

Con. 5203-07.

(REVISED COURSE)

CD-5550

(3 Hours)

[Total Marks : 100]

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **four** out of remaining.  
 (3) **Figures** to the **right** indicates **full** marks.  
 (4) **Make** reasonable assumptions.

**Q.1** In a company database, we need to store information about employees, departments, and children of employees. For each employee, identified by an emp.no, we must record the number of years worked, phone number and a photograph for identification. There are two classes of employees, regular and contract. The salaries for both are calculated differently. For the regular employees, we must record the name of the children and their ages. For each photo depending on its type, a display method is defined. For each department we must record dept.no., deptname, budget, and employees who work in that department.

- (a) Draw an extended ER diagram for the above system (6)  
 (b) Design an OR or OO system (6)  
 (c) For two typical queries write OQL or SQL3 representations (8)

**Q.2.** Consider a database keeping track of sales of different products in a company. Information of different zones where the sales are made is also stored.

- a) Discuss the design of a data warehouse using a star schema for this application. (10)  
 b) Explain the OLAP operations of rollup, drill down and pivot for the above application (10)

**Q.3 (a)** Using an example system describe DTD for the XML schema of the system. (10)

(b) Explain querying and transformation of XML data. (10)

(1) Display books, magazine and journals sorted by year

(2) Find all authors who have written a book and also a journal article in the same year.

**Q4 (a)** Consider any example system of your choice explain the design of a distributed database.

Show 2 examples each for horizontal, vertical and derived fragmentation (10)

(b) Using the same example explain the different type of parallel database architectures (10)

**Q 5** Explain the following concepts with examples:

(a) Object Identity (OID)

(b) Type constructor

(c) Persistent data types

(d) Accessor functions (GET and SET)

(5 \* 4 = 20)

**Q6 (a)** Define Data Mining? Describe classification, clustering and give one example system where each may be useful. (10)

(b) Define a temporal database, using a flight reservation system as an example. (10)

**Q7 (a)** Explain the concepts of spatial data and Geographical Information Systems (GIS) using an appropriate application (10)

(b) Describe clearly issues involved in mobile databases and solutions for them. (10)