MTH401 Lecture 23-30

Repeated MCQs for Quiz 3 & Final-term

MTH401 - Differential Equations (Quiz#3)

Question # 1 of 10 (Start time: 03:27:11 PM, 08 February 2022)

The total forces acting on mass m are_____.

Select the correct option

- [ ] 4
- [x] 3
- [ ] 2
- [ ] 5

MTH401 - Differential Equations (Quiz#3)

Question # 2 of 10 (Start time: 03:28:07 PM, 08 February 2022)

Which number is known as quasi frequency?

Select the correct option

- [ ] $\frac{2\pi}{\sqrt{\omega^2 - \lambda^2}}$
- [x] $\frac{\sqrt{\omega^2 - \lambda^2}}{2\pi}$
- [ ] $\frac{2\pi}{\sqrt{\omega^2 + \lambda^2}}$
- [ ] $\frac{\sqrt{\omega^2 + \lambda^2}}{2\pi}$

MTH401 - Differential Equations (Quiz#3)

Question # 3 of 10 (Start time: 03:29:03 PM, 08 February 2022)

Any linear differential equation of the form

$$a_{n-1}x^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+\ldots.+\frac{dy}{dx}+a_0y=g(x)$$

where

$$a_n, a_{n-1}, \ldots, a_0$$

are constants, is said to be a _____ equation.

Select the correct option

- (●) Cauchy-Euler
- ( ) Non homogeneous
- ( ) Cauchy-Euler
- ( ) Homogeneous

MTH401 - Differential Equations (Quiz#3)

Question # 4 of 10 (Start time: 03:30:09 PM, 08 February 2022)

Consider a power series

$$\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n^2}x^n=x-\frac{x^2}{2^2}+\frac{x^3}{3^2}+\ldots.$$

, then the center of series is _____.

Select the correct option

- ( ) x
- ( ) 1
- ( ) x^2
- (●) 0

MTH401 - Differential Equations (Quiz#3)

Question # 6 of 10 (Start time: 03:31:28 PM, 08 February 2022)

The flow of current is _____ proportional to the resistance.

Select the correct option

- ○ directly
- ● inversely

MTH401 - Differential Equations (Quiz#3)

Question # 7 of 10 (Start time: 03:32:11 PM, 08 February 2022)

For

$$\frac{dy}{dx} - \frac{y}{x} = -\frac{\ln x}{x}$$

the integrating factor is

Select the correct option

- ● -1/x
- ○ -y
- ○ -x
- ○ -1/y

MTH401 - Differential Equations (Quiz#3)

Question # 8 of 10 (Start time: 03:32:59 PM, 08 February 2022)

The time interval between two successive maxima of x(t) is called _____.

Select the correct option

- (●) quasi period
- ( ) quasi frequency

MTH401 - Differential Equations (Quiz#3)

Question # 9 of 10 (Start time: 03:33:44 PM, 08 February 2022)

If the system is impressed upon by a _____ force and there is no damping force then there is no transient term in the solution.

Select the correct option

- ( ) friction
- ( ) gravitational
- ( ) applied
- (●) periodic

MTH401 - Differential Equations (Quiz#3)

Question # 10 of 10 (Start time: 03:35:02 PM, 08 February 2022)

The singular points need not to be _____ number.

Select the correct option

- ○ natural
- ● real
- ○ whole
- ○ complex

MTH401 - Differential Equations (Quiz#3)

Question # 1 of 10 (Start time: 04:09:07 PM, 08 February 2022)

Any linear differential equation of the form

$$a_{n-1}x^{n-1}\frac{d^{n-1}y}{dx^{n-1}}+\ldots.+\frac{dy}{dx}+a_0y=g(x)$$

where

$$a_n, a_{n-1}, \ldots, a_0$$

are constants, is said to be a _____ equation.

