

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA - SEMESTER-II • EXAMINATION – WINTER • 2014****Subject Code: 2620003****Date: 03-12-2014****Subject Name: Database Management System (DBMS)****Time: 02:30 pm - 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.**

- Q.1 (a)** Explain following terms: **07**
1. DBMS
 2. Candidate Key
 3. Wound-Wait
 4. Functional Dependency
 5. Weak Entity Set
 6. Data Model
 7. Schema
- (b)** What is the purpose and Advantages of DBMS over File System? **07**
- Q.2 (a)** What is Normalization? Explain 1NF, 2NF and 3NF with suitable example. **07**
- (b)** What is ERD? Explain its Notations and Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. **07**
- OR**
- (b)** Explain Generalization and Specialization with suitable Example. **07**
- Q.3 (a)** Draw and explain the three level architecture of DBMS. **07**
- (b)** Explain Following Relational Algebra operations with appropriate example. **07**
1. Set Intersection Operation
 2. Natural Join
- OR**
- Q.3 (a)** What is Data Abstraction? Explain the difference between physical and logical data independence. **07**
- (b)** Explain Select, Project, Union and Set Difference operations in terms of Relational Algebra. **07**
- Q.4 (a)** Define Deadlock. Discuss deadlock prevention and detection method in brief. **07**
- (b)** List and explain in brief the ACID properties of transaction with example. **07**
- OR**
- Q.4 (a)** List and Explain Armstrong rules with its usefulness in brief. **07**
- (b)** Explain Two phase locking with its advantages and disadvantages. **07**
- Q.5 (a)** Explain the difference between a weak and a strong entity set. Can we convert any weak entity set into strong entity set? If yes then How and if No then Why? **07**
- (b)** Explain Deferred Database Modification and Immediate Database Modification Techniques of log based recovery systems. **07**
- OR**
- Q.5 (a)** Answer the following. **07**
1. Compare 3NF and BCNF.
 2. Short note on Storage Manager.
- (b)** Explain in brief: **07**
1. Serializability
 2. Recoverability
