

Question No : 1 of 26

Marks: 1 (Budgeted Time 1 Min)

Wronskian of the function  $y_c = c_1 + c_2 \cos x + c_3 \sin x$  is

Answer ( Please select your correct option )

☐ 0

☐ 1

correct answer solve  
by hadi

☐ 2

☐ 3

**Made By: Waqar Siddhu**

Question No : 2 of 26

Marks: 1 (Budgeted Time 1 Min)

The value of amplitude in the solution  $X=40\sin(7t+4)$  is

Answer ( Please select your correct option )

☐ 7

☐ 4

☐ 40

☐ 20

correct answer solve  
by hadi

**Made By: Waqar Siddhu**

Question No : 3 of 26

Marks: 1 (Budgeted Time 1 Min)

The degree of the differential equation  $[1 - x(\frac{dy}{dx})^2]^{\frac{3}{2}} = \frac{d^2y}{dx^2}$  is

Answer ( Please select your correct option )

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ None of these

correct answer solve  
by hadi

**Made By: Waqar Siddhu**

Question No : 4 of 26

Marks: 1 (Budgeted Time 1 Min)

Which of the following is the equation of pendulum?

Answer ( Please select your correct option )

☐  $\frac{d^2\theta}{dt^2} + \frac{g}{l} \sin \theta = F(t)$

correct answer solve  
by hadi

☐  $\frac{d\theta}{dt} + \frac{g}{l} \sin \theta = F(t)$

☐  $\frac{du}{dt} = F(u)G(t)$

☐ None of these

**Made By: Waqar Siddhu**

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)

The differential equation  $(x^2 - 2x + 2y^2) dx + 2xy dy = 0$  is a/an -----differential equation.

Answer ( Please select your correct option )

☐ Exact

☐ Non-exact

correct answer solve  
by hadi

☐ Homogenous

☐ Separable

**Made By: Waqar Siddhu**

Question No : 6 of 26

Marks: 1 (Budgeted Time 1 Min)

In a Bernoulli equation  $\frac{dy}{dx} + \frac{1}{x}y = xy^2$ , identify  $p(x)$ ,  $q(x)$  &  $n$  respectively.

Answer ( Please select your correct option )

☐  $\frac{1}{x}, x$  & 2

correct answer solve  
by hadi

☐  $y, x^2y$  & 2

☐  $y, \frac{1}{x}$  & 2

☐  $\frac{1}{y}, y$  & 2

**Made By: Waqar Siddhu**

Question No : 7 of 26

Marks: 1 (Budgeted Time 1 Min)

If a differential equation is of the form  $y f(x, y) dx + x g(x, y) dy = 0$  with  $xM - yN \neq 0$ , then the Integrating factor is-----.

Answer ( Please select your correct option )

☐  $\mu = \frac{1}{yN - xM}$

☐  $\mu = \frac{1}{xM + yN}$

☐  $\mu = \frac{1}{xM - yN}$

correct answer solve  
by hadi

☐  $\mu = \frac{1}{yM + xN}$

**Made By: Waqar Siddhu**

Question No : 8 of 26

Marks: 1 (Budgeted Time 1 Min)

If the given differential equation is homogeneous and  $xM + yN \neq 0$ , then the integrating factor of the given differential equation is given by-----.

Answer ( Please select your correct option )

☐  $u = \frac{1}{xM + yN}$

correct answer solve  
by hadi

☐  $u = \frac{1}{xM - yN}$

☐  $u = \exp \left[ \int \frac{\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}}{xM - yN} dy \right]$

☐  $u = \exp \left[ \int \frac{\frac{\partial M}{\partial y} - \frac{\partial N}{\partial x}}{xM - yN} dx \right]$

**Made By: Waqar Siddhu**



Question No : 9 of 26

Marks: 1 (Budgeted Time 1 Min)

Number of constant solutions obtained from the separable differential equation  $\frac{dy}{dx} = \frac{y^3 - 1}{x}$  is---

