**Code: 9F00301**

MCA III Semester Supplementary Examinations May 2018

**DATABASE MANAGEMENT SYSTEMS**

(For 2012, 2013, 2014, 2015 & 2016 admitted batches only)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain database users, DBA and functions of a DBA.
(b) Compare file systems and database systems.

2 (a) What is null attribute? With suitable diagram, explain weak and strong entity set.
(b) Develop ER-diagram for a hospital with a set of patients and a set of medical doctors, associated with each patient a log of the various tests and examinations conducted.

3 Consider the following schema for company database:
Employee (Name, ESSN, Salary, DNo, SuperSSN);
Department(DName, DNos, MGRSSN);
Project(PName, PNo, DNum);
Works_ON(ESSN, PNo, Hours);
Department(ESSN, DName, Sex);
Write the queries in relational algebraand SQL
(i) List the name of employees with at least two dependants.
(ii) Find the name of employees who work on all projects controlled by department 5.
(iii) Retrieve the names of managers who do not have female dependents.

4 (a) What is the usage of 'group by' and 'having' clauses in SQL?
(b) Demonstrate the following operators in SQL with examples:
(i) SOME. (ii) EXCEPT.

5 (a) Why normalization is needed? Explain the process of normalization.
(b) Explain briefly about 3NF, 4NF and BCNF with suitable examples.

6 (a) Discuss two phase locking protocol and strict two-phase locking protocol.
(b) Discuss about conflict serializability with an example.

7 (a) Construct an ER diagram for university registrar's office. The office maintains data about each class, including the instructor, the enrollment and the time and place of the class meetings. For each student class pair a grade is recorded. Determine the entities and relationships.
(b) Draw transaction state diagram and describe each state that a transaction goes through during its execution.

8 Write short notes on:
(a) Characteristics of a database system.
(b) Entity integrity and referential integrity constraints.
(c) Different data types of SQL.

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