

Philadelphia University



Student Name:

Faculty of Engineering

Student Number:

Dept. of Computer Engineering  
Second Exam, First Semester: 2014/2015

<b>Course Title:</b> Real-Time Computer Control Systems (RTCCS)	<b>Date:</b> 28/12/2014
<b>Course No:</b> (630512)	<b>Time Allowed:</b> 1 Hour
<b>Lecturer:</b> Dr. Mohammed Mahdi	<b>No. of Pages:</b> 1

**Question 1:**

**(12 Marks)**

**Objectives:**

This question is about Data transfer techniques and Tasks in RTCCS and RT languages.

**A) Explain the data transfer technique using Interrupts from the following points of views: -**

- **Definition and features.** (2 Marks)
- **Simple schematic diagram.** (1 Mark)
- **4-situation that is important to be used for.** (2 Marks)

**B) What does the term Task mean? Explain and sketch its all possible states.**

(3 Marks)

**C) Explain “based on importance” the Real-time software requirements.**

(4 Marks)

**Question 2:**

**(8 Marks)**

**Objectives:**

This question is about sampled-data and discrete control systems.

**A) Discuss the effect of adding the Z.O.H on the overall system performance.**

(2 Marks)

**B) Given the following continuous function:  $M(s) = 1 / (10s + 1)$ . It is required**

**to: -**

- **Calculate  $M(z)$ .** (2 Marks)
- **Calculate  $M(0)$  and  $M(\infty)$  using  $z$  and  $kT$  domains.** (2 Marks)
- **What is the best sampling time one can choose? Why?** (2 Marks)