\$ Circle the most correct answer (2$_{pts}$ each) \$

Q1: Classify the ode $y' = \frac{-y\sec^2 x}{y + \tan x}$

(a) It is linear ode. (b) It is separable ode.

(c) It is not separable but it can be made separable ode.

(d) It is Bernoulli ode . (e) It is exact

Q2: The general solution of the ode $ydy = (e^{-x} - 2y^2)dx$ is :

(a) $3y = 2e^{-x} + ce^{-4x}$ (b) $3y^2 = 2e^{x} + ce^{-4x}$

(c) $3y^2 = 2e^{-x} + ce^{4x}$ (d) $3y^2 = 2e^{-x} + ce^{-4x}$

(e) none of the above

Q3: If $W(f, g) = -2$, $f(x) = e^{x}$, then the function $g(x)$ is a solution of

(a) $y' - y = -2e^{-x}$ (b) $y' + y = -2e^{-x}$

(c) $y' - y = -2e^{x}$ (d) $y' + y = 2e^{-x}$ P=-1

(e) None of the above

Q4. The integrating factor for the equation $(x^2 - y^2)dx + (2xy)dy = 0$ is y:

(a) $\mu = y^{-2}$ (b) $\mu = x^{-2}$ (c) $\mu = x^{-1}y^{-1}$ =

(d)All the previous ones (e) None of the previous ones.

$x^2 - y^2 = M$ $x^2 - y$

Q5: Consider the ode $y''+(y')^2=e^y$, then this ode is classified as :

(a) y – missing and it can be reduced by assuming $z=y'$, to 1st order separable ode

(b) ~~y – missing and it~~ can be reduced by assuming $z=y'$, to 1st order Bernoulli ode

(c) x – missing and it can be reduced by assuming $z=y'$, to 1st order Bernoulli ode

(d) x – missing and it can be reduced by assuming $z=y'$, to 1st order separable ode

(e) None of the above

Q6: If $y_1=x$ is a solution of the ode $(x-1)y''+y'-x^{-1}y=0$

,then a basis of solutions of that ode may be :

(a) $\left\{y_1=x\ ,\ y_2=\int x^{-2}(x-1)^{-1}dx\right\}$ (b) $\left\{y_1=x\ ,\ y_2=\int x^{-1}(x-1)dx\right\}$

(c) $\left\{y_1=x\ ,\ y_2=x\int x^{-1}(x-1)dx\right\}$

(d) $\left\{y_1=x\ ,\ y_2=x\int x^{-2}(x-1)^{-1}dx\right\}$ (e) none of the above

Q7: The ode $3x^2y''-4xy'+2y=0$, converted into ode with constant coefficients would be :

(a) $3\frac{d^2y}{dt^2}-4\frac{dy}{dt}+2y=0$ (b) $3\frac{d^2y}{dt^2}-7\frac{dy}{dt}+2y=0$

(c) $3\frac{d^2y}{dt^2}-\frac{dy}{dt}+2y=0$ (d) $3\frac{d^2y}{dt^2}+7\frac{dy}{dt}+2y=0$

(e) $3y''-7y'+2y=0$

Q8: If the functions $y_1 = x^{-\frac{2}{3}}, y_2 = x^{-\frac{2}{3}} \ln x$ form a basis of solutions for a linear homogeneous ode of order 2 such an equation may be :

(a) $9x^2 y'' + 21xy' + 4y = 0$,

(b) $9x^2 y'' + 3xy' + 4y = 0$,

(c) $x^2 y'' - 21xy' + 4y = 0$,

(d) $9y'' + 21y' + 4y = 0$,

(e) None of the above

Q9: The form of y_p for the differential equation $y'' + 6y' + 9y = 5xe^{-3x}$ is :

(a) $y_p = (ax^3 + bx^2)e^{3x}$

(b) $y_p = (ax + b)e^{-3x}$

(c) $y_p = (ax^2 + bx)e^{-3x}$

(d) $y_p = (ax^3 + bx^2)e^{-3x}$

(e) None of the above

Q 10 : The form of y_p for the differential equation $y'' + 4y = \sec^2 2x$ is:

(a) $y_p = \int_{x_0}^{x} \frac{1}{2} \sin 2(x - t) \csc^2 2t dt$

(b) $y_p = \int_{x_0}^{x} \frac{1}{2} \cos 2(x - t) \sec^2 2t dt$

(c) $y_p = \int_{x_0}^{x} \frac{1}{2} \sin 2(x - t) \sec^2 2t dt$

(d) $y_p = \int_{x_0}^{x} \frac{1}{2} \cos 2(x - t) \csc^2 2t dt$

(e) None of the above