

## INSTITUTE OF TECHNOLOGY BLANCHARDSTOWN

<b>Year</b>	Year 2
<b>Semester</b>	Summer Paper
<b>Date of Examination</b>	Wednesday 23rd May 2012
<b>Time of Examination</b>	9.30am - 11.30am

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<b>Programme Title</b>	HIGHER CERTIFICATE IN SCIENCE IN COMPUTING IN INFORMATION TECHNOLOGY
<b>Programme Code</b>	BN002
<b>Programme Title</b>	BACHELOR OF SCIENCE IN COMPUTING IN INFORMATION TECHNOLOGY
<b>Programme Code</b>	BN013
<b>Programme Title</b>	BACHELOR OF SCIENCE (HONOURS) IN COMPUTING
<b>Programme Code</b>	BN104
<b>Module Title</b>	Advanced Programming
<b>Banner Module Code</b>	COMP H2030

**Internal Examiner(s):** *Dr. Luke Raeside*

**External Examiner(s):** *Dr. Richard Studdert*  
*Mr. Michael Barrett*

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### Instructions to candidates:

- 1) To ensure that you take the correct examination, please check that the module and programme which you are following is listed in the tables above.
- 2) Answer any **FOUR** questions.
- 3) All questions carry equal marks (25 marks).

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### Question 1

- a) Outline TWO general advantages of using an **IDE** in software development. [4 marks]
- b) Describe in brief the function of TWO **Javadoc** tags commonly used in **Javadoc** commenting. List ONE difference between **Javadoc** commenting and regular Java commenting. [5 marks]
- c) Define the term **modularization** in the context of software development. [3 marks]
- d) Describe the effect of using the following **keywords** in a Java class:
- i. **package**
  - ii. **static**
  - iii. **super**
- [9 marks]
- e) Describe briefly the function of any TWO **access modifiers** in Java. [4 marks]

[Total 25 marks]

### Question 2

- a) Define **class reflection**. [2 marks]
- b) Outline the function of the class **Class** in Java. Briefly summarize the function of ONE reflective method available in the class **Class**. [4 marks]
- c) Discuss briefly ONE plausible programming scenario where a Java programmer would use an **inner class**. [4 marks]
- d) Demonstrate how to declare an **inner class** in Java using Java code statements (include the outer and inner class definitions). [7 marks]
- e) Write Java code statements to illustrate the interface AND inheritance approach to implementing **threads** in Java. [8 marks]

[Total 25 marks]

### Question 3

- a) Describe using Java code examples how to use the **AudioClip** interface to play a sound in a Java application.

[6 marks]

- b) Write a Java class definition called **Toy** that models a toy with attributes, make, model, and age (e.g. 3 would indicate for age 3 years). Provide an appropriate non-blank **constructor** for **Toy** objects.

[8 marks]

- c) Write a Java test application that creates at least TWO **Toy** objects from part b) above. Instantiate ONE of the **Toy** objects as an **anonymous object**.

[7 marks]

- d) List ONE advantage of using a Java **JarFile**. Explain clearly ONE function of a **Manifest file** within a **JarFile**.

[4 marks]

[Total 25 marks]

### Question 4

- a) Describe the role of EACH of the following in Java **internationalization**:

- i. Unicode
- ii. Locales
- iii. Resources

[9 marks]

- b) Explain clearly the function of EACH of the following classes in Java:

- i. ResourceBundle
- ii. PropertyResourceBundle

[6 marks]

- c) Write Java code statements to query the **available locales** from within the JVM AND write Java code statements to print ALL of the available locale names to the default output device (using System.out).

[6 marks]

- d) List AND outline the function of any TWO **locale sensitive** classes in Java.

[4 marks]

[Total 25 marks]

### Question 5

- a) Describe the function of the **finally** keyword in Java.

[3 marks]

- b) Use Java code examples to differentiate clearly between **handling** and **declaring** an exception in Java.

[8 marks]

- c) Describe briefly the effect of declaring the following Java constructs as **final**:

- i      A **class**
- ii     A **method**

[8 marks]

- d) Using an intuitive example explain briefly the concept of **polymorphism** in object oriented programming.

[6 marks]

[Total 25 marks]