Name	*Kaleem ullah khan*
ID	*7681*
Sec	*c*
Dep	*civil engineering*
Subject	*Differential Equation*
Assignment	*1*
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Submitted to	*Miss Shumaila Mazhar*

→ Odinary Differential Equ :-

An equation contains only ordinary derivates of one or more dependent variables of a single independent variable.

For exp :-

$$\frac{dy}{dx} + 5y = e^x, \left(\frac{dx}{dt}\right) + \left(\frac{dy}{dt}\right) = 2x + y$$

→ Application's :-

→ Modelling with first-order Equation :-
① Netwon's Law of cooling.
② Electrical Circuits.

→ Modelling free mechanical Oscillations :-
① No damping.
② Light damping.
③ Heavy damping.

→ Modelling forced mechanical oscillations.

→ Computer Exercise or Activity.

→ Partial Differential Equ :-

An equation contains partial derivates of one or more dependent variables of two or more independent variables.

For exp :-

$$\frac{\partial^2 U}{\partial x^2} + \frac{\partial^2 U}{\partial t^2} = 2\frac{\partial U}{\partial t} \qquad \frac{\partial u}{\partial y} = -\frac{\partial v}{\partial x}$$

→ Application's :-

PDE'S are used to model many systems in many different field of science and engineering.

- Laplace Equ.
- Heat Equ.
- Wave Equ.