01-MCQ, Marks-01

Which of the following will represent an ordinary differential equation?

$\frac{d^2y}{dx^2} - 5\left(\frac{dy}{dx}\right)^2 = 0$ (*Correct*)

$\frac{d}{dx}(\sin x) = \cos x$

$\frac{d}{dx}(\ln x) = \frac{1}{x}$

$\frac{d}{dx}\left(\frac{y}{x}\right) = \frac{x\frac{dy}{dx} - y}{x^2}$

02-MCQ, Marks-01

For a differential equation, the order of highest derivatives appearing in it, is called the ——- of differential equation.

degree

order (*Correct*)

exponent

power

03-MCQ, Marks-01

The ordinary differential equation: $\frac{d^4y}{dx^4} - 2\left(\frac{dy}{dx}\right)^5 + 3xy = \sin x$ is of order——.

6

5

4 (*Correct*)

1

04-MCQ, Marks-01

The ordinary differential equation: $\left(\frac{d^3y}{dx^3}\right)\left(\frac{d^2y}{dx^2}\right) + 6\frac{dy}{dx} = \frac{1}{x}$ is of order——.

6

5

4

3 (*Correct*)

05-MCQ, Marks-01

The ordinary differential equation: $y' = 4y + x^3$ is of order——.

1(*Correct*)

2

3

4

06-MCQ, Marks-01

The ordinary differential equation: $(2x + y)dx + (y + 3x)dy = 0$ is of order——.

1(*Correct*)

2

3

4

07-MCQ, Marks-01
The ordinary differential equation: $4y'' + \cos x.y' - y = e^{\tan x}$ is of order——.
1
2 (*Correct*)
3
4

08-MCQ, Marks-01
The ordinary differential equation: $(y')^3 = \frac{a \sec x}{b \ln x}$ is of order——.
1(*Correct*)
2
3
4

09-MCQ, Marks-01
The ordinary differential equation: $\left(5\frac{dy}{dx}\right)^3 = \sqrt{2 - \left(3\frac{dy}{dx}\right)^2}$ is of order——.
1 (*Correct*)
2
3
6

10-MCQ, Marks-01
The ordinary differential equation: $\sqrt[3]{\left(5\frac{d^2y}{dx^2}\right)^2} = \sqrt{2 - \left(3\frac{dy}{dx}\right)^2}$ is of order——.
6
5
4
2 (*Correct*)

11-MCQ, Marks-01
The ordinary differential equation: $\sqrt[5]{5\frac{dy}{dx}} = \frac{d^3y}{dx^3}$ is of order——.
2
3(*Correct*)
5
6

12-MCQ, Marks-01
The ordinary differential equation: $8\frac{d^2x}{dy^2} + 5x = \csc 2y$ is of order——.
1
2 (*Correct*)
3
4

13-MCQ, Marks-01

The ordinary differential equation: $7\frac{d^2y}{dx^2} + 2x^2y = \cot\left(\frac{d^2y}{dx^2}\right)$ is of order——.

undefined

4

1

2 (*Correct*)

14-MCQ, Marks-01

The ordinary differential equation:$x = 1+xy\left(\frac{dy}{dx}\right)+\frac{x^2y^2}{2}\left(\frac{dy}{dx}\right)^2+\frac{x^3y^3}{6}\left(\frac{dy}{dx}\right)^3\cdots$ is of order——.

1(*Correct*)

2

3

undefined

15-MCQ, Marks-01

The ordinary differential equation: $t = 1 - \frac{1}{2!}\left(\frac{dx}{dt}\right)^2 + \frac{1}{4!}\left(\frac{dx}{dt}\right)^4 - \frac{1}{6!}\left(\frac{dx}{dt}\right)^6 + \cdots\cdots$ is of order——.

1(*Correct*)

2

4

6

16-MCQ, Marks-01

A differential equation which can be rationalized and cleared of fractions with respect to all its derivatives present, then the exponent(power) of the highest order derivatives is called the ——- of a differential equation.

order

degree (*Correct*)

linearity

homogeneity

17-MCQ, Marks-01

The differential equation:$(3y''')^{\frac{2}{3}} = 6 + y'$ is of degree——.

$\frac{2}{3}$

3

2 (*Correct*)

1

18-MCQ, Marks-01

The differential equation:$3y''' = 6x - 5y$ is of degree——.

$\frac{2}{3}$

3

2

1(*Correct*)

19-MCQ, Marks-01

The degree of a differential equation ——— if the unknown function(dependant variable) is an argument(so called the angle) of the transcendental functions.

is undefined (*Correct*)

can be defined

is unique

is stable

20-MCQ, Marks-01

The degree of a differential equation ——— if the unknown function(dependant variable) y can not be written as polynomial in y and its derivatives.

is undefined (*Correct*)

can be defined

is unique

is stable

21-MCQ, Marks-01

The degree of differential equation: $x^2y''' + \cos x.y'' - \sin(xy) = 1$ is ——-.

2

3

1

undefined (*Correct*)

22-MCQ, Marks-01

The degree of differential equation: $x^2y'' + 3(y')^2 = x \ln y''$ is ——-.

2

3

1

undefined (*Correct*)

23-MCQ, Marks-01

The degree of differential equation: $\sec(y') = y' - 2x + 1$ is ——-.

