UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL EXAMINATION
JANUARY 2016 SEMESTER

COURSE CODE	:	ICB 20403
COURSE NAME	:	OBJECT ORIENTED SYSTEM ANALYSIS AND DESIGN
PROGRAMME NAME	:	BIT (HONS) IN SOFTWARE ENGINEERING
DATE	:	27 MAY 2016
TIME	:	9.00 am – 11.30 am
DURATION	:	2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

1. Please CAREFULLY read the instructions given in the question paper.

2. This question paper has information printed on both sides of the paper.

3. This question paper consists of TWO (2) sections; Section A and Section B.

4. Answer ALL questions in Section A. For Section B, answer TWO (2) questions ONLY.

5. Please write your answers on the answer booklet provided.

6. Answer all questions in English language ONLY.

THERE ARE 5 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

SECTION A (Total: 50 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

Read the following case study:

AirAsia E-commerce Solution

AirAsia wants an e-commerce website that will enable potential passengers to check flight timetables and will allow flights to be booked and paid for using a credit/debit card.

The new e-commerce system should be able to handle three categories of potential passengers: adults, who pay full fare, children (under the age of 15), who pay half fare and frequent flyers, who get a 10% discount.

In order to make a booking a visitor will use the website to select their preferred departure and destination cities where the airline operates. Next, the visitor will select the departure and return dates. Then a list of all the available flights will be displayed, including fares for each flight. After that, the visitor should be able to select a flight from the list. Of course, the system will not display any 'fully booked' flights.

The system will then prompt the visitor to enter the details of all intended passengers (e.g. name, telephone number, postal address, date of birth, and e-mail address). Additional details like seating preference (aisle or window) and meal preferences (vegetarian) may also be entered. Frequent flyers will have to enter a valid 10-digit PIN in order to get the discount.

When the visitor has confirmed the booking details, the system will provisionally book the seat(s) so that no other visitor can make a booking for the same seat(s) on the same flight.

Then the visitor will be prompted to input the payment details such as cardholder name, card number, issue date, etc. The system will then transfer control to a separate secure server for credit status confirmation.
If payment is authorized the system will book the flight, mark the seat(s) as "sold" and automatically issue an "e-ticket" confirming flight details to the passenger. Once payment has been received, cancellations cannot be made.
If payment is rejected by the secure server the entire transaction will be rolled back and the seat(s) will become available to other visitors.

(a) Develop a *Use Case Diagram* for Flight Reservation System. Clearly indicate actor(s) involved and activities, which exist in the system.

(14 marks)

(b) Produce a *Class Diagram* for Flight Reservation System which includes the attributes.

(20 marks)

(c) Develop a *Sequence Diagram* for use case *Make Booking*.

(16 marks)

SECTION B (Total: 50 marks)

INSTRUCTION: Answer TWO questions ONLY.
Please use the answer booklet provided.

Question 2

(a)   Define Information System (IS) and identify **FOUR (4)** elements of IS.

(6 marks)

(b)   Assume that your company hired a new staff to be involved in the project that lead by you. As a project manager you have to brief them on the roles and responsibilities. Describe the roles and responsibilities as a *business analyst* and *system analyst*.

(6 marks)

(c)   Describe the typical process of using prototyping as a requirements analysis technique. Identify **TWO (2)** advantages and **TWO (2)** disadvantages of the prototyping approach.

(8 marks)

(d)   What are Computer-Aided Software Engineering (CASE) tools? Why are they used? Justify your answer.

(5 marks)

Question 3

(a)   Differentiate between functional requirements and non-functional requirements. Give **ONE (1)** example for each requirement.

(6 marks)

(b)   Describe **THREE (3)** fact-finding techniques that can be used for collecting user requirements for a new information system. Identify **ONE (1)** advantage and **ONE (1)** disadvantage for each technique.

(12 marks)

(c)   Describe the concept of inheritance. How does this impact the development of object-oriented systems?

(5 marks)

(d)   What is the purpose of producing use cases?

(2 marks)

Question 4

(a)　Define the following sets of terms:

　　　i.　Object

　　　ii.　Class

　　　iii.　Instance

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(b)　Arissa has been assigned by the project manager to serve as the testing manager for the soon-to-be-completed systems project. The project manager has made it clear that this systems project is normal in every way and they are to design a plan that would be similar to the last. They have written a normal testing plan that is very similar to the testing plan followed on the last three projects. What are the **FOUR (4)** type of tests Arissa should include in their testing plan? Describe **ALL**.

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(c)　Haris has been asked to develop a deployment strategy for a soon-to-be-completed systems project. Only three marketing managers will periodically use the new system, a small marketing advisory system. The deployment must be completed in less than a week. The organization has not fully budgeted the IS departments requested deployment costs. Identify **THREE (3)** type of deployment strategies and make a recommendation to Haris on which deployment strategy that suitable for the project. Justify the recommendation.

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(d)　Describe **FIVE (5)** types of input validation methods.

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END OF EXAMINATION PAPER