



<b>DUBLIN CITY UNIVERSITY</b>
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**SEMESTER TWO SAMPLE EXAMINATIONS 2009**

**MODULE:** CA170 Introduction to Operating Systems  
(Title & Code)

**COURSE:** Computer Applications  
Enterprise Computing

**YEAR:** 1

**EXAMINERS:** Dr. M. Ward, Ext no. 8719  
(Including Telephone Nos.)

**TIME ALLOWED:** 2 Hours

**INSTRUCTIONS:** Answer Question 1.  
Also answer any two additional questions.

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**Please do not turn over this page until you are instructed to do so**

The use of programmable or text storing calculators is expressly forbidden.  
Please note that where a candidate answers more than the required number of questions, the examiner will mark all questions attempted and then select the highest scoring ones

## QUESTION 1

[TOTAL MARKS: 40]

1(a)

[10 Marks]

Explain the following terms and describe its role in the structure or design of an Operating System.

- |       |      |           |
|-------|------|-----------|
| (i)   | I/O  | [3 Marks] |
| (ii)  | ROM  | [3 Marks] |
| (iii) | FIFO | [4 Marks] |

1(b)

[10 Marks]

What is meant by **pre-emption**? What are the advantages of pre-emption?

1(c)

[10 Marks]

An Operating System can be run in **User Mode** or a **Kernel Mode**. Explain these two terms. Why do these two different modes exist?

1(d)

[10 Marks]

When considering Operating Systems, there are 3 different structures: **monolithic**, **layered**, **microkernel**. Explain the difference between these structures terms and give an example for each type.

[End of Question 1]

## QUESTION 2

[TOTAL MARKS: 30]

2(a)

[16 Marks]

- |       |  |            |
|-------|--|------------|
| (i)   | What is meant by fragmentation?  | [3 Marks]  |
| (ii)  | What is the difference between internal and external fragmentation?  | [3 Marks]  |
| (iii) | In the area of memory management, explain what is meant by relocation and protection. What are the issues involved in relocation and protection and how can they be addressed? | [10 Marks] |

2(b)

[14 Marks]

- |      |  |           |
|------|--|-----------|
| (i)  | Explain the role of <b>swapping</b> in a Memory Management system.   | [6 Marks] |
| (ii) | There are several algorithms for memory allocation. Suggest a good algorithm for a situation in which the size of memory requested is generally all of the same size. Justify your decision. | [8 Marks] |

[End of Question 2]

**QUESTION 3****[TOTAL MARKS: 30]****3(a)****[15 Marks]**

Server Operating Systems, Distributed Operating Systems and Embedded Operating Systems are 3 different types of Operating Systems. For 2 of these Operating Systems, explain the main features, requirements and usage environments of the Operating System. Give an example where the Operating System might be used in the real world.

**3(b)****[15 Marks]**

MobileFon Software Ltd has developed a device that provides the mobile phone users with extra utilities for their mobile phones. What type of Operating System would you recommend to MobileFon Software Ltd and why?

[End of Question 3]

**QUESTION 4****[TOTAL MARKS: 30]****4(a)****[22 Marks]**

Explain the role of a System Administrator. Name 3 common tasks performed by a System Administrator. Select 1 of them and state what is involved in the task and explain why it is important to an organisation.

**4(b)****[8 Marks]**

Explain the different role a System Administrator might play in a large organisation compared to a System Administrator in a small organisation. Give an example of each to illustrate your answer.

[End of Question 4]

**[END OF EXAM]**