	Frage
	SYLLA BUS
1)	Differential Equations and applications.
2)	Matrix Algebra Limear Algebra
3)	Linear Algebra.
-4)	Numerical Methods - I
5)	Numerical Methods-II
	FOR MORE DETAILS REFER COURSE CONTENTS.
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Differential Equations

A differential equation is an equation that relates one on more Junctions and their derivatives.

eg $\frac{dy}{dx} = f(x)$ $\frac{dy}{dx} = g(x, y)$

 $\frac{(1-x)d^2y}{dx^2} - 4x\frac{dy}{dx} + 6y = 0$

ORDINARY DIFFERENTIAL EQUATIONS

A differential equation containing one or more functions of one independent variable and the derivatives of those functions. As 1971 $\frac{x^2 d^2y}{dx^2} = 4x dy + 6y = 0$

TYPES OF D.E: all all a - (uh p x) + tub

i) ODE

ii) PDE (Pantial differential equation)

(e) 1 × (0) 1 × (1(2)

Lindependent variables.

GENERAL FORM OF AN ODE

The nth order ODE is given as, $F(x, y, y', \dots, y^n) = 0$

LINEAR ODE
An nth order ODE is said to be linear if it can be written as:
(i) Can be woutten as
$(x) \longrightarrow a_0(x)y^n + a_1(x)y^{n-1} + a_2(x)y^{n-2} \cdots a_n(x)y = R(x)$
Where a (or) for 0 \le j \le n are called the coefficients of the equations
coefficients of the equations
300
In (F) if R(x)=0, then (F) is called a homogenous
linear differential equation.
OPPINION DIFFERENTIAL EQUATIONS
In ①, if R(x) = 0, then ① is called a non homogenous linear differential equation.
linear differential equation
first bons of any independent research and the
GEOMETRICAL MEANING OF FIRST ORDER FIRST
DEGREE DIFFERENTIAL EQUATION.
Scho Scho
Let f(x y dy) = 0 lo le do 1
Let $f(x, y, dy) = 0$ be the de of istorder,
Let: (2 C2 (C1A) (259)
Let: 1 62 62/ Children
mo = dyoning the house of the contract of the
d20
$m_1 = dy_1$
dx. / 1/1 / 1/2, 92) AREMEN
$A_3(x_3, y_3)$
$m_2 = dy_2$
dx_2 $C_1: y = \phi(x)$ smooth comes
$c_2: y = \psi(x)$
This is the solution of the given
d·e
$y = k, \phi(x) + k_2 \psi(x)$

	FORMATION OF A DIFFERENTIAL EQUATION:
_	
_	by eliminating arbuthary constants.
	Onder of de = no of aubritrary constants)
	Eg: 8. y= ex (Acosx + Bsinx)
	O .
	Ans. $\frac{dy}{dx} = e^{x} \left(A\cos x + B\sin x \right) + e^{x} \left(-A\sin x + B\cos x \right)$
	$\frac{dy}{dx} = y + e^{x} \left(-Asinx + Bcossc \right)$
	$\frac{d^2y}{dy} = \frac{dy}{dy} + e^{x}(-A\sin x + B\cos x) + e^{x}(-A\cos x - B\sin x)$
	dx2 dic
	$\frac{d^2y}{dy} = \frac{dy}{dy} + e^{2t} \left(-A\sin x + B\cos x \right) - y$
	dx^2 dx
	d2y - dy + dy -y - y. e
	$\frac{d^2y}{dx^2} = \frac{dy}{dx} + \frac{dy}{dx} - y - y = \frac{e}{2}$
	$d^2y = 2(dy - y)$
	$\frac{1}{dx^2}$ $\frac{1}{dx}$
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