

## (REVISED COURSE)

(3 Hours)

[Total Marks : 100

- N.B.:** (1) Question No.1 is **compulsory**.  
 (2) Attempt any **four** questions out of remaining **six** questions.

1. Blood bank is a critical entity in providing required type of blood to the patients at critical time. Their database keeps track of the inventory of the blood, together with relevant information like blood group, date received, location, date of expiry, donor etc. 20
- The database keeps information such as name, address, and telephone number of other blood banks in the area. The reason for doing so is to get blood of a particular type from other banks in case of emergency. Information about donors is recorded as well. Donors are classified into occasional and regular donors. For the regular donors, the database keeps information such as identification number, blood type and a history of their donations.
- A list of health care providers in the area along with information such as address, telephone number etc. is kept. The healthcare providers are the customers of the blood bank. They keep track of the blood transactions performed. These transactions are classified into : normal transactions and unexpected transactions (for example, the motor accidents during the holiday season). The reason for keeping track of the unexpected transactions is to use this information in estimating the extra amount of blood to keep in the inventory for each age group during the coming holiday season.
- (a) Draw an extended E-R diagram for the system.  
 (b) Draw an Object-Oriented schema  
 (c) Take two typical queries and write them in OQL.
2. (a) Explain the concept of nested relation in ORDBMS with example 10  
 (b) Compare and contrast RDBMS, OODBMS and ORDBMS. 10
3. (a) Describe different architectures for Parallel Databases. 10  
 (b) Explain various types of transparencies in distributed databases and also list advantages and disadvantages of distributed databases. 10
4. (a) Consider the global schema :— 10  
 PATIENT (number, name, ssn, amount\_due, dept, doctor, med\_treatment)  
 DEPARTMENT (dept, location, director)  
 STAFF (staffnum, director, task)  
 I. Show 2 examples of horizontal fragmentation  
 II. Show 2 examples of vertical fragmentation  
 (b) Write XML Schema for Mumbai University Exam results. Assume few branches and few colleges of Engineering. 10
5. (a) Explain in brief Deductive database system 10  
 (b) Write a detailed note on Geographical Information System 10
6. Explain the following with example :— 20  
 (i) Object Identity  
 (ii) Transient and Persistent object  
 (iii) Specialization and Generalization  
 (iv) Subclass and Superclass
7. Write notes on (any four) :— 20  
 (i) XPATH  
 (ii) XQUERY  
 (iii) Persistent Programming Languages  
 (iv) SQL3 standard  
 (v) Mobile Databases