

Board – ICSE

Class –10th

Topic – Work, power and energy

1. A man is dragging a large trunk on the ground by applying a force at an angle ' θ ' to the horizontal. What is the work done by i) gravity on the trunk, ii) man on the trunk & iii) frictional force on the trunk?
2. What is the work done by Earth's gravitational field on moon when the moon completes :
 - (i) one revolution
 - (ii) half a revolution
3. A boy of mass 60kg carrying a bag of 20kg runs up a flight of 100 stairs 0.2m high each. Calculate
 - (i) The total work done by the boy
 - (ii) Useful work done by the boy and
 - (iii) The efficiency of the boy.
4. Define SI unit of Work.
5. Two men A & B perform the same amount of work. B performs the work in 1/50th of the time as compared to A. Calculate the ratio of their powers.
6. Show that $P = F \times v$
7. A pump lifts 200 kg of water through a height of 5m in 3minutes. Calculate the power of pump in HP
8. Mass of a body is tripled & velocity halved .Express new KE in terms of old KE.
9. A thin girl & a fat man have same KE. Which of the 2 have a greater momentum?
If the ratio of their masses is 4:25, calculate the ratio of their momentum.
10. Two spheres have masses in the ratio 2:3 but have same gravitational PE. Calculate the ratio of their heights & weights.
11. An apple falls from a height "h". Calculate its KE & PE when the apple is at height
 - (i) h
 - (ii) $\frac{h}{2}$
 - (iii) $\frac{h}{3}$
12. A boy of mass 50kg slides down a wooden plank 500cm high. Calculate the speed with which the boy will reach the ground.

13. A ball of mass 10g is dropped from a certain height. At 50m height its KE is equal to its PE.
From what height was it dropped? Calculate its PE at the topmost point, TE midway & maximum velocity that the ball can attain.
19. $1.6\text{MeV} = \dots\dots\dots\text{J}$
20. Define & differentiate between watt-hour & W. Also express Wh in its SI units.
21. State the unit of energy other than its S.I units & its multiples.
22. State the quantities which possesses the following unit: kgm^2/s^2