

**GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. VII<sup>th</sup> Semester–Examination – Nov- 2011

Subject code: 171602

Subject Name: Distributed Database Application &amp; System

Date:26/11/2011

Time: 10:30 am – 01:00 pm

Total Marks: 70

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**Q.1** Given the following relational database.

Employees

EmpNo	EmpName	Salary
E1	Federer	20000
E2	Klum	10000
E3	Spears	12000
E4	Montoya	6000
E5	Beckham	15000
E6	Lopez	18000

ProjectAssignments

EmpNo	ProjNo	MonthsSpent
E1	P1	3
E2	P2	4
E2	P4	2
E3	P3	8
E4	P1	6
E5	P2	9
E6	P4	4.5

Projects

ProjNo	ProjName	Location	Budget
P1	Training	Geneva	98000
P2	Advertising	Geneva	72000
P3	Management	Munich	150000
P4	Customer Support	Zurich	120000

Typical queries from applications are:

At the controlling department located in Geneva:

A1

```
SELECT P.ProjNo, P.Budget, PA.EmpNo, PA.MonthsSpent
FROM Projects P, ProjectAssignments PA
WHERE P.ProjNo = PA.ProjNo AND P.Budget < 110000
```

A2

```
SELECT PA.EmpNo, PA.ProjNo, PA.MonthsSpent
FROM Employees E, ProjectAssignments PA
WHERE E.EmpNo = PA.EmpNo AND E.Salary > 11500
```

At the human resource department located in Munich:

A3

```
SELECT * FROM Employees E
```

A4

```
SELECT E.*, PA.MonthsSpent
FROM Employees E, ProjectAssignments PA
WHERE E.EmpNo = PA.EmpNo
```

At the sales coordination department located in Zurich:

A5

```
SELECT * FROM Projects
WHERE Location != "Geneva"
```

1) For the relations Employees and Projects, determine minimal sets of simple predicates. 05

2) What are the corresponding fragments of the two relations Employees and Projects? 04

3) How would you fragment ProjectAssignments horizontally? 05

- Q.2 (a)** What is normalization? Explain all normal form with example. **07**
- (b)** What are the various problem areas in DDBS environment? Explain them in details. **07**
- OR**
- (b)** Explain Database interoperability. **07**
- Q.3 (a)** Draw and explain various components of Distributed DBMS. **07**
- (b)** Explain Set oriented assertions and its enforcement with example. **07**
- OR**
- Q.3 (a)** Explain views in distributed DBMS. Also what is data security in DDBS. **07**
- (b)** Explain partitioning algorithm. **07**
- Q.4 (a)** What is allocation? List the information requirements during allocation. **07**
- (b)** Which process of DDBS design is used when we wanted to design DDBS from scratch? Also draw and explain that process. **07**
- OR**
- Q.4 (a)** Explain the Client server architecture for Distributed DBMS with figure. **07**
- (b)** What are the various types of network? Explain each in detail. **07**
- Q.5** Write a note on following (Attempt any two) **14**
- i) Distributed concurrency control.
- ii) Reliability in Distributed DBMS
- iii) Parallel database systems
- OR**
- Q-5 (a) i)** Explain reduction for hybrid fragmentation. **03**
- ii)** Draw and explain query optimization process. **04**
- (b)** Explain MDDBS architecture with and without GCS. **07**

\*\*\*\*\*