EASTERN UNIVERSITY, SRILANKA

EXTERNAL DEGREE SECOND EXAMINATION IN

SCIENCE- 2002/2003 (Oct./Nov., 2007)

EXTCS 253 – Database Design (Practical)

Answer all questions **Time: 2 hours**

The following relations keep track of airline flight information:

Flights (*fino:* INTEGER, *from:* VARCHAR(20), *to:* VARCHAR(20), *distance:* INTEGER, *departs:* TIME, *arrives:* TIME, *price:* INTEGER)

Aircraft (*aid:* INTEGER, *aname:* VARCHAR(20), *cruisingrange:* INTEGER)

Certified(*eid:* INTEGER, *aid:* INTEGER)

Employees (*eid:*INTEGER, *ename:* VARCHAR(50), *salary:* INTEGER)

Note that the Employees relation describes pilots and other kinds of employees as well; every pilot is certified for some aircraft, and only pilots are certified to fly.

a) Create the relational database for the above schemas using Microsoft Access. Ensure that appropriate referential integrity constraints are met. Save the database as **Flight.mdb**. State the assumptions you made if any, in the answering paper given to you.

[30 marks]

b) Set the field properties so that:

a. Aircraft number (*aid*) contains 7 characters, whereas first 4 letters designate the aircraft name and other 3 numbers designate the aircraft number.

[2 marks]

b. Employee number (*eid*) contains 6 characters, whereas first 3 letters designate the designation name and other 3 numbers designate the employee serial number.

[2 marks]

c. Flight number, aircraft number and employee number should be displayed in capital letters.

[1 marks]

c) Insert suitable records such that the below given queries can be tested, into the tables you have just created.

[15 marks]

d) Write each of the following queries in SQL.

(i) Find the names of aircraft such that all pilots certified to operate them earn more than Rs.80,000.

(ii) For each pilot who is certified for more than three aircraft, find the *eid* and the maximum *cruisingrange* of the aircraft for which she or he is certified.

(iii) Find the names of pilots whose *salary* is less than the price of the cheapest route from "Los Angeles" to "Honolulu".

(iv) For all aircraft with *cruisingrange* over 1000 miles, find the name of the aircraft and the average *salary* of all pilots certified for this aircraft.

(v) Find the names of pilots certified for some "Boeing" aircraft.

(vi) Find the *aids* of all aircraft that can be used on routes from "Los Angeles" to "Chicago".

(vii) Identify the routes that can be piloted by every pilot who makes more than $100,000.

(viii) Print the *enames* of pilots who can operate planes with *cruisingrange* greater than 3000 miles but are not certified on any "Boeing" aircraft.

(ix) Compute the difference between the average salary of a pilot and the average salary of all employees (including pilots).

(x) Find the name and salary of every non pilot whose salary is more than the average salary for pilots.

[4*10 = 40 marks]