



OXFORD BROOKES UNIVERSITY

BACHELOR OF SCIENCE (HONOURS)

DECEMBER 2005 EXAMINATION

16<sup>th</sup> DECEMBER 2005

M8748: INFORMATION SYSTEMS ANALYSIS AND DESIGN

TIME : 2 Hours + 10 Minutes Reading

NUMBER OF PAGES : 1 Cover sheet and 3 Pages of questions

Φ INSTRUCTIONS:

- θ All Questions in SECTION A are COMPULSORY and choose any TWO questions in SECTION B.
- θ Section A carries 40 marks.
- θ All questions in Section B carry 30 marks each.
- θ Please start every question on a new page.
- θ Answers will not be marked if they are illegible.
- θ Enter the question numbers (in the order you have attempted) in the boxes provided in the answer script.
- θ Write your INDEX NUMBER and MODULE NUMBER on the cover page of the answer script.

## SECTION A

(Answer ALL questions)

### QUESTION 1

Here is a scenario of vehicle rental system. A vehicle rental company rent the various models of vehicles. A person can rent more than vehicles including different models, types and sizes etc.

Each vehicle belongs to one vehicle type (could be MPV, SUV or normal cars). A vehicle type contains any number of vehicles. Reservations always relate to one vehicle type (and not to an actual vehicle). Rentals always relate to an actual vehicle (when rental confirmed).

The rental reference refers to a vehicle that belongs to a vehicle type different from the one that is defined in the reservation linked to the rental system.

Students may consider applying their own knowledge to the above scenario.

We want to eventually create a system that will let us define, update and report on various vehicle rentals system.

- (a) Use appropriate graphical notations to depict the Project stakeholders of the vehicle rental system. [10 marks]
- (b) Using the noun analysis technique discover a number of suitable classes with relationship from the description of each use case drawn in part (a). [This is open ended and you may consider to include as many relevant project stake holder as you can. Required to draw Class diagram] [13 marks]
- (c) Use appropriate graphical notations to depict the requirements of a system that defines the interactions between fleet management, customer, customer vehicle rental and billing (updates and reports on vehicle rental system). [require to draw a Use Case diagram]. [7 marks]
- (d) Consider the following scenario Course Registration System in the Informatics University, the following functions are performed by different actors :-
  - Register for courses
  - Select courses to teach
  - Request course roster
  - Maintain course information
  - Maintain professor information
  - Maintain student information
  - Create course catalog

Use appropriate graphical notations to depict the requirements of a system that defines, updates and reports on vehicle rental system (require to draw a Use Case diagram). [10 marks]

[TOTAL FOR QUESTION 1: 40 MARKS]

## SECTION B

(Answer any TWO Questions)

### QUESTION 2

During the initial analysis of an information system for the vehicle rental system, there is a need to identify the activities of the process flow – (Require to draw a activity diagram from the above scenario from Q1).

(a) Draw a activity diagram. [20 marks]

(b) What do you understand by the following terms.

- (i) Functional Requirements
- (ii) Non-functional requirements
- (iii) Pseudo requirements

[6 marks]

(c) Describe when it is justified to use “V” model approach for software development.

[4 marks]

[TOTAL FOR QUESTION 2: 30 MARKS]

### QUESTION 3

(a) The state diagram shows the status of the activities of the business process under different scenarios. Draw a state diagram showing the various states for the vehicle rental system from the above scenario (from Q1). [20 marks]

(b) State some of problems of using prototyping. [10 marks]

[TOTAL FOR QUESTION 3: 30 MARKS]

### QUESTION 4

A Publishing and magazine circulation company analyse, publish and circulate the magazine. They have their own library where librarian registers, archive and preserve the magazines copy they published. The company's secretary create circulation note and the analyser, analyse the magazine contents.

(a) Draw a Use Case diagram for the above Magazine circulation company system. [10 marks]

(b) Inheritance is a characteristic in Object Oriented programming. What do you understand by inheritance? Define their benefits as well. [10 marks]

(c) State the purposes of Use Cases. Identify the limitations of Use Cases in Object Oriented methodology? [10 marks]

[TOTAL FOR QUESTION 4: 30 MARKS]

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