MCS-023

MCA (Revised) / BCA (Revised)
Term-End Examination
December, 2015

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MCS-023 : INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

Time : 3 hours *Maximum Marks : 100*

(Weightage 75%)

Note : *Question no. 1 is* **compulsory.** *Answer any* **three** *questions from the rest.*

1. (a) With the help of a neat diagram, explain the physical DBMS architecture. **10**

   (b) With the help of an appropriate example for each, explain the following basic set operations : **10**

      (i) UNION

      (ii) INTERJECTION

      (iii) SET DIFFERENCE

      (iv) CARTESIAN PRODUCT

   (c) Design an ER diagram for the specifications to maintain any IGNOU's study centre. Clearly indicate the entities, attributes, constraints, relationships and the cardinality. **10**

(d) Differentiate between Horizontal fragmentation and Vertical fragmentation with the help of suitable examples in Data fragmentation of Distributed databases. *10*

2. (a) Explain the Sequential file organization. Give the advantages and disadvantages of it. *10*

   (b) Write in detail about B-Tree structure for indexes with a neat diagram. *10*

3. (a) Explain "Write Ahead Log Protocol" with suitable example / diagram. *5*

   (b) Explain in detail the mechanism of Optimistic Concurrency Control to prevent concurrency related problems, with the help of an example. *10*

   (c) Consider the following Relations :

   Employee (EName, EId, Addr1, Addr2, City, State)

   Works (EId, Branch, Dept_Name, Dept_No, Dept_Head)

   Write the SQL statements for the following : *5*

   (i) Find all the ENames of employees who work in FINANCE department of Delhi Branch.

   (ii) Find the Dept_Head for the employee if EName and EId are given.

4. (a) With the help of an example for each, explain Host Updates, Dirty Reads and Unrepeatable Reads of Concurrent transactions. *10*

(b) Give the difference between operating system and database security. *5*

(c) Explain the different forms of Authorization techniques. *5*

5. Write short notes on the following : *4×5=20*

(a) Any 4 Commands of DML

(b) Serialisable Schedules

(c) Data Replication in Distributed Databases

(d) 3-Tier Architecture

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