

Total No. of Questions : 8]

**PA-1441**

SEAT No. :

[Total No. of Pages : 2

[5926]-57

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

**DATABASE MANAGEMENT SYSTEMS**

**(2019 Pattern) (Semester - I) (310241)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

- Q1)** a) Justify the impact of normalization on database? Explain 2<sup>nd</sup> normal form, 3<sup>rd</sup> normal form and BCNF with example. [8]  
b) Elaborate the significance of codd's rule. Explain 12 rules proposed by codd's. [9]

OR

- Q2)** a) What is the impact of insert, update and delete anomaly on overall design of database? How is normalization used to remove these anomalies? [9]  
b) Explain 3NF and BCNF and give its example. Also enlist their differences. [8]

- Q3)** a) Suppose a transaction T<sub>i</sub> 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 in detail time stamp based protocol. [9]  
b) Explain the concept of conflict serializability with suitable example. Since every conflict-serializable schedule is view serializable, why do we emphasize conflict serializability rather than view serializability? [9]

OR

- Q4)** 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) A transaction may be waiting for more time for an Exclusive (X) lock on an item, while a sequence of other transactions request and are granted as Shared (S) lock on the same item. What is this problem? How is it solved by two phase lock protocol? [9]

P.T.O.

- Q5)** a) Explain how NOSQL databases are different than relational databases? Describe in detail the key value store NOSQL data model with example. [9]  
b) Explain BASE properties with its significance. How soft state of system is depending on Eventual consistency property? [8]

OR

- Q6)** a) List the different NOSQL data models. Explain document store NOSQL data model with example. [9]  
b) State and explain the concept of CAP theorem and BASE properties with example. [8]

- Q7)** a) Write short note on :  
i) Active databases  
ii) Deductive databases  
b) What is the significance of XML databases? Explain with proper example when to use XML database. [9]

OR

- Q8)** a) Difference between relational databases and object relational databases with example [9]  
b) Describe the significance of JSON data type and object. Discuss with syntax all JSON data types with suitable example. [9]