KUMARAGURU
college of technology
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Register Number:……..

MCA DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Fifth Semester

MASTER OF COMPUTER APPLICATIONS

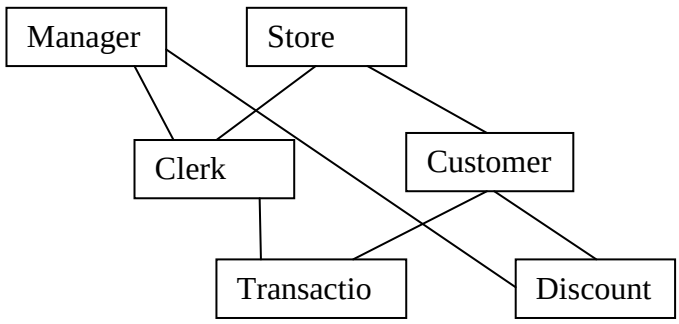
MCA524**:** Advanced DBMS

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. List the important characteristics of database approach.
2. Consider the following diagram



Which type of data model is this? Justify your answer.

3. Write any two inference rule for functional dependency.
4. Define the dependency preserving property of decomposition.
5. List three heuristics of query optimization.
6. What are the goals of tuning? Enumerate different types of statistics required for query tuning.
7. Comment on the following: “Deductive databases support recursive approach of data selection”.
8. Why is tuple versioning important in temporal databases?
9. How does data mining differ from and extend the functionality of a typical database management system?
10. Why is GIS data modeling more complex compared to conventional data modeling?

PART B (5 x 16 = 80 Marks)

11. a) (i) What are the different types of database end users? Discuss the main activities of each. (10)

(ii) Enumerate the responsibilities of the DBA. (6)

(OR)

b) Discuss about the main categories of data models. What are the basic differences between the relational model, the object model, and XML model?

12. a) Discuss about the normalization process with examples.

(OR)

b) An organization has a database which maintains the records for the customer who places the order(s) through the salesmen. There can be more than one customer who places the order(s) for a single/multiple product through a single salesman or there can be single customer who places the order(s) for multiple products through multiple salesman. The organization maintains the details of customers like customer id, name and address and for salesperson the details include salesperson id, name and salary. Draw the UML class diagram. Also discuss the following UML terms corresponding to the ER model. a) Object, b) class, c) aggregation, d) reflexive association.

13. a) What is a relational algebra query tree? Draw the query tree for the following SQL query.

```
SELECT P.Pnumber, P.Dnum, E.Lname, E.Address, E.Bdate

FROM Project AS P, Department AS D, Employee AS E

WHERE P.Dnum=D.Dnumber AND D.Mgr_ssn=E.ssn AND
P.Plocation='Coimbatore';
```

Discuss the rules for transformation of query trees and identify when each rule should be applied during optimization.

(OR)

b) What are the factors that influence the physical database design? Enumerate the instances that prompt for query tuning.

14. a) (i) What is the need for active databases? How it is implemented? Explain with examples. (8)

(ii) Describe how the insert, update and delete commands should be implemented on a valid time relation. (8)

(OR)

b) (i) What are the design strategies in distributed database management system? Explain. (6)

(ii) Do the fragmentation process of the given two table faculty and course. (10)

Faculty:

factID	factName	Dept	Salary	Rank
F234	Usman	CSE	21000	AP
F235	Tahir	CSE	23000	Asso Prof
F236	Ayesha	MCA	27000	Asso Prof
F237	Banu	MCA	32000	Prof

Course:

CourseCode	CourseTitle	FactID
C3456	Database Systems	F234
C3457	Open Source Systems	
C3458	Introduction to Accounting	F237
C3459	Data Mining	F236

15. a) What is data warehouse? How does it differ from DB? Describe the characteristics and design consideration of a data warehousing.

(OR)

b) Discuss about the mobile database architecture with neat diagram.

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