Answer ( Please select your correct option )

☐ 0

correct answer solve  
by hadi

☐ 1

☐ 2

☐ 3

**Made By: Waqar Siddhu**

Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)

If  $\frac{dy}{dx} = x$ , then  $y = \dots\dots\dots$

Answer ( Please select your correct option )

☐  $y = \frac{x^2}{2} + c$

correct answer solve  
by hadi

☐  $y = x^2 + c$

☐  $y = x + c$

☐  $y = \frac{x}{2} + c$

**Made By: Waqar Siddhu**

Question No : 11 of 26

Marks: 1 (Budgeted Time 1 Min)

To convert the non-homogenous differential equation  $\frac{dy}{dx} = \frac{2x+3y-4}{4x+6y+9}$  into variable separable form, we use the substitution -----.

Answer ( Please select your correct option )

☐

$Z = x + y$

☐

$Z = 4x + 3y$

☐

$Z = 2x + 6y$

☐

$Z = 2x + 3y$

correct answer solve  
by hadi

**Made By: Waqar Siddhu**

Question No : 12 of 26

Marks: 1 (Budgeted Time 1 Min)

In exponential model for the population growth  $P(t) = P_0 e^{kt}$  If  $k < 0$ , then  $\lim_{t \rightarrow \infty} P(t) = \dots$ .

Answer ( Please select your correct option )

☐  $\infty$

☐ 0

correct answer solve  
by hadi... k > 0 then  
infinte

☐  $-\infty$

☐ 1

**Made By: Waqar Siddhu**

Question No : 13 of 26

Marks: 1 (Budgeted Time 1 Min)

In exponential model for the population growth  $P(t) = P_0 e^{kt}$  if  $k > 0$ , then  $\lim_{t \rightarrow \infty} P(t) = \dots$ .

Answer ( Please select your correct option )

☐  $\infty$

correct answer solve  
by hadi

☐  $-\infty$

☐ 0

☐ 1

**Made By: Waqar Siddhu**

Question No : 14 of 26

Marks: 1 (Budgeted Time 1 Min)

The constant solutions of the logistic equation  $\frac{dP}{dt} = P(a - bP)$  are-----.

Answer ( Please select your correct option )

☐

P=0, P= b/a

☐

P=0, P=a/b

correct answer solve  
by hadi

☐

P=a/b, P=b/a

☐

P=0, P=0

**Made By: Waqar Siddhu**

Question No : 15 of 26

Marks: 1 (Budgeted Time 1 Min)

If  $f(x)$  and  $g(x)$  are linearly dependent on  $I$ , then-----.

Answer ( Please select your correct option )

- ☐  $W(f,g)(x) \neq 0$  (Wronskian) for all  $x$  in the interval  $I$ .
- ☐  $W(f,g)(x) = 0$  (Wronskian) for all  $x$  in the interval  $I$ . correct answer solve  
by hadi
- ☐  $W(f,g)(x)$  may or may not be zero for all  $x$  in the interval  $I$ .
- ☐  $W(f,g)(x)$  is not defined for all  $x$  in the interval  $I$ .

**Made By: Waqar Siddhu**

Question No : 16 of 26

Marks: 1 (Budgeted Time 1 Min)

What is annihilator operator of the function  $g(x) = \sin x$  ?

Answer ( Please select your correct option )

☐  $(D^3 + 1)$

☐  $D^2$

☐  $D^2 - 1$

☐  $D^2 + 1$

correct answer solve  
by hadi

**Made By: Waqar Siddhu**



Question No : 17 of 26

Marks: 1 (Budgeted Time 1 Min)

Which of the following is the annihilator operator of the function  $g(x) = 4x - 5$  ?

