## **DIFFERENTIAL EQUATIONS**

## **BASIC CONCEPTS OF DIFFERENTIAL EQUATIONS**

## EXERCISE

**Q.1** Find the order & degree of following differential equations.

(1) 
$$\frac{dy}{dx} + y = \frac{1}{\frac{dy}{dx}}$$

(2) 
$$\sin^{-1}\left(\frac{dy}{dx}\right) = x + y$$

(3) 
$$e^{\left(\frac{dy}{dx}-\frac{d^2y}{dx^3}\right)} = In\left(\frac{d^5y}{dx^5}+1\right)$$

(4) 
$$\left[\left(\frac{dy}{dx}\right)^{\frac{1}{2}} + y\right]^2 = \frac{d^2y}{dx^2}$$

## **ANSWER KEY**

**1.** (1) Order is 1 and degree is 2

(2) 
$$\frac{dy}{dx} = \sin(x+y)$$

Hence order is 1 and degree is 1

- (3) Order = 5, degree = not applicable.
- (4) order = 2, degree = 2