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]**

OR

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]**

OR

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?

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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]**

<p style="text-align:center">OR</p>

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]**

<p style="text-align:center">OR</p>

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]**