CITY UNIVERSITY OF HONG KONG Seat No. _____

Student No. _____

Module Code & Title : CS3402 Database Systems

Session : Semester A 2001-2002

Time Allowed : Two hours

This paper has EIGHT pages (including this page).

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1. This paper consists of two sections
2. Answer ALL THREE questions in Section A
3. Choose ANY THREE questions ONLY in Section B
4. Put all answers in space given on this question paper

Material, aids & instruments permitted to be used during examination :

1. One A4 size paper of any personal notes

Section A : Answer ALL THREE questions (Total 55 marks)

A1. [10 marks] Hong Kong based Bauhinia Airline operates a large number of non-stop flights to and from major cities around the world. A new flight status enquiry system is to be added so that customers can verify flight departure and arrival status at anytime from anywhere via Internet.

Each morning a new table of flights scheduled for the day is added to the status database. The latest departure and arrival information will be updated from time to time as available. These records will remain in the system for up to three days. Anyone can find out the latest status of flights from Bauhinia's web page by any matching keys.

In the space below, draw the ER diagram of this new simple flight status database. You may refer to information from other questions in this section. Highlight entity types, relationship and primary keys ONLY.

A2 [15 marks] Derive the fully normalized form from this sample enquiry display.

Bauhinia Airline Flight Status

Enquiry Key – Flight : BH123

Date	Flight	Origin City	Departure	Destination	Arrival	Status
Dec. 19, 01	BH123	Hong Kong	22:30 (Scheduled) 22:40 (Actual)	Honolulu	10:55 (Scheduled) 10:53	On Time
Dec. 20, 01	BH123	Hong Kong	22:30 (Scheduled) 23:58 (Actual)	Honolulu	10:55 (Scheduled) 12:11	Delayed
Dec. 21, 01	BH123	Hong Kong	22:30 (Scheduled)	Honolulu	10:55 (Scheduled) Chk in from 20:30	

Thank You for Flying with Bauhinia! *Merry Christmas!*

A3 [30 marks] Write SQL statements based on the following two tables (2 marks will be **deducted** from each **non-compilable** answer; Oracle coding assumed, please specify otherwise) :

FLIGHT (Flight_No, Origin_City, Departure, Destination, Arrival)
STATUS (Date, Flight_No, Actual_Departure, Dp_Gate, Actual_Arrival, Ar_Gate, F_Status)

a. Flights to Europe are being diverted away from flying over a restricted Middle East zone today. Update all concerned flights BH400-BH499 with 'Delayed' status. (6 marks)

b. Create a View for Australian regional management all status of Bauhinia flights between Hong Kong and Sydney/Melbourne/Brisbane. (9 marks)

c. List the number of flight delays yesterday by origin cities. (9 marks)

d. Delete all status records which are more than three days old. (6 marks)

Section B : Answer ANY THREE questions ONLY (15 marks each, total 45 marks)

B1. The current hierarchical reservation database for Bauhinia Airlines has been running well for many years. You are asked to recommend EITHER using this existing approach OR using relational database to write this new status enquiry system. Give the MOST important reason for your decision.

B2. Recommend approach(es) to go about recovery/backup for the flight status database system. How often should this system apply checkpoints? And Why?

B3. Which concurrency control technique would you prefer for the status enquiry system? Give the major reason to support your choice.

B4. Bauhinia plans to offer her customers data access ability from Internet browsers, describe ONE practical way on how to achieve linking up her databases with the Internet world.