Total No. of Questions : 8]

SEAT No. :

PC-1718

[Total No. of Pages : 2

[6353]-35
T.E. (Computer Engg) (AI & DS)
DATABASE MANAGEMENT SYSTEM
(2019 Course) (Semester - I) (310241)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Answer 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 & delete anomaly on overall design of 8 M database? How is normalization used to remove these anomalies? Explain with suitable example. **[8]**

b) What is functional dependency? Explain its use in database design. Consider the instance of the relation Market (MarketName, Product, Stock): **[9]**

Market Name	Product	Stock
S1	Toothpaste	14
S1	Biscuits	8
S1	Shampoo	8
S2	Toothpaste	30
M1	Chocolates	50
M2	Cakes	14

Identify the functional dependencies that can be found in the given instance.

OR

Q2) a) Elaborate the significance of CODD's rule. Explain 12 rules proposed by CODD's. **[8]**

P.T.O.

SPPUQuestionPapers.com
CEGP019111 103.171.156.250 10/12/2024 09:31:52

b) What is decomposition? Explain the desirable properties of decomposition? Consider the relation F (FN, PN, C, D) with the following Functional Dependencies: **[9]**

FD1: FN, PN –> C
FD2: C –> D
FD3:D –> F

If Fig is decomposed into F1(FN, PN, C) and F2(C, D). Check decomposition is lossless or lossy?

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

b) What is need of lock in DBMS? Explain shared lock and exclusive lock with the help of example. **[9]**

OR

Q4) a) When do deadlocks happen, how to prevent them, and how to recover if deadlock takes place? **[9]**

b) What is R-timestamp(Q) and W-timestamp(Q). Explain the necessary condition used by time stamp ordering protocol to execute for a read/ write operation. **[9]**

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

b) Explain how NOSQL databases are different than relational databases? Describe in detail the column NOSQL data model with example. **[9]**

OR

Q6) a) Draw and explain architecture of Distributed database system. State the reasons for building distributed database systems. **[8]**

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

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

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

OR

Q8) a) What are spatial data? Explain Geographic and Geometric data. **[9]**

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

SPPUQuestionPapers.com
CEGP01911 1 103.17.156.250 10/12/2024 09:31:52