Total No. of Questions : 12] Nov-15

P1904

SEAT No. : [ ]

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S.Y.M.C.A. - Engg.

DATABASES : CONCEPTS AND SYSTEMS

(2008 Course) (610902) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Answers to the two sections should be written in separate answer books.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right side indicate full marks.*
4) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain the various functional components of a DBMS with the help of a suitable diagram. [6]

b) Explain the difference between physical and logical data independence. [5]

OR

Q2) a) How following problems of file system are handled with a DBMS? [6]

Data isolation, Data redundancy and inconsistency, Data integrity.

b) Explain data abstraction in database system with suitable example. [5]

Q3) a) Consider a university database for the scheduling of classrooms for final exams. This database could be modeled as the single entity set exam, with attributes Course-name, section-number, room-number, and time. Alternatively, one or more additional entity sets could be defined, along with relationship sets to replace some of the attributes of the exam entity set, as [6]

- course with attributes name, department, and C-number
- section with attributes s-number and enrollment, and dependent as a weak entity set on course.
- room with attributes r-number, capacity, and building

Show an E-R diagram illustrating the use of all three additional entity sets listed.

P.T.O.

b) What is mapping cardinality? Explain types of mapping cardinality with example. [6]

OR

Q4) a) Construct an E-R diagram for a car-insurance company whose customers own One or more cars each. Each car has associated with it zero to any number of Recorded accidents. [6]

b) Explain the difference constraints on specialization/generalization with suitable example. [6]

Q5) a) What is extension and intension relational model? List codd's rule. [6]

b) What is view in sql and how is it defined? Discuss the problem that may arise when one attempt to update a view. How views are typically implemented, explain with example. [6]

OR

Q6) a) What are the types of data integrity constraints? Explain primary key and foreign key constraint with example. [6]

b) What is a view? Explain insert, update and delete operations with respect to views. [6]

SECTION - II

Q7) a) Create a trigger for update of column Sal in table emp, which ensures that sal cannot be reduced. [6]

b) What is cursor? Explain implicit cursor with example. [6]

OR

Q8) a) Write a PL/SQL program to display sum of the salaries for all employees in the specified department. [6]

b) What is trigger? Explain statement level trigger and row level trigger with example. [6]

Q9) a) Describe the concept of full functional dependency and describe how this concept relates to 2NF. Provide an example to illustrate your answer. [6]

b) What is functional dependency? Explain transitivity dependency with example. [6]

OR

*Q10)*a) Consider a relation R with attributes A, B, C, D, E. You are given the following dependency: **[6]**

A->B, BC->E, ED->A

i) List all key for R

ii) Is R in 3NF

b) What is normalization? Describe the characteristics of a table in unnormalized form and describe how such a table is converted to first normal form. **[6]**

*Q11)*a) What are the type recovery techniques? Explain shadow paging technique. **[6]**

b) What is deadlock? Explain use of wait for graph technique for deadlock detection. **[5]**

OR

*Q12)*a) What is transaction? Explain ACID properties of transaction with example. **[6]**

b) What is schedule? Explain serializable schedule with example. **[5]**