**Reg. No. :** ☐☐☐☐☐☐☐☐☐☐

## Question Paper Code: 43805

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. Administrative supervision of database activity is responsibility of

   (a) Database Administrator                (b) Database Manager
   (c) DB Server                            (d) Programmer

3. Which one of the following is used to define the structure of the relation, deleting relations and relating schemas?

   (a) Data Manipulation language            (b) Data Definition Language
   (c) Query                                (d) Relational Schema

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. Who developed the normalization process.

    (a) E.F. codd        (b) F.F. codd        (c) E.E. codd     (d) None of the mentioned

6. Which forms are based on the concept of functional dependency?

    (a) 1NF                (b2NF                (c) 3NF             (d) 4NF

7. In order to undo the work of transaction after last commit _____ is used.

    (a) View             (b) Commit           (c) Rollback      (d) Flashback

8. When transaction $Ti$ requests a data item currently held by $Tj$, Ti is allowed to wait only if it has a timestamp smaller than that of $Tj$ (that is, $Ti$ is older than $Tj$). Otherwise, $Ti$ is rolled back (dies). This is called

    (a) Wait-die         (b) Wait-wound       (c) Wound-wait    (d) Wait

9. Tertiary storage is built with

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

10. How many tables can be included with a join?

    (a) One             (b) Two               (c) Three          (d) All the above

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

11. Discuss the usage of a semi structured data model.

12. Define materialized views with an example.

13. When a relation schema is said to be in forth normal form?

14. State the benefits of strict two - phase locking.

15. List the factors to be considered in choosing a RAID level.

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

16. (a) Denote the various symbols used in E-R diagram. Construct an ER-diagram for a University with a set of students and set of professors. Associate the students and professors with respective departments. For each student enroll their personal details and for each staff enroll their experience and courses taught details.     (16)

Or

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

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

Or

(b) (i) Discuss the strengths and weakness of the trigger mechanism. Compare triggers with other integrity constraints supported by SQL. (8)

(ii) Outline tuple relational calculus. (8)

18. (a) Interpret the following concepts with suitable definitions

(i) Lossless decomposition (8)

(ii) Dependency preservation (8)

Or

(b) Explain 1NF, 2NF, 3NF and BCNF with suitable example. (16)

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

Or

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

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

Or

(b) (i) Describe the structure of B-tree indexing. Write its advantages and drawbacks. (8)

(ii) Summarize the different RAID levels. (8)

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