Student Name:_____

Student ID:_____

Seat No.:_____

CITY UNIVERSITY OF HONG KONG

Course code & title : CS3402 Database Systems

Session : Semester A 2002/03

Time allowed : Two hours

This paper has **NINE** 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 FOUR questions from Section B.
4. Put all your answers in the space given in this examination paper.

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

Textbook: "Database Systems" by T.Connolly, C.Begg

NOT TO BE TAKEN AWAY

Section A : Answer ALL THREE questions (Total 52 marks)

A1 [14 marks]

Derive the tables in third normal form from this sample document.

Cornwall Hotel Invoice

Name **Jacky Tung** **Invoice No.** 11082002
Address 999 New Century Road
PuTung
China

Check-In	Check-Out	Room	Type	Price	Amount
31-Dec-02	2-Jan-03	538	Single	380.00	760.00
2-Jan-03	4-Jan-03	828	Family	1380.00	2760.00
				Total:	**3520.00**

A2 [9 marks each, total 27 marks; 3 marks are to be deducted from each answer not compilable in SQL]

Room	(Room_No, Type, Price)
Booking	(Guest_No, Date_From, Date_To, Room_No)
Guest	(Guest_No, Name, Address, Credit_Card_No., Status)

Based on the above tables, write SQL statements to satisfy the following requests :

a. Assign 'CC' status to all guests who may have stayed with Cornwall for a total of 12 or more days this year. (All days within bookings that cross over New Year Eve are counted)

b. A new 35% discount is given to all Cornwall Club (CC) guests. List names, room numbers of CC guests currently staying at Cornwall and their total savings due to this discount.

c. Delete all Guest records for those who have checked out from Cornwall for more than ten weeks and have no future bookings.

A3. [11 marks]

```
Create TRIGGER XXX

Before insert on booking
For each row

Declare record_count number;

Begin    Select count(*) into record_count From booking
         Where room_no =  new.room_no and
                ( new.date_from between date_from and (date_to – 1) or
                  new.date_to between date_from + 1 and date_to );

if ( record_count >= 0 ) then
   raise_application_error ( -20304, 'This room has been reserved !');

end;
```

i. Referring to the Booking table in question A2, what is the **purpose** of this trigger?

ii. In the above trigger program, **circle** any areas that you consider the coding needs to be made complete. Write the necessary **corrections** on the side of this page so that the program can carry out its mission in Oracle System, and draw line(s) to **link** them to the appropriate circles.

Section B : Answer **ANY FOUR** questions (12 marks each, total 48 marks). All questions apply to Cornwall Hotel booking system as in Section A. Give **concise** answers and up to the point reasoning.

B1. The hierarchical database for Cornwall has been running well for two decades. You are asked to justify on retaining this existing approach OR to rewrite a new system using relational database approach. Give the most important reason for your decision.

B2. Recommend TWO main ways to go about backup/recovery for Hotel Cornwall reservation system. How often should checkpoints be taken?

B3. Which concurrency control method for this room reservation system do you prefer? Give major reason(s) to support your choice.

B4. Cornwall wishes to offer her VIP customers the data access ability from Internet, suggest ONE application and discuss how it can help to promote the image of superior service to these loyal customers.

B5. List THREE important enterprise constraints for Cornwall Hotel that are required to preserve data integrity.

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