к. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH,
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Program: *MIM Semester I (2018-21 Batch)*
Course: Database Applications
(End Term Examination)

Maximum Marks: 50
Duration: 3 hours   Date: 20-Nov-2018

Instructions
1. **Be Precise and to the point**
2. **Support your answers with appropriate examples and diagrams wherever possible**

Question 1   **[10]**
Explain the importance of normalisation. For the following purchase order design the table structure:

PO#		Date
Vendor		

Dear Sir/Madam		

    Reference to your quotation _____ (dt. ___/___/____) , we are pleased to place the order on you for the following items:

Sr. #	Product Description	Quantity	Rate	Amount	Delivery
::	:::	::::	::::	::::::	::::::

Delivery schedule :
Inspection   : At your end by us/By us at our end
Packing & Marking: Carton packing & labels bearing date of purchase, company name
Mode of delivery   : By Hand/ By Courier

Authorised Signatory details

Question 2   **[15]**
Design a database for Training and Development (T & D) system that would accomplish the following:
- The stored data can be manipulated to match employees training requirements with the identified (available) training programs.
- The feedback can be analyzed to identify the changes required in the training programs.
- Generate periodic reports (indicative)that may provide information such as:
    i.   Department wise list of employees recommended for training
    ii.   List of training topics
    iii. List of internal resource person
    iv.   Training institute identified as external resource
    v.   Employees above age 55
    vi.   Employees who have not attended any training program over last two years
    vii. Training schedule
    viii. Program evaluation
- State the business rules and assumptions clearly. The database should in minimum provide for:

  i. Investigating training needs
  ii. Help in Designing training program
  iii. Aid conduction of training
  iv. Access effectiveness of training

Question 3   [15]
Answer any THREE of the following
a) Differentiate file processing system with Database Management System
b) Explain the ACID property.
c) Explain merits and demerits of hierarchical and network database models
d) What is data abstraction? Explain the different levels of data abstraction.
e) What are the different types of keys that an RDBMS support? Explain different kinds of relationships.

Question 4   [10]
Draw an ER diagram for the following:
a) The `university` database stores details about university students, courses, the semester a student took a particular course (and his mark and grade if he completed it), and what degree program each student is enrolled in. The requirement list –
  - The university offers one or more programs.
  - A program is made up of one or more courses.
  - A student must enroll in a program.
  - A student takes the courses that are part of her program.
  - A program has a name, a program identifier, the total credit points required to graduate, and the year it commenced.
  - A course has a name, a course identifier, a credit point value, and the year it commenced.
  - Students have one or more given names, a surname, a student identifier, a date of birth, and the year they first enrolled. We can treat all given names as a single object—for example, "John Paul."
  - When a student takes a course, the year and semester he attempted it are recorded. When he finishes the course, a grade (such as A or B) and a mark (such as 60 percent) are recorded.
  - Each course in a program is sequenced into a year (for example, year 1) and a semester (for example, semester 1).

b) The `flight` database stores details about an airline's fleet, flights, and seat bookings. The requirement list –
  - The airline has one or more airplanes.
  - An airplane has a model number, a unique registration number, and the capacity to take one or more passengers.
  - An airplane flight has a unique flight number, a departure airport, a destination airport, a departure date and time, and an arrival date and time.
  - Each flight is carried out by a single airplane.
  - A passenger has given names, a surname, and a unique email address.
  - A passenger can book a seat on a flight.

-x-x-x-