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B033412(033)

B. Tech. (Fourth Semester) Examination, Nov.-Dec. 2021

(Information Technology Branch) AICTE

DATABASE MANAGEMENT SYSTEM

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from part (b), (c) and (d) of each question.*

Unit-I

1. (a) What is Super Key? Explain it with example. 4

   (b) Explain database system concept and architecture. 8

(c) Explain the disadvantage of file processing system. 8

(d) What do you mean by terms aggregation and generalization? Explain it with the help of example. 8

Unit-II

2. (a) What are Integrity constraints? 4

(b) Define Relational Algebra. Write relational algebra expression for any example which represents union, intersection and product of relations. 8

(c) What are the characteristics features of SQL? Create table for employee who contains a department name, department_id, phone no, address and e-mail_id. Perform some DML operations. 8

(d) Write short notes on : 8

(i) Views and indexes

(ii) Aggregate functions

(iii) Triggers

Unit-III

3. (a) Define functional dependency. 4

(b) Explain Lossy and Lossless dependency with some example. 8

(c) What is normalization? Explain 5 different types of normal forms. 8

(d) How to find candidate Keys and Super keys using attribute closure? Consider the relation scheme

$$R = \{E, F, G, H, I, J, K, L, M, N\}$$

and the set of functional dependencies

$$\{\{E, F\} -> \{G\}, \{F\} -> \{I, J\}, \{E, H\} ->$$

$$\{K, L\}, K -> \{M\}, L -> \{N\}\}$$

on R. What is the key for R? 8

Unit-IV

4. (a) What is serializability? 4

(b) How to do recovery from transaction failures? Explain it with example. 8

(c) Differentiate between conflict and view serializability. 8

(d) Explain some key features of deadlock handling. 8

Unit-V

5. (a) What is Hash Based Indexing? 4

(b) Describe time stamping protocols for concurrency control. 8

(c) Explain comparison of file organizations. 8

(d) Write short notes on : (any **two**) 8

(i) Locking techniques for concurrency control

(ii) Recovery with concurrent transaction

(iii) Case study of oracle