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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Second Semester, Master of Computer Applications (MCA)

Semester End Examination; May / June - 2019

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. Define DBMS. Discuss the main characteristics of database approach. 10
- b. Explain three schema architecture with a neat diagram. 6
- c. List the actors on the scene and workers behind the scene. 4
- 2 a. What are the advantages of DBMS? Explain. 10
- b. What are the different languages used in DBMS? Explain. 4
- c. Explain centralized and client-server architectures. 6

UNIT - II

- 3 a. Define attribute. Mention and explain different types of attributes with an example. 10
- b. Define the following terms with an example each :
 - i) Entity sets
 - ii) Relationship sets
 - iii) Entity types
 - iv) Relationship type
 - v) Weak Entity type
- 4 a. Draw an ER diagram for COMPANY scheme with structural constraints specified using (Min and Max) notation. Assume appropriate entities, attributes and relationship. 10
- b. Explain in detail naming conventions and design issues in ER diagram with an example. 10

UNIT - III

- 5 a. Give a brief note on different types of joins. 10
- b. Demonstrate ER-to-Relational mapping algorithm. 10
- 6 a. Define relational algebra. Explain various relational algebra operations with example. 10
- b. What are integrity constraints? Discuss the various update operations on relations and the type of integrity constraints that must be checked for each update operations. 10

UNIT - IV

- 7 a. Bring out the different clauses of SELECT-FROM-WHERE-GROUP-HAVING with an example for each. 10
- b. Write a note on embedded SQL. 4
- c. Write a short note on granting and revoking of privileges in SQL. 6
- 8 a. Describe aggregate functions in SQL. 5
- b. Briefly explain the different domain types used in SQL. 5
- c. How is a view created and dropped? What problems are associated with updating of views? 10

UNIT - V

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| 9 a. | Define functional dependency and explain all the inference rules for functional dependencies. | 10 |
| b. | Demonstrate the informal design guidelines for relation schema. | 5 |
| c. | Explain BCNF with a suitable example. | 5 |
| 10 a. | Define transaction. Explain ACID properties of Transaction. | 6 |
| b. | What is Normalization? Explain the 3NF with example. | 6 |
| c. | What is a locking protocol? Describe the strict Two-Phase locking protocol. | 8 |

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