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|  **Student’s Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

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| **Question Number** | **I** | **II** | **III** | **Total** |
| **Mark** |  |  |  |  |

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| **Question I:** Choose the correct answer 1. If  then the relation  is

 (a) an explicit solution (b) an implicit solution (c) a particular solution (d) None of the previous |
|   (2)The differential equation $ yx^{4}\frac{d^{5}y}{dx^{5}}+sinx\left(\frac{dy}{dx}\right)^{6}=0$ is(a) of order 5 and nonlinear (b) of order 6 and nonlinear (c) of order 5 and linear (d) None of the previous |
|   (3) The value of $k$ that makes $\left(x+cos3y\right)dx+kxsin3y dy=0$ exact is  (a) $-1$ (b) -3 (c) -2 (d) None of the previous |
|   (4) The function $f\left(x,y\right)=\frac{1}{x^{2}+4xy}$ is homogeneous of degree (a) $-2$ (b) $\frac{1}{2}$ (c) -1 (d) None of the previous |
|  (5) The differential equation $x^{2}dy=\left(x^{3}y+y^{\frac{3}{2}}\right)dx$ is (a) first order linear equation (b) exact equation (c) Bernoulli equation (d) None of the previous |
| **Question II:** A. Determine the region of the $xy-plane$ for which the differential equation has a unique solution$$\sqrt{y}\frac{dy}{dx}-x=0$$B. Find the integrating factor for the following linear differential equation$$\frac{dy}{dx}+\left(2x+\frac{1}{x}\right)y=x$$ **Question III**: A. Solve the following differential equations$(1) \left(x^{2}-xy+y^{2}\right)dx=xydy$ (2) $ \frac{dy}{dx}-sin\left(4x-y+5\right)$= 4B. Solve the Initial Value Problem$$\left(e^{x}+y\right)dx+\left(2+x+ye^{y}\right)dy=0, y\left(0\right)=1.$$Good Luck☺ |
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