Lamrin Tech Skills University Punjab

University School of Engineering & Technology

Program: B.Tech (CSE(AI&ML;,CS,DS,IOT))
MST-II Nov. 2024
Time: 1.5 hrs. Max. Marks: 25
Course Title (Course Code): RDBMS (UGCS-201)

INSTRUCTIONS TO CANDIDATES
1. SECTION–A is Compulsory carrying one mark each.
2. SECTION–B you have to attempt 3 questions carrying 5 marks each.
3. SECTION–C you have to attempt 1 question carrying 8 marks each.

Section–A (5x1=5)
Q1. Attempt all questions.
(i) What is a functional dependency in a relational database?
(ii) Define atomicity in the context of transactions?
(iii) Name any two types of NoSQL databases.
(iv) Identify one advantage of NoSQL databases over relational databases.
(v) Define the purpose of a lossless join in database decomposition.

Section–B (3x4=12)
Q2. List and briefly describe the four main types of NoSQL databases.
Q3. Explain Concurrency control Techniques?
Q4. Discuss conflict serializability and view serializability.
Q5. Describe the importance of lossless join and dependency preservation in database decomposition.
Q6. Explain the states of Transaction with the help of diagram.

Section–C (1x8=8)
Q7. Below is an unnormalized table representing a bookstore inventory and sales system:

OrderID	Customer Name	CustomerPhone	BookTitle	Author	Price	Quantity	TotalPrice	OrderDate
101	Alice Brown	123-456-7890	Book A	Author X	15	2	30	2024-11-01
101	Alice Brown	123-456-7890	Book B	Author Y	20	1	20	2024-11-01
102	Bob Green	987-654-3210	Book A	Author X	15	1	15	2024-11-02

Normalize this table step-by-step into 1NF, 2NF, and 3NF, and explain the process at each stage.

Q8. Test the serializability of the following schedule and determine whether it is conflict serializable or view serializable:
T1: Read(A), Write(A)
T2: Read(A), Write(B)