Candidate Seat no…….

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
Third Semester of B. Tech (CE) Examination
May 2017
CE217 /CE217.01 Database Management System

Date: 02.04.2018, Monday **Time: 01:30 p.m. To 04:30 p.m.** **Maximum Marks: 70**

Instructions:
1. The question paper comprises two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I		
Q - 1	**Answer the questions below:**	
(a)	What are the responsibilities of a DBA? If we assume that the DBA is never interested in running his or her own queries, does the DBA still need to understand query optimization? Why?	**[02]**
(b)	Explain how the File System leads to inconsistency of data.	**[02]**
(c)	Define the following terms: relation schema, relation instance and attribute domain.	**[03]**
Q – 2	**Answer the questions below:**	
(a)	Explain the differences between: (i) Single Valued Attribute and Multi-Valued Attribute. (ii) Candidate key and Super Kay	**[04]**
Q – 2 (b)	**Answer the questions below (Any Two)**	
(i)	Define the concept of Specialization in E-R model. Give an appropriate example where this concept is useful.	**[05]**
(ii)	Describe the three levels of ANSI-SPARC database architecture.	**[05]**
(iii)	Consider the Following Relational schema: Suppliers(sid, sname, address) Parts(pid, pname, color) Catalog(sid, pid, cost) The key fields are underlined, Therefore sid is the key for Suppliers, pid is the key for Parts, and sid and pid together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers. Construct the following relational algebra queries: a) Find the names of suppliers who supply some red part. b) Find the sids of suppliers who supply some red or green part.	**[05]**
Q - 3	**Answer the questions below:**	
(a)	Explain the Following Relational Algebra Operations i) Cross join ii) Natural Join Operation	**[06]**
(b)	Construct an E-R Diagram for Banking System.	**[05]**

(c)	What is Decomposition? Explain the lossless decomposition in brief.	**[03]**
	OR	
Q – 3	**Answer the questions below:**	
(a)	What is a foreign key constraint? Why are such constraints important?	**[04]**
(b)	What is normalization? Why it is required? Explain using appropriate example.	**[05]**
(c)	What are insertion, deletion and update anomalies?	**[05]**
SECTION – II		
Q - 4	**Answer the questions below:**	
(a)	Differentiate between Serial Schedule and Concurrent Schedule.	**[05]**
(b)	Describe Cascadeless Schedule with proper example.	**[02]**
Q -5	**Answer the questions below:**	
(a)	Discuss the need of Transactional Processing (TP) monitor in Database Management System? Describe the four architectures of TP Monitors.	**[07]**
(b)	Give example of a deadlock situation in database transactions? Explain deadlock detection method in Database Management System.	**[07]**
	OR	
Q -5	**Answer the questions below:**	
(a)	Discuss the various modes in which data item can be locked. Explain two phase locking (2PL) protocol.	**[07]**
(b)	Why recovery plays an important role in database system?	**[07]**
Q – 6	**Answer the questions below (Any two)**	
(a)	Explain deferred and immediate modification versions of log based recovery scheme.	**[07]**
(b)	What is transaction? Explain ACID properties that are required to ensure the integrity of data.	**[07]**
(c)	Explain Timestamp Ordering protocol that ensures the serializability between transactions.	**[07]**

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