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SUBJECT:- PHYSICS

CLASS:- IXTH

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SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 4. (WORK, ENERGY & POWER) (BASED ON NCERT PATTERN)

<u>Work</u> (W) :-

Work is defined as a force acting upon an object to cause a displacement

It is expressed as the product of force and displacement in the direction of force. W=F x s Here, W= work done on an object

F = Force on the object

s = Displacement of the object

The unit of Work is Newton metre (Nm) or **joule** (J).

1 Joule is defined as the amount of work done by force of 1 N when displacement is 1m.

Sign Conventions for Work Done:-

- when both the force and the displacement are in the same direction, positive work is done.
 W = F x s
- when force acts in a direction opposite to the direction of displacement, the work done is negative.
 W= F x s

Angle between force and displacement is 180°.

- If force and displacement are inclined at an angle less than 180°, then work done is given as: $W{=}\;F.s.cos\theta$

If force and displacement act at an angle of 90° then work done is zero.

Necessary Conditions for Work to be done :-

Two conditions need to be satisfied for work to be done:

- Force should act on the object.
- Object must be displaced.