Reg. No. : | E | N | G | G | T | R | E | E | . | C | O | M |

Question Paper Code : 50905

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024

Third / Fourth Semester

Computer Science and Engineering

CS 3492 – DATABASE MANAGEMENT SYSTEMS

(Common to : Computer Science and Design / Computer and Communication Engineering / Computer Science and Business Systems / Information Technology)

(Regulations 2021)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate File processing system and Database processing system.
2. List some relational algebra operations.
3. Define Entity, Relationship and attributes in ER model.
4. Why BCNF is preferred over 3NF?
5. List the properties of transactions.
6. How will you handle deadlock during two transactions in database?
7. What is hash based indexing?
8. List three components of Query processor.
9. Define Distributed Database.
10. What are the challenges faced when using an encrypted system?

PART B — (5 × 13 = 65 marks)

11. (a) What is datamodel? List its different types. Explain with suitable example.

Or

(b) Discuss about domain integrity. Give an example.

12. (a) What is normalizations? List its benefits and explain briefly about 3NF, 4NF and BCNF with suitable example.

Or

(b) (i) Illustrate functional dependency with an example. (7)

(ii) Discuss about dependency preservation. (6)

13. (a) Demonstrate conflict serializability and view serializability.

Or

(b) (i) Discuss in detail about Multiple Granularity. (7)

(ii) Explain different types of locks. (6)

14. (a) Explain B+ trees. Discuss about this Dynamic Index Structure.

Or

(b) Compare I/O costs for all File Organizations.

15. (a) Explain distributed database architecture in detail.

Or

(b) Explain in detail about key value stores and role based access control in advanced database management systems.

PART C — (1 × 15 = 15 marks)

16. (a) Consider the following relational schemes for a library database:

Book (Title, Author, Catalog_no, Publisher, Year, Price)

Collection (Title, Author, Catalog_no)

the following are functional dependencies:

(i) Title Author → Catalog_no

(ii) Catalog_no → Title Author Publisher Year

(iii) Publisher Title Year → Price

(iv) Assume {Author Title} is the key for both schemes. Apply the appropriate normal form for Book and Cancellation?

Or

(b) Consider a B+–tree in which the maximum number of keys in a node is 5. Calculate the minimum number of keys in any non–root node.