Select the correct option

- ● Cauchy-Euler
- ○ Homogeneous
- ○ Non homogeneous
- ○ Cauchy-Euler

MTH401 - Differential Equations (Quiz#3)

Question # 3 of 10 (Start time: 04:09:59 PM, 08 February 2022)

A function f is said to be analytic at a point 'a' if it can be represented by a power series in (x-a) with a _____ radius of convergence.

Select the correct option

- ○ negative
- ● positive

MTH401 - Differential Equations (Quiz#3)

Question # 4 of 10 (Start time: 04:10:38 PM, 08 February 2022)

The damping force is _____to the instantaneous velocity

$$\frac{dx}{dt}$$

.

Select the correct option

- ● Proportional
- ○ None of these
- ○ Inverse proportional
- ○ Constant

MTH401 - Differential Equations (Quiz#3)

Question # 6 of 10 (Start time: 04:11:12 PM, 08 February 2022)

The total forces acting on mass m are_____.

Select the correct option

- (●) 3
- ( ) 2
- ( ) 5
- ( ) 4

MTH401 - Differential Equations (Quiz#3)

Question # 7 of 10 (Start time: 04:11:31 PM, 08 February 2022)

For solving non homogeneous differential equation, we use either the method of _____.

Select the correct option

- (●) a&b both
- ( ) Undetermined coefficient
- ( ) Variation of parameter
- ( ) None of them

MTH401 - Differential Equations (Quiz#3)

Question # 8 of 10 (Start time: 04:11:56 PM, 08 February 2022)

If

$$\lambda^2 - \omega^2 = 0$$

and

$$\beta = k$$

then the system is said to be _____ damped.

Select the correct option

○	over
○	under
●	critically
○	none of these

MTH401 - Differential Equations (Quiz#3)

Question # 9 of 10 (Start time: 04:12:33 PM, 08 February 2022)

Ordinary differential equation $\left(\frac{dy}{dx}\right)^3 + \frac{d^2y}{dx^2} + y = 9$, is of order ------.

Select the correct option

○	0
○	3
○	1
●	2

MTH401 - Differential Equations (Quiz#3)

Question # 10 of 10 (Start time: 04:13:53 PM, 08 February 2022)

Consider a power series

$$x - \frac{x^2}{2} + \frac{x^3}{3} - \dots$$

represents _____.

Select the correct option

○	sin x
●	ln (1+x)
○	cos x
○	e

MTH401 - Differential Equations (Quiz#3)

Question # 1 of 10 (Start time: 04:43:08 PM, 08 February 2022)

The quantity $X = L\gamma - \frac{1}{C\gamma}$ is called _____ of the circuit.

Select the correct option

○	impedance
●	reactance

MTH401 - Differential Equations (Quiz#3)

Question # 4 of 10 (Start time: 04:44:44 PM, 08 February 2022)

To reduce any Cauchy –Euler differential equation into a differential equation with _____ coefficients we often use substitution

$$x = e^t$$

.

Select the correct option

- ( ) variable
- (•) constant

MTH401 - Differential Equations (Quiz#3)

Question # 5 of 10 (Start time: 04:45:38 PM, 08 February 2022)

A _____ is a passive electronic component of an electronic circuit that has the ability to store charge and opposes any change of voltage in the circuit.

Select the correct option

- ( ) resister
- (•) capacitor
- ( ) inductor
- ( ) voltage

MTH401 - Differential Equations (Quiz#3)

Question # 8 of 10 (Start time: 04:47:28 PM, 08 February 2022)

The conversion of Cauchy Euler equation

$$x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = \ln x$$

after putting

$$x = e^t$$

becomes

Select the correct option

○	$(\Delta^2 - \Delta + 1)y$
○	$(\Delta^2 - 2\Delta - 1)y$
●	$(\Delta^2 - 2\Delta + 1)y$
○	$(2\Delta^2 - \Delta - 1)y$

MTH401 - Differential Equations (Quiz#3)

Question # 10 of 10 (Start time: 04:51:02 PM, 08 February 2022)

If the system is impressed upon by a _____ force and there is no damping force then there is no transient term in the solution.

