**King Fahd University of Petroleum and Minerals**
**Department of Mathematics and Statistics**

**Math 202** **Section .....** **Serial #: ....** **Quiz 4(a) (Term 172)**

**Name** : ..... **ID** #..... **Marks** #: ...../8

1. Find a linear differential operator that annihilates the function $g(x) = (e^x + x\,e^{-x})^2$.

2. Use a suitable substitution to change the DE $x^2y'' - y = \sin(\ln x)$, $x > 0$, into a linear DE with constant coefficients.
(Do not solve the new equation).

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**Math 202** **Section .....** **Serial #: ....** **Quiz 4(b) (Term 172)**

**Name** : ..... **ID** #..... **Marks** #: ...../8

1. Solve the DE $y'' + y = \cos x$ by an annihilator method.

2. Solve $xy'' + y' = x$ by the variation of parameters method.

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**Math 202** **Section .....** **Serial #: ....** **Quiz 4(c) (Term 172)**

**Name** : ..... **ID** #..... **Marks** #: ...../8

1. Use variation of parameters to solve: $y'' - 2y' + y = (x+1)\,e^x$

2. Change $x^2y'' - xy' + y = \ln x,\ x > 0$, into a linear DE with constant coefficients. **(Do not solve the new equation)**.