



Kingdom of Saudi Arabia
King Abdulaziz University

Faculty of Science –Mathematics Department
Final Term Exam (120 Minutes) - (204 Math).
11/2/1433 H – 5/1/2012 A.D.
First Semester 1432-1433 H

Model A

Name:	Section:
Student's I.N. :	Serial Number:

Q_1	Q_2	Q_3	Q_4	Q_5	Q_6	Total Marks (40)

2 Solve the differential equation:

[4 Marks]

$$xy' - 4y = x^5 e^x$$

3 Solve the differential equation:

[4 Marks]

$$y'' + 3y' + 2y = \cos e^x$$

4 **Solve** $\frac{dx}{dt} + 2x - 4y = -4t - 2;$ $x(0) = -5$ **[6 Marks]**

$\frac{dy}{dt} - 2x = 4t;$ $y(0) = 4$

5 Use the Laplace transform to solve the IVP:

[5 Marks]

$$y'' - y' = e^t \cosh t, \quad y(0) = 0, y'(0) = 0$$

6(a) Evaluate:

[6 Marks]

(i) $\ell^{-1} \left\{ \frac{2s + 5}{s^2 - 2s + 10} \right\}$

(ii) $\ell^{-1} \left\{ \frac{s}{s^2 + 9} e^{\frac{-\pi s}{2}} \right\}$

6(b) Solve $f(t) = 3t^2 - e^{-t} - \int_0^t f(\tau)e^{t-\tau}d\tau$ for $f(t)$. **[4 Marks]**