TE Comp Sem V
Advanced Database Mgmt Syst

Con. 3402-11. (REVISED COURSE) **RK-2085**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Attempt any **five** questions from the following.
(2) Assume any **suitable** data if **necessary** and **clearly** state it.

1. a) Explain with suitable examples: Aggregation, Specialization and Generalization in EER diagrams. 10
   b) In SQL3 how type inheritance and table inheritance is implemented? Explain with suitable example. 10

2. Consider a university database that keeps track of student and their majors, transcripts and registration and the university's courses. Several sections of each course are offered and each section is related to the instructor who is teaching. It also keeps track of the sponsored research projects of faculty and graduate students of the academic departments of the particular collage. The database also keeps track of research grants and contracts awarded to the university. A grant is related to one principle investigator and to all researchers it supports.
   (i) Draw an EER diagram for the above statement. 06
   (ii) Design Object Oriented Database Schema for the same. 08
   (ii) Answer the following queries in Object Query Language:- 06
      1) Extract the names of the students who have completed the course "ADB"
      2) Retrieve the names of all departments in the course of Engineering.

3. a) The company database keeps track of a company's employees, departments and projects. An employee is assigned to one department but may work on several projects. A department controls a number of projects. The manager manages the department and the supervisor supervises each employee. A department may have several locations. We want to keep track of the dependents of each employee for insurance purposes. For this statement of the problem, answer the following:
      i) Design a suitable global distributed database schema for this problem. 05
      ii) Clearly identify the Fragmentation schema and the guard conditions for each fragment. 05
   b) Describe the steps used to perform JOINS in a Parallel Database. 10

4. a) Explain concurrency control and recovery in distributed data base management system. 10
   b) Give the general architecture of mobile computing using wireless and client network relationship. 10

5. a) University database Contains information about the courses and the professors who teach the courses in each Semester. Each course must also have information about the number of students enrolled, Room no., Date and Time (where and when the course is conducted)
   i) Write DTD rules for above XML document. 05
   ii) Create an XML schema for above XML document. 05
   b) Explain nested relation in ORDBMS with suitable example. 10

6. The Mumbai University wants you to help to design a star schema to record grades for course completed by the students. There are four dimensional tables namely, Course_section, Professor, Student and Period with attributes as follows:
   - **Course_section**(*Course_ID, Section_No., Units, Room-Id, Room_Capacity*) During a given semester the college offers an average of 500 course sections.
   - **Professor**(*Prof_ID, Prof_Name, Title, Department-ID, Department_Name*)
   - **Student** (*Student_ID, Student_Name, Major*). Each course section has an average of 60 students.
   - **Period**(*Semester_ID, Year*). The database will contain data for 30 months periods. The only fact that is to be recorded in the fact table is Course_Grade.

   Answer the following questions:
   i) Design the star schema for building a data warehouse. 10
   ii) Using examples describe how mining can be useful in the above application. 10

7. Write a short note on the following: – 20
   a) Persistent object
   b) Types of Multimedia sources
   c) Temporal DB
   d) Geographical Information System.
