INSTITUTE OF TECHNOLOGY BLANCHARDSTOWN

Institute of Technology Blanchardstown
Institiúid Teicneolaíochta Baile Bhlainséir

Year	**Year 1**
Semester	**Semester 1**
Date of Examination	Monday 16 January 2012
Time of Examination	12.30pm – 2.30pm

Prog Code	BN002	**Prog Title**	Higher Certificate in Science in Computing in Information Technology	**Module Code**	COMP H1032
Prog Code	BN013	**Prog Title**	Bachelor of Science in Computing in Information Technology	**Module Code**	COMP H1032
Prog Code	BN104	**Prog Title**	Bachelor of Science (Honours) in Computing	**Module Code**	COMP H1032

Module Title	Fundamentals of Programming 1

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

External Examiner(s): **Dr. Richard Studdert**

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 Question 1 and TWO other questions**
3) **Question 1 is worth 40 marks. Questions 2, 3 and 4 are worth 30 marks each.**

DO NOT TURN OVER THIS PAGE UNTIL YOU ARE TOLD TO DO SO

Question 1:

Attempt ALL parts. (4 marks each)

a)	Describe briefly what it means to **compile** a Java program.
b)	List FOUR **reserved words** used in the Java programming language.
c)	Assign an appropriate Java **type** to EACH the following: • The number of people in a class • The amount of cash in a safe (including notes and coins) • A grade awarded to a student, e.g., A, B or C • The population of The Earth (approximately 7 billion)
d)	Compute the result of the following calculations in Java: • 2 + 3 * 9 + 10 – 3 / 3 • 3 % 2 + (20 +10) – 15 * 3
e)	Define the function of the following in Java programming: • The Java **JVM** • The **.class** file
f)	Explain the function of **commenting** in programming. Demonstrate the syntax of TWO types of comments used in Java programming.
g)	Briefly outline the difference between a **sentinal-controlled** and **counter-controlled** loops.
h)	Write a Java **for** loop structure that will output all of the numbers between 1 and 100 inclusive.
i)	Re-write part (h) above using a **while** loop.
j)	Using an appropriate example demonstrate how to set a Java variable as a **constant**, i.e., the value cannot change during the course of the program.

Candidates should attempt any 2 of the following 3 questions

Question 2:

a) Outline the difference in operation between a **do..while** loop and a **while** loop in Java.

(4 marks)

b) Discuss briefly ONE possible programming scenario where a **do..whille** loop would be required.

(4 marks)

c) Three fundamental concepts within programming are **sequence**, **selection** and **iteration**. Explain in detail the meaning of EACH of these three aspects of programming.

(15 marks)

d) Write a Java code block to output the **even numbers** between 1 and 1000 (inclusive). [**NOTE:** Use a **for** loop or other iterative looping structure in your answer]

(7 marks)

[Total 30 marks]

Question 3:

a) Write a Java **method** called *concat* that receives TWO strings and concatenates the strings. The method must return the concatented strings to the caller.

(12 marks)

b) Explain the function of the keyword **void** in Java programming.

(4 marks)

c) Define precisely the **signature** of a method. List the factors that define the **signature** of a method.

(5 marks)

d) Outline TWO advantages of modularizing code using methods.

(6 marks)

e) Write out the standard form of the **main** method in Java.

(3 marks)

[Total 30 marks]

Question 4

a) Write a menuing programme in Java using a **switch** statement. The menuing programme must produce the outputs as shown in the table below [use **System.out.print**] depending on the value entered by the user (assume the **Keyboard** class is available):

User Enters Value	Output to the screen
0	"This number represents Spring"
1	"This number represents Summer"
2	"This number represents Autumn"
3	"This number represents Winter"

The following Java keywords may assist you in answering the above question:

- switch
- case
- break

(15 marks)

b) Clearly explain the function of EACH of the following:

- The **&&** operator
- The **||** operator
- The **++** operator

(9 marks)

c) Write an **if** statement that will check if your income is between €5000 and €10000. Output the phrase "Within Limits" if the income is within this range, otherwise, output the phrase "Outside of the Limits" to the default output device (use **System.out.print**).

(6 marks)

[Total 30 marks]