Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 90248

M.C.A. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Second Semester

MC 4202 – ADVANCED DATABASE TECHNOLOGY

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Outline the difference between homogeneous and heterogeneous distributed database management systems.

2. Outline the motivations of replication in a distributed database environment.

3. Define a temporal database and a temporal relation.

4. Outline a nearest-neighbor query with an example.

5. What is MongoDB?

6. Present an outline of database sharding.

7. How XML data can be represented?

8. What does document type declaration of a document specify?

9. Present an outline of Web crawlers.

10. Name the two measures used to evaluate the effectiveness of an information retrieval system.

PART B — (5 × 13 = 65 marks)

11. (a) Name and outline the stages in distributed query processing. Also, outline distributed query processing using semijoin. (13)

Or

(b) (i) Outline how the two phase commit protocol works in a distributed database management environment. (6)

(ii) Outline the two basic types of fragmentation in a distributed database environment. With an example. (7)

12. (a) What is a database trigger? Elaborate the types of triggers with example. (13)

Or

(b) Outline the data management issues pertaining to mobile databases. (13)

13. (a) Explain the query operations in MongoDB with an example. (13)

Or

(b) (i) Present an outline of CAP theorem. (4)

(ii) What is Hive? Present an outline of the data types in Hive. (9)

14. (a) (i) Name and brief the three main types of XML documents. (6)

(ii) Outline well-formed XML and valid XML with an example. (7)

Or

(b) Elaborate X Path and X Query with an example. (13)

15. (a) Name and detail the types of queries in information retrieval systems with an example. (13)

Or

(b) State and explain the commonly used text preprocessing techniques that are part of the text processing task. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Present a distributed database design for a "Banking System". State the functional requirements you are considering. (15)

Or

(b) Consider the following Non-temporal relation EMPLOYEE: (15)

EMPLOYEE (ENO, NAME, DESIGNATION, BASIC_PAY, DEPT)

Modify the schema of the EMPLOYEE relation to incorporate time and present the schema for the following types of temporal databases.

(i) Valid time database schema

(ii) Transaction time database schema

(iii) Bitemporal database schema.

———————