Total No. of Questions : 8]

SEAT No. :

PD4241

[Total No. of Pages : 2

[6403]-35
T.E. (Computer Engineering) (AI.D.S)
DATA BASE MANAGEMENT SYSTEM
(2019 Pattern) (Semester - V) (310241)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) What is the impact of insert, update and delete anomaly on overall design of database? How normalization is used to remove these anomalies? **[8]**

b) Elaborate the signigicance of CODD's rule. Explain 12 rules proposed by CODD's. **[9]**

OR

Q2) a) What are the desirable properties of decomposition? Explain it with example. **[8]**

b) Explain partial, full and transitive dependency with examples. **[9]**

Q3) a) How to ensure the atomicity using Recovery Methods? Explain the log based recovery method in detail. **[9]**

b) When do deadlocks happen, how to prevent them, and how to recover if deadlock takes place? **[9]**

OR

P.T.O.

Q4) a) What is conflict serializability? How to check schedule is conflict serializable schedule? Explain with one example. **[9]**

b) Explain two phase locking protocol. Consider the following two transactions. **[9]**

T1 : read (A);
read (B);
if A = 0 then B := B + 1;
Write (B).

T2 : read (B);
read (A);
if B = 0 then A := A + 1; Write (A).

Add lock and unlock instructions to transactions T1 and T2, so that they observe the two phase locking protocol. Can the execution of these transactions result in a deadlock?

Q5) a) Explain the CAP theorem referred during the development of any distributed application. **[8]**

b) Explain the NOSQL database types with examples and write down the real time applications. **[9]**

OR

Q6) a) Explain Structured, Semi-structured and Unstructured data types with examples. **[9]**

b) List the different NOSQL data models. Explain following NOSQL database types with examples. **[8]**

i) Column-oriented
ii) Document-oriented

Q7) a) What is the significance of XML databases? Explain with example the use of XML databases. **[9]**

b) What is Deductive Database. Explain its features and state its advantages over traditional database. **[9]**

OR

Q8) a) Write a short note on complex data types: **[9]**

i) Semi-structured data
ii) Features of semi-structured data models

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

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