્રાઈટેરિયા શુછે? નીચે દર્શાવેલ ટેબલને 1NF માં બેઅલ ગઅલગ પધ્ધતિથી નૉરમલાઈઝકરો.

EnrollmentNo	Name	Subjects
001	DEF	Maths,Physics,Chemistry
002	XYZ	History,Biology,English

Q.5 **(a)** Explain ACID properties of transaction. **03**

ટ્રાન્ઝેકશનની ACIDપ્રોપર્ટી સસમજાવો.

(b) Create the following table having following specification. **04**

STUDENT: (stu_id, stu_name, Address, City, contact_no, Branch_name)

(i) Define stu_name as not null.

(ii) Student branch must be ‘IT’, ‘Computer’, ‘Electrical’ or ‘Civil

નીચે દર્શાવે લસ્પેસિફિકેશન મુજબ ટેબલ બનાવો.

STUDENT: (stu_id, stu_name, Address, City, contact_no, Branch_name)

(i) Define stu_name as not null.

(ii) Student branch must be ‘IT’, ‘Computer’, ‘Electrical’ or ‘Civil

(c) What is trigger? Write down syntax to create a trigger in oracle. Create simple trigger that display each record before inserting it into the table. **07**

ટ્રિગરશુંછે? Oracle માંટ્રિગર બનાવવા માટે સિન્ટેક્સલખો. simpleટ્રિગર બનાવો જેદરેકરે કોર્ડને table માંદાખલ કરતા પહેલા પ્રદર્શિતકરે.

OR

Q.5 **(a)** Explain problems of concurrency controlin transaction. **03**
ટ્રાન્સેકશન માં કોંકરેંસી કંટ્રોલ ના પ્રોબ્લેમ્સ સમજાવો .

(b) Create the following table having following specification. **04**
STUDENT: (stu_id, stu_name, Address, City, contact_no, Branch_name)
(i) Define stu_id as a primary key.
(ii) Stu_id must start with 'S'.

નીચે દર્શાવેલ સ્પેસિફિકેશન મુજબ ટેબલબ નાવો.
STUDENT: (stu_id, stu_name, Address, City, contact_no, Branch_name)
(i) Define stu_id as a primary key.
(ii) Stu_id must start with 'S'.

(c) What is Explicit cursor? Explain explicit cursor with simple example. **07**
એક્સપ્લિસિટકર્સર શુછે? એક્સપ્લિસિટકર્સર ઉદાહરણ સાથે સમજાવો.