Cosmo School

Physics | **Worksheet 5 : 14/07/2020** | **Class - IX**

CHAPTER 4 : WORK, POWER AND ENERGY

Creative Questions (Mark - 3 or 4)

1. A motor of 15kw can lift 2 quintal water in 1 minute at a height of 300m.

a) What is the effective power of the motor?

b) What will be the change in energy spent by the motor if the efficiency is increased by 5%? Analyze mathematically.

2. Mass of Jony and Rony are respectively 40kg and 50kg. Jony and Rony can stair up 20 steps of 20cm height each in 10s and 18s respectively. [Acceleration due to gravity is $9.8ms^{-2}$]

a) Calculate work done by Rony.

b) Though Rony's work is more but Jony is ahead in power - evaluate the statement.

3. Karim carries a load of 30kg through a distance of 500m in 5 minutes while Rahim carries the same load through the same distance in 10 minutes. [Take $g=10m/s^2$]

a) Calculate the force applied on the load.

b) Explain with mathematical logic whether the power will be double or not in comparison with one another.

4. A toy car of mass 250gm is generated by an engine of 5J energy, at 1st trail it continues with 4m/s uniform velocity and in the 2nd trail it starts from rest with uniform acceleration 1m/s^2 and travels 8m distance.

a) Determine the required time to travel the distance in the 2nd trail mentioned in the above stem.

b) Is there any change of efficiency of the toy car in both trails? Explain with mathematical logic.

5. An engine of power 1kw and efficiency 70% is used for lifting up water for a house of height 30m in 4 minutes. Another engine of power 2kw can lift up 1000kg of water at height of 10m in 2 minutes.

a) Find out what amount of water the first engine can lift up in minutes.

b) Which engine will you select for the purpose of lifting water? Establish your selection.