

*Ollscoil na hÉireann, Gaillimh*  
*National University of Ireland, Galway*

GX 1474

**Semester I Examinations, 2003/2004**

Exam Code(s)	<u>2BA1</u>
Exam(s)	<u>Second year BA</u>
Module Code(s)	<u>CT242</u>
Module(s)	<u>Technological Frameworks I</u>
Paper No.	<u>                    </u>
Repeat Paper	<u>                    </u> Special Paper <u>                    </u>
External Examiner(s)	<u>Prof. D. Bell</u>
Internal Examiner(s)	<u>Prof. G. Lyons</u>
	<u>Ms. P. Byrne</u>

**Instructions:**

Answer question one and any two others

Duration	<u>2 hours</u>
No. of Answerbooks	<u>1</u>

**Requirements:**

Handout	<u>                    </u>
MCQ	<u>                    </u>
Statistical Tables	<u>                    </u>
Graph Paper	<u>                    </u>
Log Graph Paper	<u>                    </u>
Other Material	<u>                    </u>

No. of Pages	<u>2</u>
Department(s)	<u>Information Technology</u>

1. (a) Explain the function of data, address and control buses when data is being read from the memory of the computer into the ALU. [30]  
(b) Explain the use of a compiler in the writing and processing of computer programs. [10]
2. (a) Explain the following terms when used in computing: parity ; ASCII ; twos complement ; combinational logic circuits [20]  
(b) Explain the main functions of the control unit within the CPU. [10]
3. Choose two of the following and describe briefly their contribution to early computing:  
George Boole; Grace Hopper; Joseph-Marie Jacquard; Charles Babbage [30]
4. (a) Explain the action of an encoder when used to convert from decimal to binary form. [20]  
(b) Derive the logical operands NAND and NOR and draw truth tables to illustrate your answer. Describe the usefulness of these gates in logic design. [10]
5. For your final year project in college you create a 3D computer game in which the player creates a SIM world. You put a lot of work into the program, incorporating AI techniques by which the world's inhabitants learn and progress through time. You graduate with first class honours, win a prize for your project and get a highly-paid job in France. On your Christmas visit back to Galway, your brother tells you that he has seen a game very like the one you developed for sale on the Internet. You investigate, and discover that one of your classmates (who is himself a poor programmer) has taken your source code, packaged and marketed the game with his own company logo, and is making a tidy profit from the sales.  
  
Analyse the ethical problem presented, making any assumptions you think necessary to decide your next action. Defend your decisions. [30]