Uva Wellassa University, Sri Lanka
End Semester Examination – March 2011
CST 223-2 Database Management Systems
SCT 375-2 Database Management Systems & Repeat
CST 203-2 Database Management Systems(Repeat)
Time: One (01) hour
PART B

Total Two (02) questions.
Answer all questions.

1. Consider the schema given below. (25 Marks)

Professor(ssn, profname, status, salary)
Course(crscode, crsname, credits)
Taught(crscode, semester, ssn)

Assumption:

- Each course has only one instructor in each semester;
- All professors have different salaries;
- All professors have different names;
- All courses have different names;
- Status can take values from "Full", "Associate", and "Assistant".

Write the relational algebra expressions for the following queries.

a) Return the SSN of those professors who have taught 'csc6710' but never 'csc7710'.
b) Return the SSN of those professors who have taught both 'csc6710' and 'csc7710'.
c) Return the SSN of those professors who have never taught 'csc7710'.
d) Return the SSN of those professors who taught 'CSC6710' and 'CSC7710" in the same semester.
e) Return the SSN of the professor who earns the second highest salary.

2. Consider the given table which is used to store the details of students in the university. (25 Marks)

Sid	Sname	Phone	Course-id	Course-description	Credit-hours	Grade
100	Saman	487 2454	CST 380	Database Concepts	3	A
100	Saman	487 2454	CST 416	Unix Operating System	3	B
200	Kalani	671 8120	CST 380	Database Concepts	3	B
200	Kalani	671 8120	CST 416	Unix Operating System	3	B
200	Ruvini	671 8120	CST 420	Data Network	3	C
300	Ruvini	871 2356	CST 417	System Analysis	3	A

a) Identify the attribute(s) for super keys, candidate keys, primary key and alternative keys seperately.

b) Identify the functional dependencies among attributes of the relation.

c) Find the normal form of the relation.

d) Convert the relation in to 3NF if it is not in 3NF.