eExam Question Bank

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Question Type	Question	A	B	C
MCQ	Find the general solution of $y' + 2y = x^3 e^{-2x}$	$y = e^{-2x}\left(\frac{x^4}{4} + c\right)$	$y = e^{2x}\left(\frac{x^4}{4} - c\right)$	$y = -e^{-2x}\left(\frac{x^4}{4}$
MCQ	Solve the initial value problem $y' - ay = 0, y(x_0) = y_0$	$y = -y_0 e^{-ax_0} e^{-ax}$	$y = y_0 e^{ax_0} e^{-ax}$	$y = -y_0 e^{-ax_0}$
MCQ	Let a be a constant. Find the general solution of $y' - ay = 0$	$y = ce^{ax}$	$y = -ce^{ax}$	$y = e^{ax}$
MCQ	The solution of differential equation $\frac{dy}{dx} = \frac{1}{x^2}$	$y = \frac{1}{x} + c$	$y = -\frac{1}{x} + c$	$y = -\frac{1}{x^2} +$
MCQ	If $y = 2x + Ce^x$ is a solution of the differential equation $\frac{dy}{dx} - y = 2(1 - x)$ then find the particular solution satified by x=0, y=3	$y = 2x + e^x$	$y = 2x + 2e^x$	$y = 2x + 5e$
MCQ	Find the complete solution of $\left(D^4 - 8D^2 + 16\right) y = 0$	$y = (A + Bx)e^{-x} + (C + Dx)e^x$	$y = (A + Bx)e^{-2x} + (C + Dx)e^{2x}$	$y = (A + Bx)e^x + (C$
MCQ	Solve the equation $\frac{dt^2}{dx^2} - 4t = 0$	$t = cos2x$	$t = sin2x$	$t = sinh2x$
MCQ	Solve completely the differentiial equation $\frac{d^2y}{dx^2} - a^2 y = 0$	$y = Acoshax + Bsinhax$	$y = Acoshax - Bsinhax$	$y = Acosax + B$
MCQ	Solve the diferential equation $2\frac{d^2y}{dx^2} + 5\frac{dy}{dx} - 12y = 0$	$y = c_1 e^{\frac{-3x}{2}} + c_2 e^{-4x}$	$y = c_1 e^{\frac{3x}{2}} + c_2 e^{-4x}$	$y = \frac{x}{1+a} - \frac{1}{a}$