Select the correct option

○	applied
○	friction
●	periodic
○	gravitational

sec(s)

MTH401 - Differential Equations (Quiz#3) Quiz Start Time: 02:50 PM, 07 February 2022

Question # 10 of 10 (Start time: 02:53:32 PM, 07 February 2022) Total Marks: 1

The quantity $X = L\gamma - \frac{1}{C\gamma}$ is called _____ of the circuit.

Select the correct option

Reload Math Equations

- (●) reactance
- ( ) impedance

Click to Save Answer & Move to Next Question

MTH401 - Differential Equations (Quiz#3) Quiz Start Time: 02:50 PM, 07 February 2022

Question # 8 of 10 (Start time: 02:52:34 PM, 07 February 2022) Total Marks: 1

A point

$$x_0$$

is said to be a _____point of a differential equation

$$a_2(x)y'' + a_1(x)y' + a_0(x)y = 0$$

if both P(x) and Q(x) are analytic at

$$x_0$$

Select the correct option

Reload Math Equations

- singular
- ordinary

Click to Save Answer & Move to Next Question

MTH401 - Differential Equations (Quiz#3) Quiz Start Time: 02:50 PM, 07 February 2022

Question # 6 of 10 (Start time: 02:52:05 PM, 07 February 2022) Total Marks: 1

If

$$\lambda^2 - \omega^2 = 0$$

and

$$\beta = k$$

then the system is said to be _____ damped.

Select the correct option

Reload Math Equations

- (•) critically
- ( ) under
- ( ) none of these
- ( ) over

Click to Save Answer & Move to Next Question

The power series, $\sum_{n=0}^{\infty} \frac{x^n}{n!}$, _____ $x = 1$ to the number e.

Select the correct option

Reload Math Equations

- diverges
- converges (selected)

Click to Save Answer & Move to Next Question

sec(s)

MTH401 - Differential Equations (Quiz#3)

Quiz Start Time: 02:50 PM, 07 February 2022

Question # 2 of 10 (Start time: 02:51:00 PM, 07 February 2022)

Total Marks: 1

The nature of the roots of the differential equation

$$x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} - 4y = 0$$

is _____.

Select the correct option

Reload Math Equations

- none of these
- Real and repeated
- Conjugate complex
- Real and distinct (selected)

Click to Save Answer & Move to Next Question

Question # 4 of 10 (Start time: 02:51:28 PM, 07 February 2022) Total Marks: 1

The equation, $(x^2+1)\frac{d^2y}{dx^2}+2x\frac{dy}{dx}+6y=0$, has the singular point(s) at $x=$ _____.

Select the correct option

Reload Math Equations

- (III) $-i$
- (II) i
- (I) ± 1
- (IV) Both (II) and (III).

Click to Save Answer & Move to Next Question

MTH401 - Differential Equations (Quiz#3) Quiz Start Time: 02:50 PM, 07 February 2022

