



B.E / B.TECH DEGREE EXAMINATIONS: MAY 2015

(Regulation 2009)

Fourth Semester

ITY103: DATABASE MANAGEMENT SYSTEMS

(Common to CSE/IT)

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which of the following data model is widely applied in many real world database applications?
 - a) Network model
 - b) Relational model
 - c) Hierarchical model
 - d) Star schema model
2. Consider the Relationship: Employee and **head-of** department, Select suitable cardinality for the relationship.
 - a) 1:N
 - b) 1:1
 - c) M:N
 - d) M:1
3. Find the odd one out of the following
 - a) Alter
 - b) Insert
 - c) Update
 - d) Select
4. Which normal form is called as Strict 3 NF?
 - a) 1 NF
 - b) 2 NF
 - c) BCNF
 - d) 4 NF
5. Which one of the following is an example of Stable Storage?
 - a) Main memory
 - b) Cache
 - c) Registers
 - d) RAID
6. What is the maximum number of rows a table can store in SQL Server 2000?
 - a) 255
 - b) 1,048,516
 - c) 2,147,483,647
 - d) No Limit besides physical storage size
7. The presence of a _____ allows the system to streamline its recovery process.
 - a) Checkpoint
 - b) Fact table
 - c) Rollbacks
 - d) Meta Data
8. Transactions are collected in a group and processed is called

- a) Batch Processing
 - b) Online Processing
 - c) Real Time Processing
 - d) Offline Processing
9. Which of the following is not correct about the distributed databases
- a) Distributed Databases have a slower interconnection
 - b) Distributed Databases are geographically separated and managed
 - c) Distributed Databases are separately administered
 - d) All Data is located at a single site
10. The ability to define common properties or functions in the higher class and then modify them in the lower classes is called as
- a) Inheritance
 - b) Polymorphism
 - c) Abstraction
 - d) Association

PART B (10 x 2 = 20 Marks)

11. Compare traditional File System with Database Management System.
12. Name two database system applications.
13. Let $R = (A, B, C)$, and let r_1 and r_2 both be relations on schema R . Give an expression in the domain relational calculus that is equivalent to $r_1 \cap r_2$
14. Name the different types of joins in SQL.
15. Infer the usage of Multiple Key Access.
16. State a few methods to improve the efficiency of Query Processing.
17. Define ACID Properties.
18. What is Shadow Paging?
19. Distinguish between Homogeneous and Heterogeneous Databases.
20. Classify Array and Multiset types in SQL.

PART C (5 x 14 = 70 Marks)

21. a) i) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. (8)
 - ii) Compare and Contrast Physical and Logical Data Independence. (6)
- (OR)**
- b) i) Discuss about the three schema Database Architecture with a neat sketch. (8)
 - ii) Explain the concept of Network Data model with relevant example. (6)

22. a) Sailors (sid: **integer**, sname: **string**, rating: **integer**, age: **real**)
 Boats (bid: **integer**, bname: **string**, color: **string**)
 Reserves (sid: **integer**, bid: **integer**, day: **date**)
 Write SQL Queries for the following problems using the above schema
- a) Find the names and ages of all sailors
 - b) Find the names of sailors who have reserved boat number 103
 - c) Find the names of sailors who have reserved a red boat
 - d) Find the names of sailors who have reserved at least one boat
 - e) Find the sid's of all sailors who have reserved red boats but not green boats

(OR)

- b) Explain in detail about Relational Model Concepts.

23. a) Compare and Contrast Ordered Indexing and Hashing. Discuss about static and Dynamic Hashing with relevant examples.

(OR)

- b) i) Compare B - tree index files and B⁺ tree index files. (4)
 ii) Analyze the B⁺ tree indexing with suitable example. (10)

24. a) i) Illustrate the concept of Log Based Database Recovery in detail. (8)
 ii) Elaborate how testing for serializability is achieved. (6)

(OR)

- b) i) What is a Locking Protocol? Describe the Strict two phase locking protocol. (6)
 ii) Describe Timestamp Based Protocols for Concurrency Control. (8)

25. a) i) Compare Object Oriented and Object relational databases with relevant example. (8)
 ii) Explain the Distributed Database Architecture with a neat sketch. (6)

(OR)

- b) Inspect Distributed Data Storage and Elaborate about the Commit Protocols for Distributed Transactions.
