ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE
I SEMESTER EXAMINATION, OCTOBER 2019
M.Sc IN BIG DATA ANALYTICS
BDA 1518: DATABASE MANAGEMENT

TIME 2 1/2 HRS   **MAX MARKS 70**

THIS QUESTION PAPER CONTAINS THREE PRINTED PAGES AND ONE PART

ANSWER ANY SEVEN QUESTIONS   **(7 X10=70)**

1) Explain different characteristics of DBMS. How DBMS is different from file system?

2) Write the difference between the following terms
    i)   Strong and weak entity
    ii) Single valued and multi valued attributes
    iii) Network and hierarchical Database
    iv) Homogeneous and heterogeneous distributed computing in DBMS

3) What is cardinality ratio? Why do we need normalization? Explain different Functional dependencies with example.

4) Explain different languages in SQL with suitable example. What are the different types of JOIN possible in DBMS? Explain with appropriate example.

5) What is data dictionary? Explain the concept of Specialisation and generalisation in DBMS with suitable example. What are the advantages of Indexing over sorting?

6) Identify all entity types, attributes, relationship types and their degrees in the following case. An organization makes many models of cars, where a model is characterized by a name and a suffix (such as GL or XL which indicates the degree of luxury) and an engine size. Each model is made up from many parts and each part may be used in the manufacture of more than one model. Each part has a description and an id code. Each model of car is produced at just one of the firm's factories, which are located in London, Birmingham, Bristol and Manchester - one in each city. A factory produces many models of car and many types of part although each type of part is produced at one factory only.

7) Construct tables in RDBMS with appropriate keys and constrains for the given scenario. The Prescriptions-R-X chain of pharmacies has offered to give you a free lifetime supply of medicine if you design its database. Given the rising cost of health care, you agree. Here's the information that you gather:

- Patients are identified by an SSN, and their names, addresses, and ages must be recorded.
- Doctors are identified by an SSN. For each doctor, the name, specialty, and years of experience must be recorded.
- Each pharmaceutical company is identified by name and has a phone number. For each drug, the trade name and formula must be recorded. Each drug is sold by a given pharmaceutical company and the trade name identifies a drug uniquely from among the products of that company. If a pharmaceutical company is deleted, you need not keep track of its products any longer.
- Each pharmacy has a name, address, and phone number.
- Every patient has a primary physician.
- Every doctor has at least one patient.
- Each pharmacy sells several drugs and has a price for each. A drug could be sold at several pharmacies, and the price could vary from one pharmacy to another. Doctors prescribe drugs for patients. A doctor could prescribe one or more drugs for several patients, and a patient could obtain prescriptions from several doctors.
- Each prescription has a date and a quantity associated with it. You can assume that, if a doctor prescribes the same drug for the same patient more than once, only the last such prescription needs to be stored. Pharmaceutical companies have long-term contracts with pharmacies.
- A pharmaceutical company can contract with several pharmacies, and a pharmacy can contract with several pharmaceutical companies. For each contract, you have to store a start date, an end date, and the text of the contract. Pharmacies appoint a supervisor for each contract. There must always be a supervisor for each contract, but the contract supervisor can change over the lifetime of the contract.

8) Suppose you are given the following requirements for a simple database for the National football League (NFL):

• The NFL has many teams,

• Each team has a name, a city, a coach, a captain, and a set of players,

• Each player belongs to only one team,

• Each player has a name, a position, a skill level, and a set of injury records,

• A team captain is also a player,

• A game is played between two teams (referred to as host team and guest team) and has a date and a score.

Construct EER diagram with cardinalities.

9) Write the SQL for the following Database Schema

Works(Pname, Cname, Salary)

Lives(Pname,Street,City)

Located in(Cname, City)

Where Pname = person's name

   Cname = company's name

a) Retrieve the names of all person of TCS whose salary is more than Rs. 50,000

b) Find the names of all persons who live and work in same city.

c) Find the average salary of "TCS" employees.