

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER- III• EXAMINATION – WINTER 2020

Subject Code:4639303

Date:12/01/2021

Subject Name:Database Management Systems

Time:10:30 AM to 12:30 PM

Total Marks: 56

### Instructions:

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a) Explain different types of data models in detail. 07
- (b) Discuss Advantages of using DBMS system. 07
- Q.2 (a) Discuss the concept of DBMS Languages. 07
- (b) 1. Briefly explain in one or two sentences: 07
- i. Key attribute
  - ii. Derived Attribute
  - iii. Stored Attribute
  - iv. Composite Attribute
  - v. Descriptive Attribute
  - vi. Weak Entity Set
  - vii. Strong Entity Set
- Q.3 (1) Explain with example: 1NF, 2NF and 3NF. 07
- (2) Write a short note on “Database System Environment”. 07
- Q.4 (1) Discuss the concept of Functional Dependency in normalization. 07
- (2) What are the pitfalls of normalization? Explain different methods to resolve it. 07
- Q.5 (a) Explain the UNION, INTERSECTION and MINUS Relational Algebra operations with example. 07
- (b) Discuss ACID properties of transactions. 07
- Q.6 (a) Tables are given below: 07
- Student( Rollno, student\_name, dept\_name, CPI),
- Work(Rollno, task\_id)

Project( Task\_id, task\_nm)

Make Relational algebra for the given statements:

- i. List out all students with their roll no, name and department name.
- ii. List out all students of CE department with their roll no, name and department name.
- iii. Find out highest CPI from student table.
- iv. Find out sum of all students CPI.

(b) Discuss general operations of relational Algebra with its symbols. 07

Q.7 (a) Mention and briefly explain the different possible reasons for a transaction failure. 07

(b) Explain the working of Deferred Update and Immediate Update policies for database recovery in detail. 07

Q.8 (a) Explain transaction roll-back and cascading rollback in detail giving example. 07

(b) Explain the lock and unlock operations for a binary lock with diagram. 07

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