NATIONAL SCHOOL OF BUSINESS MANAGEMENT

BSc (Hons) in Software Engineering – 19.1

BSc (Hons) in Computer Networking – 19.1

BSc (Hons) in Computer Security – 19.1

1st Year 3rd Semester Examination

29 July 2020

CS107.3 – Object Oriented Programming with C#

Instructions to Candidates

1) **This paper has two parts.**

   PART A (50%): 25 Multiple Choice Questions

   PART B (50%): 01 Essay Question

2) Time allocated for the examination is three (03) hours and thirty (30) minutes. This includes the time allocated for Part 1-MCQ.
3) Total number of pages - Three (02)
4) You may write your answers on a paper and copy the images of your work into the word template (provided answer booklet) and save your work as a PDF and upload this file to the LMS within the stipulated time. This PDF file should be saved with your index no.
5) You are required to submit the answer file within the allowed timeframe, and no additional time is provided for submissions.
6) All the submissions will be checked for plagiarism. Plagiarism, collusion, and copying are serious offences in the university and serious penalties that would be imposed.
7) You're not allowed to publish or disseminate any part of the paper online or offline.

Part B (Total – 50 marks)

1. Write C# code for the below scenario using OOP concepts.

   Arpico Super Market has two types of customer base. They are normal customers and loyalty customers. All customers have a Customer ID (a String), Name (a String) and Telephone number (a String). ***Loyalty customers are given a special discount of 10% of their total bill.***

   a) What is the main OOP concept that we can use to implement this scenario? (5 marks)

   b) Identify the attributes/data of the above scenario. (3 marks)

   c) Implement two classes named **NormalCustomer** and **LoyaltyCustomer**. (6 marks)

   d) Add the following to the classes that you created in part (b).
      i. Default constructor. (6 marks)
      ii. Parameterized constructor with customer ID, name and telephone number. (6 marks)
      iii. 3 methods to return the customer ID, name and telephone number. (6 marks)
      iv. A method to calculate the total bill named calculateBill(float bill). (10 marks)

   e) Create a test class **Test** to test the classes that you created in part (b) as follows.
      i. Create an object of the **NormalCustomer** class named ***ncustomer*** with the customer name of "John Smith", customer id of "cus001" and telephone number of "0112365896". (2 marks)
      ii. Invoke calculateBill(float bill) method to get the bill and print it on console. (2 marks)
      iii. Create an object of the **LoyaltyCustomer** class named ***lcustomer*** with the customer name of "Bill Smith", customer id of "cus002" and telephone number of "0112785123". (2 marks)
      iv. Invoke calculateBill(float bill) method to get the bill and print it on console. (2 marks)