Total No. of Questions : 8]

P805

SEAT No. :

[Total No. of Pages : 2

[5870]-1125

T.E. (Computer Engineering)
DATABASE MANAGEMENT SYSTEMS
(2019 Pattern) (Semester-I) (310241)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:
    1)   *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
    2)   *Figures to the right indicate full marks.*
    3)   *Neat diagrams must be drawn wherever necessary.*
    4)   *Assume suitable data if necessary.*

Q1) a)   Explain 3NF and BCNF and give its example. Also enlist their differences.
                                                                    [8]

     b)   What are the desirable properties of decomposition? Explain it with example.   **[9]**

<div align="center">OR</div>

Q2) a)   Explain partial and transitive dependencies with example.   **[8]**

     b)   Explain why database normalization is required for good relational database design? Explain with example requirements of different normal forms like 1NF, 2 NFand 3NF.   **[9]**

Q3) a)   What is conflict serializability? How to check schedule is conflict serializable schedule. Give one example.   **[9]**

     b)   During execution, a transaction passes through several states, until it commits or aborts. List all possible sequence of states through which transaction may pass. Explain the situation when each state transition occurs.   **[9]**

<div align="center">OR</div>

Q4) a)   Consider the following two transactions: **[9]**

        T31: read(A);
            read(B);
            if A = 0 then B:=B+1;
    Write (B)
        T32: read(B);
            read(A);
            if B= 0 then A: = A+1;
            write (A).

        Add lock and unlock instructions to transactions T31 and T32, so that they observe the two phase locking protocol. Can the execution of these transactions result in a deadlock?

<div align="right">P.T.O.</div>

b) To ensure atomicity despite failures we use Recovery Methods. Explain in detail log based recovery method. **[9]**

Q5) a) Explain following NOSQL database types with examples and also state the scenario where it is useful **[9]**
   i) Column-oriented
   ii) Graph
   iii) Document -oriented

b) Explain CAP theorem and BASE properties. **[8]**

OR

Q6) a) Describe distributed database. Explain System architecture of distributed transaction. **[8]**

b) Explain following types of data with example **[9]**
   i) Structured
   ii) Semi-structured
   iii) Unstructured

Q7) a) Write short note on **[9]**
   i) Active database
   ii) Deductive database

b) Explain how encoding and decoding of JSON object is done JAVA with example. **[9]**

OR

Q8) a) Write short note on **[9]**
   i) Geometric data
   ii) Geographic data

b) What is object relational database? What are its advantages and disadvantages? **[9]**