

a) $z = \log x$

b) $x = \log z$

c) $-z = e^x$

d) $z = e^{-x}$

7) The differential equation $\frac{d^2y}{dx^2} + \frac{1}{x^2}y = 1$ is of the type -----

Ans.

a) Homogeneous linear differential equation

b) Non Homogeneous linear differential equation

c) Non- linear Homogeneous linear differential equation

d) Non Homogeneous Non - linear differential equation

8) The differential equation $Pdx + Qdy + Rdz = 0$ is integrable if -----

Ans.

a) $\frac{P}{\frac{\partial}{\partial x}} + \frac{Q}{\frac{\partial}{\partial y}} + \frac{R}{\frac{\partial}{\partial z}} = 0$

b) $\frac{P}{\frac{\partial}{\partial x}} + \frac{Q}{\frac{\partial}{\partial y}} + \frac{R}{\frac{\partial}{\partial z}} = 0$

c) $\frac{P}{\frac{\partial}{\partial x}} + \frac{Q}{\frac{\partial}{\partial z}} + \frac{R}{\frac{\partial}{\partial y}} = 0$ d) $\frac{P}{\frac{\partial}{\partial y}} + \frac{Q}{\frac{\partial}{\partial x}} + \frac{R}{\frac{\partial}{\partial z}} = 0$

9) The type of differential equation $y^2zdx + z^2x dy + x^2ydz = 0$ is -----

a) Lagrange's linear equation b) Simintaneous differential equation

c) Cauchy – Euler equation d) Total differential equation

10) Ordinary simintaneous differential equation can be solved by -----

a) Changing dependent variable b) Taking one variable constant

c) Changing dependent variable d) Method of multipliers

11) The general solution of the differential equation $\frac{dx}{x} = \frac{dy}{y} = \frac{dz}{z}$ is -----

a) $\emptyset (xy, yz) = 0$ b) $x = c_1y, y = c_1z$

Ans.

c) $\emptyset \left(\frac{x}{y}, yz\right) = 0$ d) $\emptyset (xyz, yz) = 0$

12) In solving $Pdx+Qdy+Rdz = 0$ by method of reduction, we regard----- variables.

a) 1

b) 2

c) 0

d) 3

13) A complete solution of differential equation $\frac{dx}{x} = \frac{dy}{y} = \frac{dz}{z}$ is ----- Ans.

a) $x = c_1y, y = c_2z$

b) $x^2 = c_1y, y^2 = c_2z$

c) $xy = c_1, yz = c_2$ d) $x^2y = c_1, y^2z = c_2$

14) Equation $p \tan y + q \tan x = \sec^2 z$ is the order ----- Ans.

a) 1

b) 2

c) 0 d) None of these

15) The equation $(2x + 3y)p + 4xq - 8pq = x + y$ is -----

Ans.

a) Linear b) Non-linear

c) Quasi-linear d) Semi-linear

16) The bounded solution to the partial differential equation

Ans.

$\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2} + e^{-t}$ is-----

a) $u(x,t) = e^{-t}$ b) $u(x,t) = e^{-(x+t)}$

c) $u(x,t) = e^{-x} + e^{-t}$ d) $u(x,t) = x + e^{-t}$

17) The equation $Pp + Qq = R$ is known as -----Ans.

a) Charpit's equation b) Lagrange's equation

c) Bernoulli's equation d) Clairaut's equation

18) The general solution of $(y - z)p + (z - x)q = x - y$ is ----- Ans.

a) $\emptyset (x + y + z, x^2 + y^2 + z^2) = 0$ b) $\emptyset (xyz, x + y + z) = 0$

c) $\emptyset (xyz, x^2 + y^2 + z^2) = 0$ d) $\emptyset (x^2 + y^2 + z^2, x - y - z) = 0$

19) The Lagrange's auxillary equation for the partial differential equation

$Pp + Qq = R$ are -----

Ans.

a) $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$ b) $\frac{dx}{P} = \frac{dy}{Q}$

c) $\frac{dx}{P} = \frac{dz}{R}$ d) None of these

20) The solution of $xp + yq = z$ is-----

Ans.

a) $f(x,y) = 0$ b) $f\left(\frac{x}{y}, \frac{y}{z}\right) = 0$

c) $f(xy, yz) = 0$ d) $f(x^2, y^2) = 0$

21) The equation $z = px + qy + p^2q^2$ is of the type -----

Ans.

a) Linear b) Non-linear

c) Clairaut's d) Quasi-linear

22) Singular integral of $z = px + qy + p^2 - q^2$ is -----

Ans.

a) $4z^2 = 3(x^2 - y^2)$ b) $4z = 3(x^2 - y^2)$

c) $4z^2 = 3(x^2 + y^2)$ d) $4z = 3(x^2 + y^2)$

23) A complete integral of $z = pq$ is -----

Ans.

a) $4az = (x + ay + b)^2$ b) $4az = (x + ay + b)$

c) $4z = (x + ay + b)^2$ d) $4z = (x + ay + b)$

24) The complete integral of $pq = 1$ is -----

Ans.

a) $z = ax - \frac{1}{a}y + c$ b) $z^2 = ax - \frac{1}{a}y - c$

c) $z = ax + \frac{1}{a}y + c$ d) $z = ax + \frac{1}{a}y + c$

25) The equation $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial^2 z}{\partial x \partial y} + \left(\frac{\partial z}{\partial y}\right)^2 = 0$ is of order-----

a) 1

b) 2

c) 3

d) None of these

Ans.

