



Reg. No. :

Name :

First Semester MCA Degree (Reg./Supple./Imp.)
Examination, February 2015
MCA1C05 : DATABASE MANAGEMENT SYSTEMS
(2014 Admn.)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Note : Answer **any ten** questions. **Each** question carries **three** marks. (10×3=30)

1. Differentiate File Systems and Database Management System.
2. What is logical data independence ?
3. What is an instance ? What is a schema ?
4. What is key attribute ? Define weak and strong entity set.
5. What are three characteristics of a Relational Database system ?
6. Differentiate between primary key, candidate key and super key in ER model.
7. When is a function dependency said to be trivial ?
8. What are the pitfalls of database design ?
9. Write the tuple relational calculus expression to find the number of employees working in sales department in the given relation Employee.
Employee (SSN_NO, Name, Department)
10. Define the DIVISION operator in relational algebra using basic operators.
11. Define triggers.
12. Write a short note on Data Control Languages (DCL).

SECTION – B

Note : Answer **all** questions. **Each** question carries **ten** marks. (5×10=50)

13. a) Explain the component modules of a DBMS and their interactions with the architecture.

OR

- b) Write a detailed note on database languages.

P.T.O.



14. a) Describe the procedure of converting an E-R model to an equivalent relational model. Trace your procedure with a suitable example.

OR

b) Develop an E-R model for automation of a department works in a university considering Staff, Books, Projects, Course and Examinations as major entities. Assume suitable attributes.

15. a) Define function dependency. Derive an algorithm that preserves functional dependencies when a relation is decomposed into set of relations.

OR

b) What is normalization ? State and explain 1NF, 2NF and 3NF with examples.

16. a) Explain in detail about relational algebra, Domain relational calculus and Tuple Relational calculus with suitable examples.

OR

b) Define the five basic operators of relational algebra with an example each.

17. a) What are aggregate functions ? Discuss any four aggregate functions supported in SQL with an example relational database.

OR

b) Consider the following relations for a database :

Book (Title, Author, Accession_no, Call_No, Price, Publishers)

Refers (Teacher_Id, Call_No)

Teacher (Teacher_Id, Name, Address, Designation, D_O_B)

Write SQL statements for the following queries :

- i) To create a table 'Refers' with suitable integrity constraints.
 - ii) To retrieve the names of all the teachers who referred at least two books.
 - iii) To list the names of the books published by PHI.
 - iv) To find the total number of books with a price exceeding Rs. 500.
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