Question # 1 of 10 (Start time: 02:50:49 PM, 07 February 2022) Total Marks: 1

The damping force is _____to the instantaneous velocity

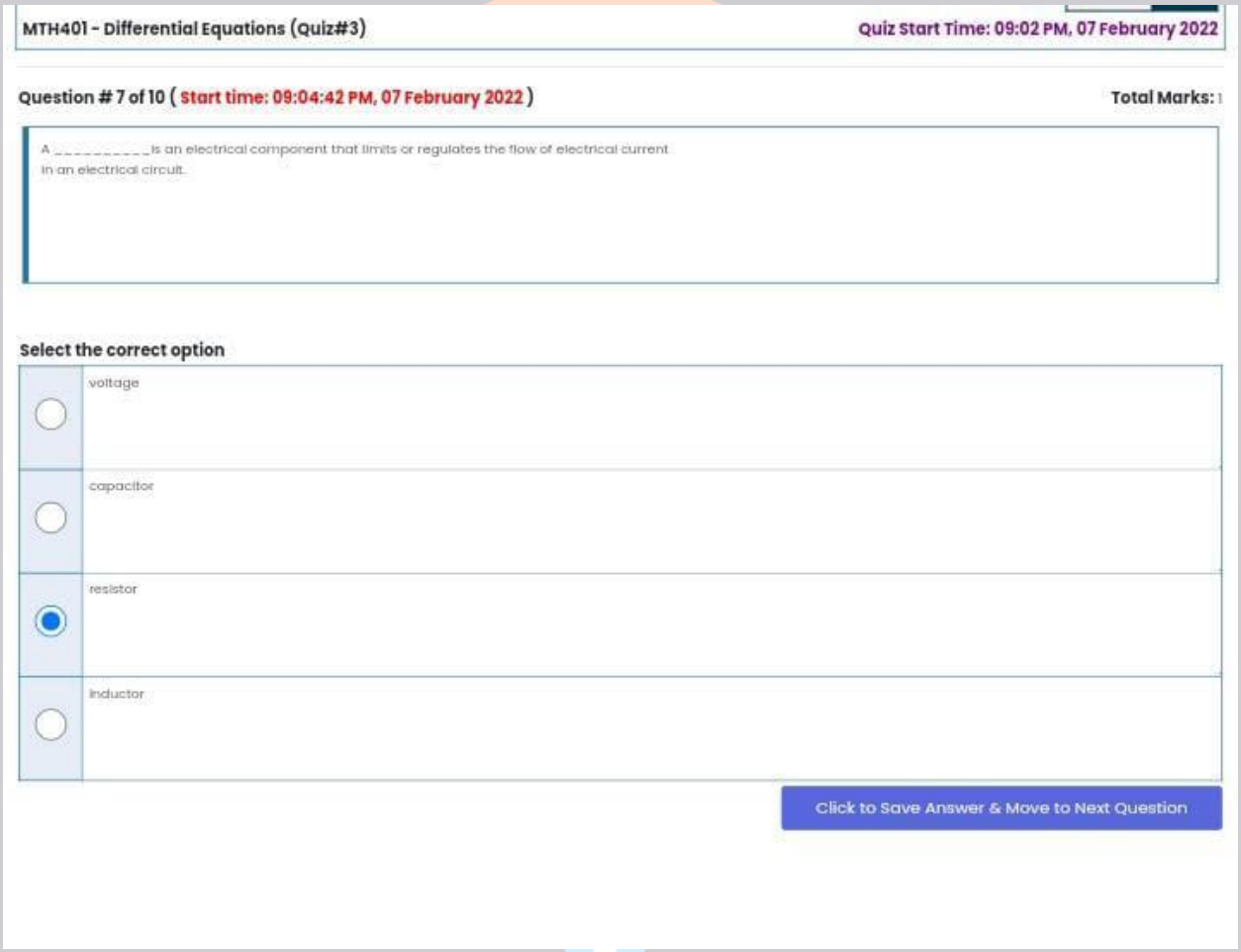
$$\frac{dx}{dt}$$

Select the correct option

Reload Math Equations

- Constant
- Proportional
- None of these
- Inverse proportional

Click to Save Answer & Move to Next Question



MTH401 - Differential Equations (Quiz#3) Quiz Start Time: 09:02 PM, 07 February 2022

Question # 7 of 10 (Start time: 09:04:42 PM, 07 February 2022) Total Marks: 1

A _____ is an electrical component that limits or regulates the flow of electrical current in an electrical circuit.

