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**Question Paper Code: 51236**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Computer Science and Engineering

15UCS306 – DATABASE SYSTEM CONCEPTS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

- Database system which supports majority of concurrent users is classified as
  - multiuser system
  - multi-function system
  - multi transaction system
  - client and disk server system
- In relational database management system, server is classified as
  - SQL server
  - SQT server
  - SQR server
  - ODBC server
- Types of database system utilities are
  - backup utility
  - performance monitoring utility
  - loading utility
  - all the above
- In a particular time, data available in database at specific moment is called
  - database time interval
  - database concept
  - database construct
  - database state

5. SQL is a standard language for \_\_\_\_\_
- (a) accessing databases (b) creating web pages  
(c) creating front ends (d) none of these

PART - B (5 x 3 = 15 Marks)

6. Define relational algebra.
7. Signify the usage of candidate and primary keys.
8. Define checkpoints.
9. Briefly explain about RAID level 3.
10. What is outer join? Give an example.

PART - C (5 x 16 = 80 Marks)

11. (a) Design a relational database for a university registrar's office. The office maintains data about each class, including the instructor, the number of students enrolled, and the time and place of the class meetings. For each student–class pair, a grade is recorded. (16)

Or

- (b) Analyze the concepts of entity relationship model with suitable examples. (16)

12. (a) Explain the following

- (i) Aggregate functions in SQL (5)  
(ii) Insert update and delete commands (5)  
(iii) How are triggers and assertions defined in SQL? (6)

Or

- (b) (i) What is the need for normalisation? Explain the normal forms with a suitable application. (8)  
(ii) What is BCNF? How it is different from 3NF? Prove that a relation with two attributes is always in BCNF. (8)

13. (a) Why do database systems support concurrent execution of transactions, in spite of the extra programming effort needed to ensure that concurrent execution does not cause any problems? (16)

Or

- (b) Compare log-based recovery with the shadow-copy scheme in terms of their overheads, for the case when data is being added to newly allocated disk pages (in other words, there is no old value to be restored in case the transaction aborts). (16)
14. (a) How are the files organized by the underlying operating system? Explain in detail. (16)

Or

- (b) Analyze the following in detail
- (i) Static hashing (8)
  - (ii) Dynamic hashing (8)
15. (a) Explain selection operation with suitable examples. (16)

Or

- (b) Discuss in detail about transformation of relational expressions with examples. (16)
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