



Faculty of Business

School of Computing and Information Technology

SEMESTER 2, 2010

EXAMINATION FOR BACHELOR OF INFORMATION SYSTEMS

562.699: Object-oriented Programming (VB.NET)

[Time Allowed: 3 Hours]

Ten minutes extra allowed for reading this paper

During this time you may write on your question paper but NOT on or in your answer book

INSTRUCTIONS

1. Answer ALL questions
2. Read each question carefully.
3. Begin each answer (but not part of an answer) on a new page.
4. Ensure your student ID number is entered on the front page of your answer book.
5. Please do not remove any pages from your answer book (including student note pages).
6. Please remain silent and seated until all papers are collected and you are told you may leave.
7. Please ensure that all cell phones and any other electronic devices are switched off and placed up the front of the room.

MATERIALS PERMITTED FOR THIS EXAMINATION

- * An approved language dictionary (in book form). It must not contain any handwritten or other notes.

SPECIAL INSTRUCTIONS

You may retain this question paper.

SUMMARY OF PAPER

Question	Topic	Marks	Suggested Time (minutes)
Section A	Short questions	68	2 hours
Section B	Analysis and coding	32	1 hour
TOTAL MARKS AND SUGGESTED TIME		<u>100</u>	<u>3 hours</u>

Section A: Short Questions (68 marks)		
A1	Explain, using an example, how Microsoft Intermediate Language (MSIL) supports the integration of components that are developed using various .NET compatible languages.	4 marks
A2	Use the following code to answer the short questions below: 1. Dim test 2. test = 5.6 3. Dim score As Integer = test 4. test = score a. What are the data types of the variable <i>test</i> in code lines 1,2,3 and 4? (2 marks) b. What is the value of <i>score</i> ? (1 mark) c. Write the 5 th line code to convert the <i>test</i> to the string type data. (1 mark)	4 marks
A3	Write the steps to compile a VB.NET programme as a windows setup programme.	4 marks
A4	Explain, using code example, the concepts of explicit and implicit type conversions.	4 marks
A5	How does a VBC compiler differ from a JIT compiler? Does a VB.NET programmer need both the compilers? Why or why not?	4 marks
A6	Explain, using appropriate examples, the memory management processes for value types and reference types data.	5 marks
A7	Write five different features of a structure that differ from a class.	5 marks
A8	Explain why we need an Interface Type. What advantage does an interface type provide over the abstract class?	5 marks
A9	An employee class has two private fields, mEmpID and mPosition. The class is declared as Serialisable. What formatters do you use for serialising an employee object? Write a method to save the employee as emp.xml in C:\Temp folder.	5 marks
A10	What are the prerequisites for system testing? Prepare a list of steps that you would follow to test a system.	5 marks
A11	System.IO namespace contains <i>File</i> and <i>FileInfo</i> classes. a) How do they differ from each other? (2 marks) b) Make a list of the basic functions that are provided by these classes. (2 marks) c) In what context, would you use them? (1 mark)	5 marks

A12	<p>A BISStudent class implements an abstract class called Student. Write the class using the following features:</p> <ul style="list-style-type: none"> • An abstract WriteOnly property of Date type. • A method with no return type that records the date of a progress review with a tutor, the name of the tutor and any notes or comments made by the tutor. • An overridable SubmitAssignment method that returns Boolean data and raise AssignmentSubmitted event. 	5 marks
A13	Explain, using examples, the context of using <i>Queue</i> and <i>Stack</i> classes.	4 marks
A14	<p>You are writing an Employee class as part of the Employee Management System for a New Zealand company. An employee must have a First Name, Date of Birth and Position. First name and Date of Birth cannot be changed at any time. How do you enforce these criteria and also validate them in the employee class?</p>	5 marks
A15	<p>Write an Order class that implements an Interface type called IOrder. IOrder exhibits the following features:</p> <ul style="list-style-type: none"> • A ProcessOrder method with no return type. The method has a Single type parameter named DiscountRate. • A Calculate method that returns total order amount. • An OrderItems property of HashTable type. • An OrderDate Readonly property of Date type. 	4 marks

Section B: Analysis and Coding (32 marks) (Note: Use appropriate data type)	
<p>B1 Write a 'Car' class that inherits an abstract class 'Vehicle' and implements 'ICar'.</p> <p>The Vehicle class inherits from a Product class and implements ICompare method.</p> <p>ICar contains a Wheels property as List (of Wheel) and three methods: start, drive and stop.</p> <p>Vehicle class contains VIN, ManufacturingDate and Model readonly abstract properties, and a ToString function that returns VIN and Model.</p> <p>Each Wheel object contains four properties: ID, size, manufacturer name and model, and a ToString method that displays Manufacturer name, model and size.</p>	<ul style="list-style-type: none"> • Car class – 5 marks • ICar – 2 marks • Vehicle class – 5 marks • Wheel class – 5 marks <p>(Total – 17 marks)</p>
<p>B2 Write a type safe Wheels collection class that inherits the HashTable class.</p>	10 marks
<p>B3 Write a Test class wherein you test the following car:</p> <p>Alpha Romeo 142, 2010, 2.0L Manual. The car has 5 wheels including a spare one. Assume other required data.</p>	5 marks

End of Examination