Bachelor in Information Technology (BIT)

Term-End Examination

June, 2007

CSI-20 : DATABASE MANAGEMENT SYSTEMS

Time : 2 Hours   *Maximum Marks : 60*

Note :   *There are **two** sections in this paper. Section A is **compulsory** and carries 30 marks. Section B consists of four questions. Attempt any **three** questions from Section B.*

SECTION A

1.   A single database may be accessed from many terminals. We are refering to
    (a)   concurrent database updates
    (b)   transaction oriented updates
    (c)   subroutine based updates
    (d)   multiuser database updates

2.   Dependency graph is a data structure used for checking
    (a)   Livelock
    (b)   Deadlock
    (c)   Serializable schedule
    (d)   End of transaction

3.   System logs are used to recover from failure of
    (a)   Log
    (b)   Media
    (c)   System
    (d)   Operating system

4. A DBA does *not* define
   - (a) Security constraints
   - (b) Damage control policy
   - (c) Performance factors
   - (d) Conceptual schema

5. Which one is *not* possible for a view ?
   - (a) Formatted data
   - (b) Limited data
   - (c) Data updation for view based on multiple tables
   - (d) Complex query in simpler form

6. Relational Model does *not* involve
   - (a) Security
   - (b) Integrity
   - (c) Database schema
   - (d) Representation of metadata

7. Major problem of a file management system is
   - (a) lack of flexibility
   - (b) logical data independence
   - (c) data consistency
   - (d) physical data independence

8. Data independence means that an application is immune to changes in

   (a) storage file formats

   (b) changes in indexes

   (c) data coding formats

   (d) All of the above

9. A checkpoint is a

   (a) Security mechanism

   (b) Recovery mechanism

   (c) Concurrency control mechanism

   (d) None of the above

10. The command SELECT COUNT (∗) FROM RESULTS will count the number of

    (a) distinct tuples in RESULTS relation

    (b) all tuples in RESULTS relation

    (c) will result in error

    (d) None of the above

11. (a) What is a timestamp ? How does a system generate a timestamp ?

    (b) List five significant differences between a file processing system and a DBMS.

    (c) Describe the following terms in context of RDBMS :

       (i) Cartesian product and Division operator

       (ii) Locking mechanism

       (iii) Advantages of DDBMS

       (iv) Entity integrity and Referential integrity

SECTION B

*There are four questions in this section. Attempt any **three** questions out of these.*

12. (a) What is the difference between specialization and generalization ? Discuss two main types of constraints on specialization and generalization.

    (b) What are the main differences between designing a relational database and an object database ?

13. Draw an ER diagram of a library. The members of the library can be the students, faculty or corporates. At one time limited number of books are issued to the members. The books are issued only for a limited duration. List all the entities and relationships. Also give all the assumptions made.

14. (a) What are the ACID properties ? Explain the usefulness of each.

    (b) During execution, a transaction passes through several states until it finally commits or aborts. List all possible sequences of states through which a transaction may pass. Explain why each state transition may occur.

15. (a) Define 2NF and 3NF. Explain each with suitable examples.

    (b) Why are certain functional dependencies called trivial functional dependencies ?