Select the correct option

- voltage
- capacitor
- resistor
- inductor

Click to Save Answer & Move to Next Question

sec(s)

MTH401 - Differential Equations (Quiz#3) Quiz Start Time: 09:02 PM, 07 February 2022

Question # 6 of 10 (Start time: 09:04:30 PM, 07 February 2022) Total Marks: 1

The harmonic series of constant

$$\sum_{n=1}^{\infty} \frac{1}{n}$$

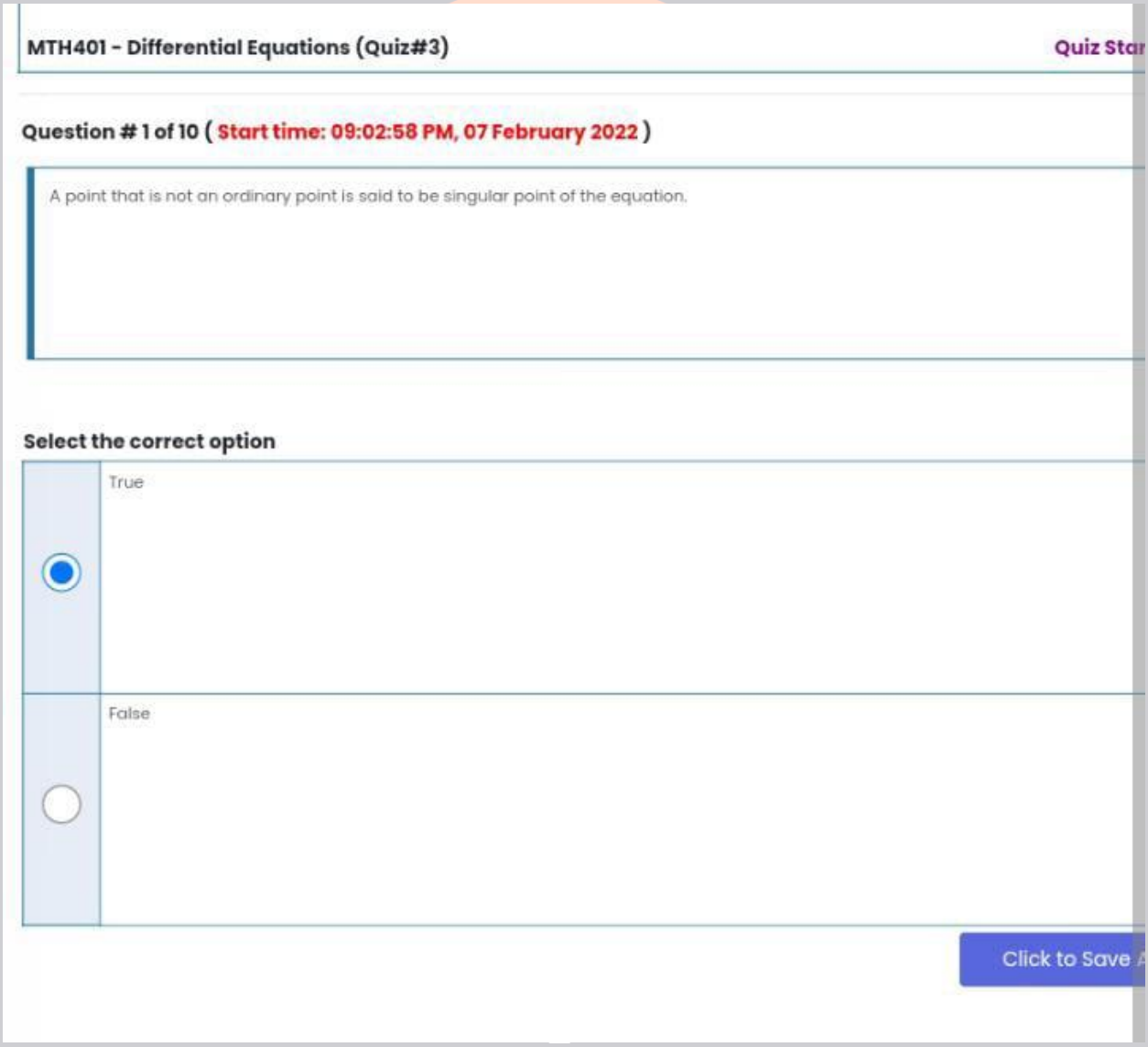
always _____.

