

Philadelphia University
Faculty of Engineering

Student Name:
Student Number:

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

Course Title: Engineering Analysis I	Date: 3/08/2005
Course No: (630201)	Time Allowed: 1 Hours
Lecturer: Dr. Abdel-Rahman Al-Qawasmi	No. of Pages: 1

Question 1: *(5 Marks)*

Objective: About Unseparable Differential Equations

Solve the following differential equation.

$$\left(y' - \frac{y}{x}\right) \sinh\left(\frac{y}{x}\right) = x \cosh(x)$$

Question 2: *(4 Marks)*

Objective: About Exact Differential equations

Show that x is an integrating factor of the not exact differential equation:

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

Question 3: *(6 Mark)*

Objective: Second Order differential equations

Solve the following Initial value problem (where a is a constant)

$$y'' + ay' + \frac{a^2}{4}y = 0, \quad y(0) = 1, y'(0) = \frac{-a}{2}$$

Question 4: *(5 Mark)*

Objective: Second Order differential equations

Solve the Initial Value Problem:

$$x^2 y'' = 0, \quad y(0) = 1, y'(0) = -1$$