



DUBLIN INSTITUTE OF TECHNOLOGY

**DT211C BSc. (Honours) Degree in Computer Science
(Infrastructure)**

Year 3

DT228 BSc. (Honours) Degree in Computer Science

Year 3

**DT282 BSc. (Honours) Degree in Computer Science
(International)**

Year 3

**DT8900/1 International Pre Masters for MSc in
Computing**

SUMMER EXAMINATIONS 2016/2017

UNIVERSAL DESIGN AND ASSISTIVE TECHNOLOGY [CMPU3046]

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WEDNESDAY 17TH MAY

9.30 A.M. – 11.30 A.M.

TWO HOURS

ANSWER **QUESTION ONE** AND ANY TWO OTHERS

QUESTION ONE CARRIES 40 MARKS, ALL OTHERS CARRY 30 MARKS

1:

(a) What is meant by the term Universal Design and what, briefly, are its benefits?

(9 marks)

b) Define what is meant by Assistive Technology. Support your definition with an appropriate example.

(6 marks)

c) Joe has poor vision. He is studying Computer Science and Software Engineering in DIT Kevin Street. Describe the likely difficulties that Joe will face in pursuing this course under the following headings and suggest ways in which he might be assisted in these tasks.

i) Acquiring and reading his course notes

ii) Graphical content of courses e.g. Logic and data Modelling Diagrams

(15 marks)

d) If voice recognition was provided as an alternative input mechanism in our computer labs, describe **three** difficulties which are likely to ensue.

(10 marks)

2.

a) Give a brief overview of Switch Access Technology and how it is used to bypass the keyboard in Computer Systems.

(10 marks)

b) In the context of Switch Access what is meant by Scanning Movement?
Give examples of two kinds of scanning movement.

(10 marks)

c) Consider the following selection grid.

0	1	2	3	4	5
6	7	8	9	•	,
A	b	c	d	+	–
E	f	g	h	?	!
I	j	k	l	M	N
O	p	q	r	S	T
U	v	w	x	Y	Z
/	:	;	()	9

How long would it take to generate the word “hello” with a row/column scan using the above grid with a 0.5 sec scan delay.
Go back to the beginning after each selection.

(10 marks)

3:

a) Describe any **two** possible barriers a web page can present? Your answer should consider different disabilities, including perceptual, motor and cognitive as well as different situations, such as a noisy environment, a dark place, or bright sunlight.

(7 Marks)

b) What are the **four** key principles according to the Web Content Accessibility Guidelines 2.0 for creating accessible Web Content

(8 Marks)

c) Explain why it is necessary to provide text alternatives for non-text content and why is this a key principle of the Web Content Accessibility Guidelines.

(7 marks)

d) What alternative text would you provide for the following images. In each case explain why you think that your alternative text adequately describes the image.

(8 Marks)

i) The image appears in a sales catalogue describing wooden furnishings and fittings in an office environment. The purpose of the image is to showcase the use of beech finish in doors.



Figure 1

ii) The following Printer Icon appears on a Web page: When clicked it prints off the main content of the current web page.

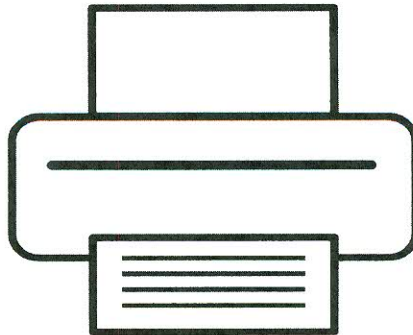


Figure 2

4:

a) Using the label for a pharmaceutical tablet bottle for illustration, explain why perceptible information is an essential element of product design.

(8 marks)

b) If you had to design a mobile phone App to remind users to take their medicine, demonstrate how you would conform to the Universal Design principle of Perceptible information.

(14 Marks)

c) How would you use a vision simulator like Keates and Clarksons to test your design?

(8 Marks)