5E5104

Roll No. _____ Total No of Pages: 4

5E5104

B. Tech. V Sem. (Main/Back) Exam., Nov.-Dec.-2016

Computer Science & Engineering

5CS4A Database Management System

Common with CS, IT

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any **data** you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL 2. NIL

UNIT – I

Q.1 (a) What do you means by DBMS? Explain the advantages of Database Management system over file management system. [10]

(b) What is difference between logical data independence and physical data independence. [6]

OR

Q.1 (a) Draw the diagram of system structure of DBMS. Write down the main function of each component. [8]

(b) Why query processor component of database is important? Briefly discuss about all components of query processor. [5]

(c) Differentiate between DDL & DML. [3]

UNIT – II

Q.2 (a) What is the role of ER model in database design? Draw an ER diagram for library management system and convert ER-Diagram into tables. [2+6+4=12]

(b) What do you means by constraints? Explain different types of constraints with examples. [4]

OR

Q.2 (a) Explain the following with the help of suitable Examples:

(i) Participation constraints

(ii) Aggregation

(iii) Multi - valued Attributes

(iv) Key constraints [2×4=8]

(b) Design an E-R Diagram to show that participation of weak entity set as owner entity set in identifying relationship with another weak entity sets and find primary key of all entity sets. [4]

(c) Explain concept of specialization and generalization in E – R model. [4]

UNIT – III

Q.3 (a) Explain following operations in relational algebra with suitable examples:

(i) Rename

(ii) Natural Join

(iii) Division

(iv) Grouping [3×4=12]

(b) Differentiate relation algebra and relational Calculas. [4]

OR

Q.3 (a) Consider following schemas: [4×3=12]

Passengers (Name, Address, Age)

Reservations (Name, FlightNum, seat)

Flights (FlightNum, DepartCity, DestinationCity, MinutesLate, DepartureTime, ArrivalTime)

(i) Get the names of passengers who had a reservation on a flight that was more than 30 minutes late.

(ii) Get the names of passengers who had reservations on all flights that were more than 60 minutes late.

(iii) Get the names of pairs of passengers, who are of the same age.

(b) Discuss various types of inner join operation. [4]

UNIT – IV

Q.4 Consider the employee database given below: [4×4=16]

Employee (emp_name, street, city)

Works (emp_name, company_name, salary)

Company (company_name, city)

Manages (emp_name, manager_name)

Give an expression in SQL for each of the following queries:

(i) Modify the database so that Jones now lives in New town.

(ii) Give all managers of First Bank Corporation a 10 percent raise.

(iii) Give all managers of First Bank Corporation a 10 percent raise unless the salary becomes greater than $100,000; in such cases, give only a 3 percent raise.

(iv) Find the names of all employees in this database who live in the same city as the company for which they work.

OR

Q.4 (a) What is Triggers? How do we create triggers on a database? Show some syntax. [2+2+4=8]

(b) Explain Embedded SQL and Dynamic SQL. [8]

UNIT – V

Q.5 (a) Discuss the purpose of BCNF and describes how BCNF is different from 3NF. Provide an example to illustrate the answer. [12]

(b) What is Decomposition? Explain Lossy and Lossless join decomposition. [4]

OR

Q.5 We are given a schema s = {A,B,C,D,E}. The F of functional dependencies is {A → B, BC → E, ED → A}.

(a) is S in BCNF? Why? [3]

(b) is S in 3NF? Why? [3]

(c) Find canonical cover F_c of F [5]

(d) List all candidate keys for S [5]