Select the correct option

Reload Math Equations

- convergent
- divergent

Click to Save Answer & Move to Next Question


MTH401 - Differential Equations (Quiz#3)
Quiz Star
Question # 1 of 10 (Start time: 09:02:58 PM, 07 February 2022)
A point that is not an ordinary point is said to be singular point of the equation.
Select the correct option
True
False
Click to Save

MTH401 - Differential Equations (Quiz#3)

Question # 1 of 10 (Start time: 02:53:35 PM, 08 February 2022)

Consider a mathematical statement, V = IR, where V be the constant of proportionality and it represents the voltage. The equation is called _____.

Select the correct option

- ○ Hooke's law
- ○ Newtown's law
- ○ Coulomb's law
- ● Ohm's law

MTH401 - Differential Equations (Quiz#3)

Question # 2 of 10 (Start time: 02:54:32 PM, 08 February 2022)

For solving non homogeneous differential equation, we use either the method of _____.

Select the correct option

- ● a&b both
- ○ Undetermined coefficient
- ○ None of them
- ○ Variation of parameter

MTH401 - Differential Equations (Quiz#3)

Question # 3 of 10 (Start time: 02:55:23 PM, 08 February 2022)

Consider a power series

$$1-\frac{x^2}{2}+\frac{x^4}{24}-\ldots.$$

represents _____.

Select the correct option

●	cos x
○	e
○	sin x
○	ln x

MTH401 - Differential Equations (Quiz#3)

Question # 4 of 10 (Start time: 02:56:11 PM, 08 February 2022)

The differential equation

$$y''+(\cos x)y=0$$

has ordinary point at _____.

Select the correct option

○	x=1
●	x=0
○	none of them
○	x=-1

MTH401 - Differential Equations (Quiz#3)

Question # 5 of 10 (Start time: 02:57:06 PM, 08 February 2022)

The differential equation

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

has singular point at

Select the correct option

- x=1
- x=0
- x=2 and x = -2
- x=2 (selected)

MTH401 - Differential Equations (Quiz#3)

Question # 6 of 10 (Start time: 02:58:02 PM, 08 February 2022)

The equation, $(x^2+1)\frac{d^2y}{dx^2} + 2x\frac{dy}{dx} + 6y = 0$, has the singular point(s) at $x =$ _____.

Select the correct option

- $(I)\quad \pm 1$
- $(III)\quad -i$
- (IV) Both (II) and (III). (selected)
- $(II)\quad i$

MTH401 - Differential Equations (Quiz#3)

Question # 7 of 10 (Start time: 02:58:56 PM, 08 February 2022)

The quantity $Z = \sqrt{X^2 + R^2}$ is called _____ of the circuit.

Select the correct option

- reactance
- impedance

MTH401 - Differential Equations (Quiz#3)

Question # 8 of 10 (Start time: 02:59:26 PM, 08 February 2022)

Auxiliary equation of the differential equation

$$fx^2\frac{d^2y}{dx^2} + gx\frac{dy}{dx} + hy = k(x)$$

is

Select the correct option

- $fm^2 - (g - f)m + h = 0$
- none of them
- $fm + (g - f)m^2 + h = 0$
- $fm^2 + (g - f)m + h = 0$

MTH401 - Differential Equations (Quiz#3)

Question # 9 of 10 (Start time: 03:00:16 PM, 08 February 2022)

Which number is known as quasi frequency?

Select the correct option

○	$\frac{2\pi}{\sqrt{\omega^2+\lambda^2}}$
○	$\frac{2\pi}{\sqrt{\omega^2-\lambda^2}}$
○	$\frac{\sqrt{\omega^2+\lambda^2}}{2\pi}$
●	$\frac{\sqrt{\omega^2-\lambda^2}}{2\pi}$

MTH401 - Differential Equations (Quiz#3)

Question # 10 of 10 (Start time: 03:01:21 PM, 08 February 2022)

The power series, $\sum_{n=0}^{\infty}\frac{x^n}{n!}$, _____ $x=1$ to the number e.

Select the correct option

●	converges
○	diverges