Total No. of Questions : 8]

SEAT No. :

P-268

[Total No. of Pages : 3

[6003]-346

T.E. (Computer/A.I.D.S.)

DATABASE MANAGEMENT SYSTEM

(2019 Pattern) (Semester - I) (End Sem.) (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 database? How normalization is used to remove these anomalies? **[6]**

b) Explain different features of good relational database design. **[6]**

c) Explain following Codd's rules with suitable examples : **[6]**

i) Guaranteed Access Rule

ii) Comprehensive Data Sub-Language Rule

iii) High-Level Insert, Update, and Delete Rule

OR

Q2) a) Explain entity and referential integrity constraints used in SQL. **[6]**

b) Define 3NF. Explain with example, how to bring the relation in 3NF? **[6]**

c) Explain following Codd's rules with suitable examples : **[6]**

i) Physical Data Independence

ii) Integrity Independence

iii) Systematic Treatment of NULL Values

P.T.O.

Q3) a) State and explain the ACID Properties. During its execution, a transaction passes through several states, until it finally commits or aborts. List all possible sequences of states through which a transaction may pass. Explain the situations when each state transition occurs. **[9]**

b) Check whether following schedule is view serializable or not. Justify your answer. (Note : T_1 & T_2 are transactions). Also explain the concept of view equivalent schedules and conflict equivalent schedule considering the example schedule given below : **[8]**

T_1	T_2
read (A)	
A := A – 50	
	read (A)
	temp :=A * 0.1
	A := A - temp
	write (A)
	read (B)
write (A)	
read (B)	
B := B + 50	
write (B)	
	B := B + temp
	write (B)

OR

Q4) a) Suppose a transaction T_i issues a read command on data item Q. How time-stamp based protocol decides whether to allow the operation to be executed or not using time-stamp based protocol of concurrency control. Explain the situations when each state transition occurs. **[9]**

b) Write a short note on : **[8]**

i) Log based recovery

ii) Shadow Paging

Q5) a) BASE Transactions ensures the properties like Basically Available, Soft State, Eventual Consistency. What is soft state of any system, how it is depend on Eventual consistency property? **[6]**

b) Enlist the different types of NOSQL databases and explain with suitable examples. **[8]**

c) What is structured and unstructured data. Explain with example. **[4]**

OR

Q6) a) Explain the CAP theorem referred during the development of any distributed application. **[6]**

b) Analyze the use of NOSQL databases in current social networking environment also explain need of NOSQL databases in social networking environment over RDBMS. **[6]**

c) Explain the difference between SQL and NOSQL database. **[6]**

Q7) a) Write a short note on emerging databases : **[9]**

i) Active and Deductive Databases

ii) Main Memory Databases

b) What is object relational database system. Explain Table inheritance with example. **[8]**

OR

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

i) Semi-structured data

ii) Features of semi-structured data models

b) Describe spatial data like Geographic data and Geometric data. **[8]**

⌘⌘⌘