	MCQ	solve the second order differential equation $\frac{d^2y}{dx^2} - 4y = 12x, y(0) = 4, y'(0) = 1$	$y = -3e^{2x} + e^{-2x} - 3x$	$y = 3e^{2x} + e^{-2x} + 3x$	$y = 3e^{2x} - e^{-2x}$
	MCQ	Solve the Riccati's equaton \[\frac{d y}{d x}=-1-x^{2}+y^{2}\]	\[y(x)=-x+\frac{e^{-x^{2}}}{\int_{0}^{x} e^{-x^{2}}}+c\]	\[y(x)=-x-\frac{e^{-x^{2}}}{\int_{0}^{x} e^{-x^{2}}}+c\]	\[y(x)=-x+\frac{e^{-x^{2}}}{\int_{0}^{x} e^{x}}+c\]
	MCQ	Solve the general solution of \[\frac{d y}{ d x }=e^{x}+x+sinx \]	\[y=c e^{-x}-\frac{1}{2} e^{x}+x-1+\frac{1}{2}(sin x - cos x)\]	\[y=c e^{-x}\frac{1}{2} e^{x}+x-1+\frac{1}{2}(sin x - cos x)\]	\[y=c e^{-x}+\frac{1}{2} e \frac{1}{2}(sin x - cos x)\]
	MCQ	Solve the diferential equation \[y'=-y+x^{2}y^{2}\]	\[y=\frac{1}{C e^{x}+x^{2}+2x+2}\]	\[y=-\frac{1}{C e^{x}+x^{2}+2x+2}\]	\[y=\frac{1}{C e^{x}-x^{2}
	MCQ	Find the particular integral of \[\frac{dy}{dx}+y=cos 3x\]	\[y_{P}(x)=\frac{1}{10}(- 3 sin 3x - cos 3x)\]	\[y_{P}(x)=\frac{1}{10}(-3 sin 3x +cos 3x)\]	\[y_{P}(x)=\frac{1}{10}(3 3x)\]
	MCQ	Find the particular solution of \[\frac{dy}{dx}+2y=2x^{2}+3\]	\[y_{P}(x)=x^{2}-x+2\]	\[y_{P}(x)=x^{2}+x+2\]	\[y_{P}(x)=-x^{2}-x+2\]
	MCQ	Find the solution of \[y'=2xy^{2}\]	\[y=\frac{1}{2x}(1-y^{2})\]	\[y=\frac{1}{2x}(1+y^{2})\]	\[y=\frac{1}{2}(1-y^{2})\]
	MCQ	Find the implicit solution of \ [y'=\frac{x^{2}+3x+2+}{y-2}, y(2)=1\]	\[y^{2}-2y=\frac{x^{3}}{3}-\frac{3x^{2}}{2}-2x+\frac{25}{6}\]	\[y^{2}-2y=\frac{x^{3}}{3}+\frac{3x^{2}}{2}+2x+\frac{25}{6}\]	\[y^{2}-2y=\frac{x^{3}}{3}- \frac{3x^{2}}{2}+2x+\frac
	MCQ	Find the implicit solution of \ [y'=\frac{2x+y}{5y^{4}+1}, y(2)=1\]	\[y^{5}+y=-x^{2}+x-4\]	\[y^{5}+y=x^{2}-x-4\]	\[y^{5}+y=x^{2}+x+4\]
	MCQ	Solve the equation \[x\frac{dy}{dx}-ay=x+1\], where \[a\] is a constant	\[y=\frac{x}{1-a}-\frac{1}{a}+cx\]	\[y=\frac{x}{1-a}+\frac{1}{a}+cx\]	\[y=\frac{x}{1+a}-\frac{1}
	MCQ	Solve the differential equation \ [x\frac{dy}{dx}+y=x^{3}\]	\[\frac{x}{y}=\frac{x}{4}+c\]	\[\frac{x}{y}=\frac{x^{2}}{4}+c\]	\[xy=\frac{x^{4}}{4}+c\]
	MCQ	Solve the equation\[(x^{2}+y^{2})dx-2xydy=0\]	\[x+\frac{y}{x}=c\]	\[x-\frac{y}{x}=c\]	\[x-\frac{y^{2}}{x}=c\]
	MCQ	Find the general solution of the differential equation \[\frac{dy}{dx}=\frac{y^{3}}{x^{3}}+\frac{y}{x}\]	\[y^{2}=-\frac{x^{2}}{2}\frac{1}{ln x |c|}\]	\[y^{2}=\frac{x^{2}}{2}\frac{1}{ln x |c|}\]	\[y^{2}=\frac{x}{2}\frac{1}
	MCQ	Solve the differential equation \ [(x^{2}+y^{2})dx-2xydy=0\]	\[-x^{2}-y^{2}=c x\]	\[-x^{2}+y^{2}=c x\]	\[x^{2}+y^{2}=c x\]
	MCQ	Find the general solution \[\frac{dy}{dx}=\frac{2y^{2}+3xy}{x^{2}}\]	[y=\frac{c x^{3}}{1-c x^{2}}\]	\[y=\frac{c x^{3}}{1+c x^{2}}\]	\[y=-\frac{c x^{3}}{1-c x^{
	MCQ	Solve the initial value problem \ [(1+y^{2})dx+(1+x^{2})d, y(0)=-1\]	\[tan^{-1} x-tan^{-1} y=-\frac{\pi}{4}\]	\[tan^{-1} x+ tan^{-1} y=-\frac{\pi}{4}\]	\[tan^{-1} x+ tan^{-1} y=\f
	MCQ	One hundred grams of cane sugar in water are being converted into dextrose at a rate which is proportional to the amount unconverted. Find the differential equation expressing the rate of conversion after t minutes.	\[\frac{dq}{dt}=K(100-q)\]	\[\frac{dq}{dt}=K(100+q)\]	\[\frac{dq}{dt}=-K(100-q)\
	MCQ	<image=picture1.png> The picture above demostrate the Newton's law of cooling which that the rate of change with respect to time t of the temperature T(t) of a body is proportional to difference between T and the temperature A of the surrounding medium. Which of the following represent the law	\[\frac{dT}{dt}=K(T-A)\]	\[\frac{dT}{dt}=K(T+A)\]	\[\frac{dT}{dt}=-K(T-A)\]

	MCQ	Which of the differential equation represent the time rate of change a population \[P(t)\] with constant birth and death rate is proportional to the size of the population	\[\frac{dp}{dt}=KP\]	\[\frac{dp}{dt}=K-P\]	\[\frac{dp}{dt}=K(1-P)\]
	MCQ	Find the value of \[m\] so that the function\[y=e^{mx}\] is a solution of the differential equation \[y'+2y=0\]	0	3	1
	MCQ	Sove the initial value problem \[\frac{dy}{dx}=12x^{3}-2 sin x, y(0)=3\]	\[y(x)=3x^{2}+2 cos t+1\]	\[y(x)=6x+2 cos t+1\]	\[y(x)=x^{2}+2 sin t+1\]
	MCQ	The general solution of equation \[\frac{dy}{dx}-y=2(1-x)\] is \[y=2x+Ce^{x}\]. Find the particular solution satisfied by \[x=0, y=0\]	\[y=2x+2e^{x}\]	\[y=2x+e^{x}\]	\[y=2x+3e^{x}\]
	MCQ	Determine the value of k in the differential equation \[y'+ky=0, y(0)=y_{0}\],where \[y=2e^{-4x}\] is the solution	0	2	3
	MCQ	Suppose \[y=2e^{-4x}\] is the solution to the initial value problem \[y'+ky=0, y(0)=y_{0}\]. Find the value of \[y_{0}\]	1	2	3
	MCQ	The degree of differention equation \[\left(\frac{d^{3}y}{dx^{3}}\right)^{2}+2\frac{d^{2}y}{dx^{2}}-\frac{dy}{dx}+x^{2}\left(\frac{dy}{dx}\right)^{3}=0\] is _____	2	1	3
	MCQ	The order of differential equation \[\frac{d^{2} y}{dx^{2}}+2\frac{dy}{dx}\frac{d^{3} y}{dx^{3}}+x=0\] is _____	1	3	4

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