

Philadelphia University
Faculty of Engineering

Student Name:
Student Number:

Dept. of Communications & Electronics
First Exam ,First Semester: 2005/2006

Course Title: Engineering Analysis I	Date: 27/11/2005
Course No: (630201)	Time Allowed: 1 Hours
Lecturer: Dr. Abdel-Rahman Al-Qawasmi	No. of Pages: 1
Dr. Wael Al-Sawalmeh	

Question 1: **(5 Marks)**

Objective: About Reduction to Separable Differential Equations.

Solve the following Initial Value Problem:

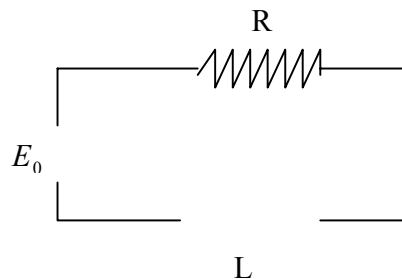
$$xy' = y + 3x^4 \cos^2\left(\frac{y}{x}\right), \quad y(1) = 0$$

Question 2: **(5 Marks)**

Objective: Modeling of Electric Circuits.

Model the "RL-Circuit" as shown in figure below and find:

1. $I(t)$.
2. If the initial condition is $I(0) = 0$ and $L = 5$ henrys, what R should we choose so that $I(t)$ will reach 50% of its final value at $t = 1$ sec?



Question 3: **(5 Mark)**

Objective: Linear First Order Differential Equations.

Solve the following Initial Value Problem and check your answer:

$$2y' - 8y = 0, \quad y(0) = 5$$

Question 4: **(5 Mark)**

Objective: Exact Differential Equations.

Check the Exactness and find the general solution: (Check your answer).

$$3 \cos(2y)dx - 2x \sin(2y)dy = 0$$