**Reg. No. :**

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### Question Paper Code: 41835

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Information Technology

14UIT305 - DATABASE SYSTEMS

(Regulation 2014)

Duration: Three hours                                                     Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1.  Which of the following is a Data model?

    (a) Entity- Relationship model              (b) Relational data model
    (c) Object –Based data model               (d) Procedure data Model

2.  The attribute AGE is calculated from DATE_OF_BIRTH. The attribute AGE is

    (a) Single valued       (b) Multi valued       (c) Composite       (d) Derived

3.  To remove a relation from an SQL database, we use the _____ command.

    (a) Delete table        (b) Remove table       (c) Purge table       (d) Drop table

4.  In course (course_id, sec_id, semester), the course_id, sec_id and semester are _____ and course is a _____.

    (a) relations, attribute                    (b) attributes, relation
    (c) tuple, relation                          (d) tuple, attributes

5.  In the _____ normal form, a composite attribute is converted to individual attributes.

    (a) Second              (b) Third              (c) First              (d) BCNF

6.  _____ can help us detect poor E-R design.

    (a) Database design process                 (b) E-R design process
    (c) Relational scheme                        (d) Functional dependencies

7. A transaction that completes its execution successfully is said to be _____

    (a) Active           (b) Aborted          (c) Failed          (d) Committed

8. Isolation of the transactions is ensured by

    (a) Transaction management        (b) Application programmer
    (c) Concurrency control             (d) Recovery management

9. Tertiary storage is built with

    (a) a lot of money               (b) unremovable media
    (c) removable media             (d) secondary storage

10. RAID stands for _____

    (a) Redundant Arrays of Independent Disk
    (b) Reduced Array of Inexpensive Disk
    (c) Random Atomic Identifier
    (d) Repeat Atomic Inexpensive Data

## PART - B (5 x 2 = 10 Marks)

11. Define Data independence.

12. The employee information in a company is stored in the relation

Employee (name, sex, salary, deptName)

Write the SQL query for the average salary of male employees is more than the average salary in the company.

13. Why is it necessary to decompose a relation?

14. Mention the types of failures in Database transaction.

15. List the steps involved in query processing.

## PART - C (5 x 16 = 80 Marks)

16. (a) Describe with a neat diagram the three schema architecture of a database system.

                                                                   (16)

Or

    (b) Discuss the various notations used in ER model. Draw an ER model for hospital information system.                   (16)

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17. (a) Differentiate relation algebra from relational calculus. Explain the basic relational algebraic expressions with an example. (16)

Or

(b) Discuss the strengths and weakness of the trigger mechanism. Compare triggers with other integrity constraints supported by SQL. (16)

18. (a) Explain briefly about Armstrong rules on functional dependency and write the algorithm to compute functional dependency closure. (16)

Or

(b) Illustrate the use of functional dependency and multivalve dependency with suitable examples. (16)

19. (a) Analyze the use of 2-phase locking protocol in concurrency control technique. (16)

Or

(b) Explain various recovery techniques during failure of a transaction in detail along with system recovery. (16)

20. (a) Discuss in detail about hashing techniques with suitable examples. (16)

Or

(b) What are the cost components for query execution? How is the sort and join operations carried out in query processing. (16)

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