

Total No. of Questions : 8]

SEAT No. :

P805

[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 NF and 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?

P.T.O.

- 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]

OR

- 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]

OR

- 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]