U.S.N ☐☐☐☐☐☐☐☐☐☐

P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Third Semester - Master of Computer Applications (MCA)
Semester End Examination; Dec. - 2015
Database Management Systems

Time: 3 hrs   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each **unit**.

UNIT - I

1 a.	Briefly explain the characteristics of the database approach.	10
b.	Define the functions performed by Database administrator and Database designer.	10
2 a.	Describe Three-schema architecture.	5
b.	With a neat diagram, explain the component modules of a DBMS.	10
c.	Describe Three-tier client/server architecture.	5

UNIT - II

3 a.	Explain the different types of symbols used in the ER-diagram.	10
b.	Construct an ER diagram and relational database schema for the COMPANY database. The company keeps track of employees, projects and departments. A department controls a number of projects and employee can work for any number of projects. The company keeps track of dependents of each employee for insurance company.	10
4 a.	Define the following terms with an example : i) Domain ii) Attribute iii) n-tuple iv) Relation schema.	10
b.	Write a short note on : i) Recursive Relationships ii) Cardinality Ratio	10

UNIT - III

5 a.	Explain the following relational algebra operations : i) SELECT ii) PROJECT iii) CARTESIAN PRODUCT iv) UNION.	10
b.	With an example, explain variations of JOIN operations.	10
6 a.	With an example, explain the update operations of the relational model.	10
b.	Explain the ER to relational mapping algorithm.	10

UNIT - IV

7 a.	Bring out different clauses of SELECT-FROM- WHERE- GROUP –HAVING with an example each.	10
b.	With example, explain aggregate functions of SQL.	10

8 a.   Explain Informal design guidelines for relational schema.   10

   b.   What is normalization? Define and explain 3NF with an example.   10

UNIT - V

9 a.   Discuss ACID properties of database transactions.   8

   b.   What are the anomalies resulting from concurrent transactions? How do you overcome this
         by a lock based protocol?   12

10 a.   How the schedules can be characterized based on serializability? Give an example.   10

    b.   What is lock? Explain the strict 2PL.   10

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