**AKGEC/IAP/FM/02**

**Ajay Kumar Garg Engineering College, Ghaziabad**

**Department of CSE**

**Sessional Test-2**

Course: B.Tech Semester: V

Session: 2017-18 Section: CS-1,CS-2,CS-3,IT-1,IT-2

Subject: Database Management System Sub. Code: NCS-502

Max Marks: 50 Time: 2 hour

***Note*** : Answer **all** the Sections.

**Section-A**

**A.**  Attempt **all** the parts. **(5 X 2 = 10)**

(1) What do you mean by referential integrity?

(2) Distinguish between functional dependency and multi-valued dependency.

(3) What is union compatibility?

(4) Explain insert and delete anomalies associated with RDBMS?

(5) Differentiate between partial functional dependency and full functional dependency.

**Section-B**

**B.** Attempt **all** the parts. **(5 X 5 = 25)**

(6)Consider the Schema Given below

EMPLOYEE(E-NAME,STREET, CITY)

WORKS-FOR(E-NAME, COMPANY NAME, SALARY)

COMPANY(COMPANY-NAME, CITY)

MANAGES(E-NAME,MANAGER-NAME)

Write the SQL queries for the following

1. Find the name of employees works for infosys.
2. Find the names and cities of residence of employees working for TCS.
3. Find name, street and city of residence of employees working for infosys and earning more than 20,000.
4. Find names of employees working in the same city where they live.
5. Find the names of employees, who are not working for wipro.

(7) What do you mean by SQL JOIN ? Explain its types with suitable Example.

(8) What are prime and non-prime attributes? For the relation R(A,B,C,D,), find

,prime and non prime,full and partial functional dependencies of following FDs.c

C 🡪D, C🡪A, B🡪C

(9) What do you mean loss-less join decomposition? Determine whether the following

decomposition of SP(S#,Sname,Scity,Status,P#,Pname, Price,Qty) is loss-less-join

decomposition or not.

Decomposition:

CS(Scity, Status)

SUPP(S#, Sname, Scity)

PART(P#, Pname, Price)

SPN(S#, P#, Qty)

FDs Holding on SP:

S# 🡪Sname, Scity

Scity 🡪 Status

P# 🡪 Pname, Price

{S#,P#} 🡪 Qty

(10) Compute the closure of the following set *F* of functional dependencies for relation

schema R = (A, B, C, D, E). A →BC, CD →E, B→ D, E→ A

List the candidate keys for R. Find canonical cover Fc.

**Section-C**

**C.** Attempt **all** the parts. (2 **X 7.5 = 15)**

(11) Consider the schema R(A, B, C, D, E, F) and the set of functional dependencies:

A🡪BCDEF, BC 🡪ADEF, B🡪F, D🡪E What is the key to R? Is the relation in 3NF.

If yes then explain your answer. If not, then decompose it into the appropriate 3NF

relations. Show clearly all the steps involved.

(12) Consider the following relational algebra expression to answer the following:

Employee(ename,street,city)

Works(ename,cname,salary)

Company(cname,city)

Manages(ename,mname)

1. Find the names of all employees who work for First Bank Corporation.
2. Find the names and cities of residence of all employees who work for First

Bank Corporation.

1. Find the names, street address, and cities of residence of all employees who

work for First Bank Corporation and earn more than $10,000 per annum.

1. Find the names of all employees in this database who live in the same city

as the company for which they work.

1. Find the names of all employees who live in the same city and on the same

street as do their managers.

1. Find the names of all employees in this database who do not work for First

Bank Corporation.

1. Assume the companies may be located in several cities. Find all companies

located in every city in which Small Bank Corporation is located.