

Philadelphia University  
Faculty of Engineering

Student Name:  
Student Number:

Dept. of Communications & Electronics  
Second Exam, Second Semester: 2004/2005

Course Title: Engineering Analysis I	Date: 5/05/2005
Course No: (630201)	Time Allowed: 1 Hours
Lecturer: Dr. Abdel-Rahman Al-Qawasmi Dr. Wael Al-Sawalmeh	No. of Pages: 1

**Question 1:** (4 Marks)

**Objective: About Second Order Ordinary Differential Equations.**

Solve the following Differential Equation

$$y'' + 2y' - 3y = e^{-2x}$$

**Question 2:** (6 Marks)

**Objective: About Direct & Inverse Laplace Transform**

a- Find the Laplace Transform of:

$$f(t) = e^t(t+1)^2$$

b- Find the Inverse Laplace Transform of:

$$F(s) = \frac{1}{(s+4)^6}$$

c- If  $y(0) = y'(0) = 0$ , find the particular solution of the differential equation in question 1 using Laplace Transform.

**Question 3:** (5 Mark)

**Objective: Higher Order ordinary Differential Equations**

Find the general solution of the following differential equation.

$$x^3 y''' + 2x^2 y'' = 1$$

if  $y_h = c_1 + c_2 \ln|x| + c_3 x$ .

**Question 4:** (5 Mark)

**Objective: Modeling of RLC-circuit.**

Model the RLC-circuit as shown in figure and find  $I_p$ .

