# UKA TARSADIA UNIVERSITY

B.C.A. / Integrated M.Sc. (IT) (1st Semester)

**Subject :**030010102 /060010102 **-** Database Management Systems

Time : 10:00 am to 1:00 pm                                                                 Date : **23**/12/2013
**Duration: 3 Hours**                                                                          **Max. Marks: 60.**
**Instructions:**

1.  Attempt all questions.
2.  Write each section in a separate answer book.
3.  Make suitable assumptions wherever necessary.
4.  Figures to the right indicate full marks allocated to that question.
5.  Draw diagrams/figures whenever necessary.

## Section-1

**Q-1 (A) Do as directed.** [06]

    I) Define entity set.

    II) Name the constraint type having participation of only some of entities in a relationship.

    III) What is data-model?

    IV) List one advantage of using sequential file.

    V) Define instance.

    VI) Name the word given for 'data about data'.

**Q-1 (B) Answer the following in brief. (Any 4)** [08]

    I) Differentiate any two points between volatile and non-volatile storage devices.

    II) Give two disadvantages of heap file organization.

    III) 'Create' statement belongs to which category of language? List other statement belongs to the same category.

    IV) What is data independency? Explain logical independency.

    V) List two component of database. Explain any one component in brief.

    VI) Show the classification for physical storage media.

**Q-2 Answer the following.** [08]

    A) Draw the E-R diagram for Online Library management system. (Identify atleast four entity set, give proper attributes and show proper mapping cardinalities as per your assumptions)

          OR

    A) Draw the E-R diagram for keeping track of the your favorite sports team. You should store the matches played, the scores in each match, the players in each match, and individual player statistics for each match. Summary statistics should be modeled as derived attributes.

    B) A company has several employees working in different departments. Each and every employee is assigned a department. All the projects are managed by employees working as a team. (Identify entities for the above scenario, give appropriate attributes and show mapping cardinalities to it)

          OR

    B) What do you mean by attributes? Explain different four types of attributes in detail.

**Q-3 Answer the following in detail. (Any 2)** [08]

    A) List any four users of DBMS. Explain any two in brief.

    B) State two conditions by which an entity set is classified as weak entity set? How weak entity set differs from the strong entity set?

    C) What is data abstraction? Explain three levels of abstraction.

# Section-2

**Q-4 (A) Do as directed.** [06]

    I) What are prime attributes?

    II) List two SET operators.

    III) Name the normal form that guarantees of atomic value in a relation.

    IV) List two logical operators.

    V) Name the constraints for not allowing null values in any column in DB2.

    VI) State the syntax for creating a table in DB2 without any constraints.

**Q-4 (B) Answer the following in brief. (Any 4)** [08]

    I) Give two differences between delete and drop statement.

    II) Explain GROUP BY clause with example.

    III) List any four data types of DB2. Explain any one in brief.

    IV) Explain any two string manipulation functions of DB2 with example.

    V) Define Second normal form.

    VI) To get the total of any column having integer datatype, which aggregate function is used? Give example.

**Q-5 Answer the following.** [08]

    A) Normalize the given relation Loan upto third normal form on the basis of given set of functional dependencies.
        Loan(BranchNo,BranchName,BranchCity,Assets,LoanNo,Amount)
        BranchNo→ BranchName, Assets, BranchCity
        LoanNo→Amount, BranchNo

                OR

    A) Normalize the given relation Project upto third normal form on the basis of given set of functional dependencies.
        Project(ProjectNo,ProjectName,EmpNo,EmpName,DeptNo,DeptName,Work)
        ProjectNo→ ProjectName, empno
        EmpNo→EmpName, DeptNo, Work
        DeptNo→DeptName

    B) Given a relation Book(Book_id, Book_name, Author, No_of_pages, publisher)
       Write a query for the following.
          1.      Display details of books having No_of_pages more than '1000'.
          2.      List all Book name in lower case.
          3.      Change book name to 'Fundamental of programming' where Author is 'Balaguru'.
          4.      Get book details whose name start with letter 'K' and published by 'Pearson'.

                OR

    B) Given a relation Student(Studid, name, city, dob, courseid)
       Write a query for the following.
          1.      Display studid of students whose dob '12/08/1990'.
          2.      List all name of students in upper case.
          3.      Change course id to 'C005' whose name is 'Mihir Mehta'.
          4.      Get studentid, name having courseid '101' or '104'.(Without using 'OR' operator)

**Q-6 Answer the following in detail. (Any 2)** [08]

    A) When does decomposition is considered as loss-less decomposition? Justify it by giving suitable example.

    B) Which type of join is required, if we require cartesian of two relation? Explain any one other type of joins with example.

    C) State any three E.F. Codd rules and explain any two of them.