

Please fill in your Student Number and, optionally, Name.

Student Number : _____

Name : _____

For Official Use

Mark : _____

Marker : _____

University of Cape Town ~ Department of Computer Science

Computer Science 1016S ~ 2007

Theory Test 2A

Question	Mark	Marker
1		
2		
3		
4		
Total		

Marks : 30

Time : 40 minutes

Instructions:

- a) Answer all questions.
- b) Write your answers in the space provided.

c) Show all calculations where applicable.

Question 1: UML [10 marks]

- a) Draw a UML class diagram to describe a booking system of a travel agent. In this system, a customer can go from a city to another by an aeroplane or a car and he/she can pay by cash or credit card

Requirements: there should be at least 6 concrete classes and 2 abstract classes with all the following links: inheritance, association, aggregation, multiplicity and navigation

The booking class diagram should have at least 2 attributes and 2 operations (those you consider are most important)

Answer:

Question 2: Cloneable Interface [10 marks]

Given the following code

```
public class Person implements Cloneable
{
    int personId;
    String personName;
    .....
    try {
        return super.clone();
    }
    catch (CloneNotSupportedException e) {
        return null;
    }
    .....
}
```

a) Explain what a **Cloneable** interface is and what it is for?

Answer:

[2 marks]

b) Why is a **CloneNotSupportedException** needed in the above code and when does this exception occur?

Answer:

[2 marks]

[3 marks]

b) Give an code example of using your new defined generic class from question 3.a

Answer:

```
public static void main(String[] args) {
```

```
//write your code here
```

```
}
```

[2 marks]

Question 4: [5 marks]

a) Provide a diagram to represent a single linked list that stores the following list of integers as the only data in the nodes.

[1 mark]

b) Provide a second diagram that illustrates how you would add a new element, 17, to the list in the correct numerical order.

[2 marks]