2

3

1

undefined (*Correct*)

24-MCQ, Marks-01

The ordinary differential equation: $\frac{d^4y}{dx^4} - 2\left(\frac{dy}{dx}\right)^5 + 3xy = \sin x$ is of degree——.

6

5

4

1 (*Correct*)

25-MCQ, Marks-01

The ordinary differential equation: $\left(\frac{d^3y}{dx^3}\right)\left(\frac{d^2y}{dx^2}\right)+6\frac{dy}{dx}=\frac{1}{x}$ is of degree——.
1(*Correct*)
5
4
3

26-MCQ, Marks-01
The ordinary differential equation: $y'=4y+x^3$ is of degree——.
1(*Correct*)
2
3
4

27-MCQ, Marks-01
The ordinary differential equation: $(2x+y)dx+(y+3x)dy=0$ is of degree——.
1(*Correct*)
2
3
4

28-MCQ, Marks-01
The ordinary differential equation: $4y''+\cos x.y'-y=e^{\tan x}$ is of degree——.
1(*Correct*)
2
3
4

29-MCQ, Marks-01
The ordinary differential equation: $(y')^3=\frac{a\sec x}{b\ln x}$ is of degree——.
1
2
3(*Correct*)
4

30-MCQ, Marks-01
The ordinary differential equation: $\left(5\frac{dy}{dx}\right)^3=\sqrt{2-\left(3\frac{dy}{dx}\right)^2}$ is of degree——.
1
2
3
6 (*Correct*)

31-MCQ, Marks-01
The ordinary differential equation: $\sqrt[3]{\left(5\frac{d^2y}{dx^2}\right)^2}=\sqrt{2-\left(3\frac{dy}{dx}\right)^2}$ is of degree——.

6
5
4(*Correct*)
2

32-MCQ, Marks-01

The ordinary differential equation: $\sqrt[5]{5\frac{dy}{dx}} = \frac{d^3y}{dx^3}$ is of degree——.
2
3
5(*Correct*)
6

33-MCQ, Marks-01

The ordinary differential equation: $8\frac{d^2x}{dy^2} + 5x = \csc 2y$ is of degree——.
1(*Correct*)
2
3
4

34-MCQ, Marks-01

The ordinary differential equation: $7\frac{d^2y}{dx^2} + 2x^2y = \cot\left(\frac{d^2y}{dx^2}\right)$ is of degree——.
undefined(*Correct*)
4
1
2

35-MCQ, Marks-01

The ordinary differential equation:$x = 1 + xy\left(\frac{dy}{dx}\right) + \frac{x^2y^2}{2}\left(\frac{dy}{dx}\right)^2 + \frac{x^3y^3}{6}\left(\frac{dy}{dx}\right)^3 \cdots$ is of degree——.
1(*Correct*)
2
3
undefined

36-MCQ, Marks-01

The ordinary differential equation: $t = 1 - \frac{1}{2!}\left(\frac{dx}{dt}\right)^2 + \frac{1}{4!}\left(\frac{dx}{dt}\right)^4 - \frac{1}{6!}\left(\frac{dx}{dt}\right)^6 + \cdots\cdots$ is of order——.
1(*Correct*)
2
4
6

37-MCQ, Marks-01

Given a equation of family of curves, we can form the corresponding differential equation by——— and then —— the arbitrary constants.

integrating,eliminating

integrating,including

differentiating,eliminating (*Correct*)

differentiating, including

38-MCQ, Marks-01

An equation involving n-arbitrary constants will give rise to a differential equation of ——- order.

$(n+2)^{th}$

$(n+1)^{th}$

$n^{th}(Correct)$

$(n-1)^{th}$

39-MCQ, Marks-01

The solution of a differential equation in which the number of independent arbitrary constants is the same as the order of the differential equation is called——- solution.

trivial

singular

particular

general (*Correct*)

40-MCQ, Marks-01

The solution of a differential equation which can't be obtained from the general solution by any choice of the independent arbitrary constant is called the ——— solution.

trivial

singular (*Correct*)

particular

complementary

41-MCQ, Marks-01

In practice, we are usually assigned to determine the solution of a differential equation which satisfies certain prescribed side conditions. If the conditions are specified at one point such as $y(x_0) = A$ and $y'(x_0) = B$, then the given problem is called ————.

initial value problem(IVP) (*Correct*)

boundary value problem(BVP)

42-MCQ, Marks-01

In practice, we are usually assigned to determine the solution of a differential equation which satisfies certain prescribed side conditions. If the conditions are specified at more than one point such as $y(x_0) = A$ and $y'(x_1) = B$, then the given problem is called ————.

initial value problem(IVP)

boundary value problem(BVP) (*Correct*)

43-MCQ, Marks-01

Which of the following is an example of IVP?

$y'' - y' - 12 = 0, \;\; y(0) = -2, y'(0) = 6$ (*Correct*)

$y'' - y' - 12 = 0, \;\; y(0) = -2, y'(1) = 6$

$y'' - y' - 12 = 0$

$y'' - y' - 12 = x$

44-MCQ, Marks-01

Which of the following is an example of BVP?

$y'' - y' - 12 = 0, \;\; y(0) = -2, y'(0) = 6$

$y'' - y' - 12 = 0, \;\; y(0) = -2, y'(1) = 6$ (*Correct*)

$y'' - y' - 12 = 0$

$y'' - y' - 12 = x$