

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA Integrated - SEMESTER-II • EXAMINATION – SUMMER • 2015

Subject Code: 4420603

Date: 01-06-2015

Subject Name: Fundamentals of Database Management Systems

Time: 10:30 am - 01:00 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)** Define the following terms. (Each of 1 mark) **07**
- | | |
|-------------------------------|-------------------------|
| 1. Functional dependencies | 5. Cardinality |
| 2. Database management system | 6. Integrity Constraint |
| 3. Weak entity | 7. Composite Key |
| 4. Information | |
- (b)** What is E ñ R model? Explain in detail. Also explain any 5 E ñ R notations. **07**
- Q.2 (a)** Explain ANSI/SPARC Database Architecture in detail. **07**
- (b)** What is normalization? Explain 1NF, 2NF and 3NF with suitable example. **07**
- OR**
- (b)** What is Conceptual, Physical and logical Database Model? Explain with diagram. **07**
- Q.3 (a)** Explain Dr. E.F.CODD's Rules. **07**
- (b)** Explain the components of DBMS in detail. **07**
- OR**
- Q.3 (a)** Explain the problems of File Systems over DBMS. **07**
- (b)** Explain Hierarchical model with its advantages and disadvantages. **07**
- Q.4 (a)** What is relational algebra? Explain notations of relational algebra with suitable example. **07**
- (b)** List and Explain Armstrong's Axioms and specify how functional dependencies can be inferred from given ones. **07**
- OR**
- Q.4 (a)** Consider the Relational Schema where the primary keys are underlined. **07**
- Sailor(sid,sname,rating,age)
Boat(bid,bname,color)
Reserved(sid,bid,date)
1. Find name of sailor who have reserved boat # 103. (2)
 2. List the name of the sailor having age less than 35. (2)
 3. Find name of sailors who have reserved a red boat. (2)
 4. List boat having green color. (1)
- (b)** Explain types of relationships and degree of relationship with suitable example. **07**
- Q.5 (a)** What is entity and attributes? Explain different kinds of attributes with suitable example. **07**
- (b)** Draw an E ñ R diagram for library management system. **07**
- OR**
- Q.5 (a)** Why data model is necessary? Discuss relational model with its advantages and disadvantages. **07**
- (b)** What is generalization and specialization? Explain with example. **07**