Answer ( Please select your correct option )

☐  $D^2$

correct answer solve  
by hadi

☐  $(D+4)$

☐  $(D^3-4)$

☐  $(D-4)$

**Made By: Waqar Siddhu**

Question No : 18 of 26

Marks: 1 (Budgeted Time 1 Min)

The differential equation of the orthogonal trajectory to the family of curves  $y = cx$  is-----.

Answer ( Please select your correct option )

☐  $\frac{dy}{dx} = -\frac{x}{y}$

☐  $\frac{dy}{dx} = \frac{x}{y}$

☐  $\frac{dy}{dx} = -\frac{y}{x}$

☐  $\frac{dy}{dx} = \frac{y}{x}$

correct answer solve  
by hadi

**Made By: Waqar Siddhu**

Question No : 19 of 26

Marks: 1 (Budgeted Time 1 Min)

If  $y = 1 + 6x^2 - 7x^3$ , then which of the following is true for it ?

Answer ( Please select your correct option )

☐

Its annihilator operator is  $D$ .

☐

Its annihilator operator is  $D^2$ .

☐

Its annihilator operator is  $D^3$ .

☐

Its annihilator operator is  $D^4$ .

correct answer solve  
by hadi

**Made By: Waqar Siddhu**

Question No : 20 of 26

Marks: 1 (Budgeted Time 1 Min)

If  $y_1 = x^2$  and  $y_2 = x$  are the first and second solution of  $x^2 \frac{d^2 y}{dx^2} - 2x \frac{dy}{dx} + 2y = 0$ , then which of the following is the most accurate option?

Answer ( Please select your correct option )

- ☐  $W(y_1, y_2)$  must be equal to zero on the indicated interval.
- ☐  $W(y_1, y_2)$  must be equal to non-zero on the indicated interval.
- ☐  $W(y_1, y_2)$  may or may not be equal to zero on the indicated interval.
- ☐  $W(y_1, y_2)$  may or may not be equal to non-zero on the indicated interval.

correct answer solve  
by hadi

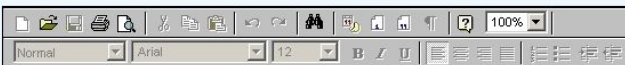
**Made By: Waqar Siddhu**

Question No : 21 of 26

Marks: 2 (Budgeted Time 4 Min)

In which sciences or subjects Logistic equations are useful?

Answer ( [Please click here to Add Answer](#) )



**Made By: Waqar Siddhu**

**Marks: 2 (Budgeted Time 4 Min)**

Answer ( Please [click here](#) to Add Answer )

[illegible]

**Made By: Waqar Siddhu**

**Marks: 3 (Budgeted Time 6 Min)**

Answer ( Please [click here](#) to Add Answer )

The image is a screenshot of a Microsoft Word application window. At the top, there is a standard toolbar with icons for file operations (Save, Open, Print, etc.), editing (Undo, Redo), and formatting (Bold, Italic, Underline, etc.). Below the toolbar is a ribbon area with tabs for 'Normal', 'Arial', '12', and various text formatting options. The main body of the document is mostly blank, except for a large, semi-transparent red watermark in the bottom right corner that reads 'Made By: Waqar Siddhu' in a stylized font.

**Made By: Waqar Siddhu**





Question No : 25 of 26

Marks: 5 (Budgeted Time 10 Min)

Find the general solution of the following non-homogenous differential equation using annihilator operator  
 $y'' - 3y' + 2y = 4x^2 + 5$ ?

Answer ( [Please click here to Add Answer](#) )



**Made By: Waqar Siddhu**

Question No : 26 of 26

Marks: 5 (Budgeted Time 10 Min)

Given that  $y = c_1 e^x + c_2 e^{-x}$  is a two parameter family of solutions of the differential equation  $\frac{d^2 y}{dx^2} - y = 0$  on  $(-\infty, \infty)$  find a member of the family satisfying the boundary conditions  $y(0) = 0, y'(1) = 1$

Answer ( [Please click here to Add Answer](#) )



**Made By: Waqar Siddhu**