C 61506

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Name......................

Reg. No...................
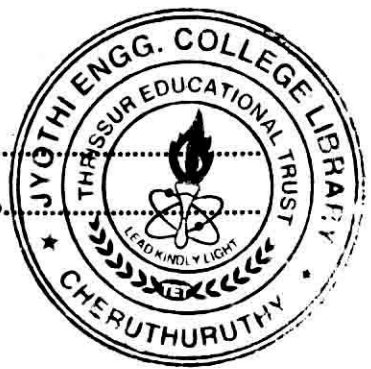
SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, APRIL 2014

(2009 Scheme)

IT/CS/PTCS 09 604—DATABASE MANAGEMENT SYSTEMS

(Regular/Supplementary/Improvement)

Time : Three Hours

Maximum : 70 Marks

Part A

*Answer **all** questions.*
Short answer questions (one / two sentences).

1. Differentiate hierarchical and network data model.

2. What are primary indexes and secondary indexes ?

3. Define foreign key. Give example.

4. What do steal/no-steal mean with regard to buffer management for transaction processing ?

5. Consider a relation R (A,B,C,D,E) with the following dependencies :—

   AB -> C, CD -> E, DE -> B

   Is AB a candidate key of this relation? If not, is ABD ? Explain your answers.

   (5 × 2 = 10 marks)

Part B

*Answer any **four** questions.*
Analytical / Problem solving questions.

6. Explain the following :—

   (a) Specialization ;

   (b) Union types.

7. What is data striping ? How is it different from mirroring in RAID technology ?

8. Explain about functional dependencies and transitive dependencies.

9. What are timestamps ? Write the timestamp ordering algorithm for concurrency control.

10. Write about the factors that influence physical database design.

11. Compare discretionary access control and mandatory access control in database security.

   (4 × 5 = 20 marks)

Turn over

Part C

Answer section (a) **or** *section (b) of each question.*
Descriptive / Analytical / Problem solving questions.

12. (a) Discuss the naming conventions used for the Entity Relationship diagram.

Or

(b) State the characteristics of database system and explain its three schema architecture.

13. (a) Discuss about the indexing techniques based on B trees and B$^+$ trees.

Or

(b) Explain the various file operations in detail.

14. (a) Consider the universal relation R = {A, B, C, D, E, F, G, H, I, J} and the functional dependencies

AB -> C, A -> DE, B -> F, F -> GH, D -> IJ

What is the key for R ? Decompose the relation R. Give explanation for each decomposition.

Or

(b) List out all the DDL and DML commands and explain each of them with an example.

15. (a) Explain the following :—

(a) Shadow pages.

(b) Immediate update.

(c) Deferred update.

Or

(b) Describe the various locking mechanisms used in transaction processing.

(4 × 10 = 40 marks)