

B.E/B.TECH DEGREE EXAMINATIONS: NOV / DEC 2014

(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. The description of data in a database is given in _____
 - a) Physical level of a database system
 - b) Conceptual level of a database system
 - c) External level of a database system
 - d) Internal level of a database system
2. A data model is _____
 - a) A collection of conceptual tools for describing the data
 - b) Database design at the physical level
 - c) Database design at the logical level
 - d) The collection of information stored in the database
3. If an entity x is an existence dependent on an entity y, then x is called as _____
 - a) Dominant Entity
 - b) Strong Entity
 - c) Weak entity
 - d) Base Entity
4. Which of the following relational algebra operations finds the tuples that are in one relation but not in another?
 - a) Set Division
 - b) Set Union
 - c) Set intersection
 - d) Set Difference
5. Which of the following are the two basic types of record access methods?
 - a) Sequential and random
 - b) Direct and immediate
 - c) Sequential and indexed
 - d) On-line and real-time
6. _____ index has entry for each key.
 - a) Sparse
 - b) Dense
 - c) Hash
 - d) Both (a) and (b)

7. Recovery techniques using immediate update _____
- a) Redo the Writes any number of times, during crash b) Ignore the log records for the transaction if it aborts
- c) Write the log and write the update to the buffers d) Write the log and write the update to the database immediately
8. Assume transaction P holds a shared lock R. If transaction Q also requests for a shared lock on R, _____
- a) it will result in a deadlock situation b) it will be immediately granted
- c) it will be immediately rejected d) it will be granted as soon as it is released by P
9. Systems that provide object-oriented extensions to relational systems are called _____.
- a) Object Oriented Programming b) Object Relational Systems
- c) Object Identifiers d) Persistent Programming Languages
10. Which of the following is an autonomous homogenous environment?
- a) The same DBMS is at each node and each DBMS works independently. b) The same DBMS is at each node and a central DBMS coordinates database access
- c) A different DBMS is at each node and each DBMS works independently d) A different DBMS is at each node and a central DBMS coordinates database access

PART B (10 x 2 = 20 Marks)

11. State the disadvantages of file processing systems.
12. What is an integrity constraint? Mention the two forms of integrity constraints in ER model?
13. Differentiate procedural and non-procedural query language.
14. What is view in SQL? How is it defined?
15. Illustrate with an example, the uses of trigger in a database while processing it.
16. Give the qualities of hash function with an example?
17. List the two phases of a two-phase locking protocol.
18. What is database recovery? Why are backups important?
19. What is meant by object-oriented data model and its major advantage?
20. How do persistent programming languages differ from traditional programming languages?

PART C (5 x 14 = 70 Marks)

21. a) With the help of a block diagram explain the basic architecture of a Database Management System.

(OR)

- b) (i) Construct an E-R diagram for hospital with a set of patients and a set of medical (7)

doctors. Associate with each patient a log of the various tests on examinations conducted. And also explain the conversion of E-R diagrams to tables?

(ii) Define model and explain relational data model with example. (7)

22. a) (i) Define Normalization. Explain the different levels of Normal forms for the relation given below: (8)

Project _employee table : (Proj.Num, Proj.Name, Empid, Empname, Designation, Hourly charges, Total No, of hours worked, Total Charges)

Populate the table with appropriate values.

(ii) Write the importance of Embedded SQL. Explain about the structure and working principles of Embedded SQL (6)

(OR)

b) Explain the fundamental and additional operations in relational algebra.

23. a) (i) What is RAID? List the different levels in RAID technology, adopted in performance improvement of disk operation. (7)

(ii) Draw the structure of a typical B+ tree and explain briefly the insertion of entry into it. (7)

(OR)

b) (i) Explain the steps involved in query processing. (7)

(ii) Write the causes of bucket overflow in a hash file organization? What can be done to reduce the occurrence of bucket overflows? (7)

24. a) (i) Define serializability. With examples explain the various types of serializability. (7)

(ii) How the durability and Atomicity is ensured using shadow paging. (7)

(OR)

b) (i) What is recovery system? Describe the different types of failure that may occur in the system. (7)

(ii) Consider the following two transactions (7)

T1 : read (A);
read (B);
B = A + B;
write (B)
T2 : write (A)
read (B)

Add lock and unlock instructions so that the transaction T1 and T2 observe two-phase locking protocol. Is it deadlock free?

25. a) (i) Describe how Distributed Database System and Centralized Database System differs. (6)
- (ii) Discuss the about distributed data storage. (8)

(OR)

- b) (i) Explain clearly in what way designing an object oriented database is different from relational database? What are the main features of Object Oriented Database Management System? (7)
- (ii) Write short note on Table inheritance and Multiset type in Object Oriented Programming. (7)
