Cosmo School

Physics | **Worksheet 6 : 20/07/2020** | **Class - IX**

CHAPTER 4 : WORK, POWER AND ENERGY

Instructions:

- ✓ Read the chapter in your book - quickly and thoroughly, preferably more than once.
- ✓ Watch the uploaded video classes of this chapter from school's website/You Tube channel. For becoming more clear about the basics, watch more than once, if needed.
- ✓ Contact me in case of any difficulty in understanding.

(MCQs given in this worksheet are important for all exams)

MCQs

(Solve Yourself)

1. Which one of the following is renewable energy?
a) petrol
b) gas
c) coal
d) water

2. What is the dimension of energy?
a) MLT^{-2}
b) MLT^{2}
c) $ML^{-2}T^{2}$
d) $ML^{2}T^{-3}$

3. Which one is the dimension of power?
a) $ML^{2}T^{2}$
b) MLT^{-1}
c) $ML^{2}T^{-2}$
d) $ML^{2}T^{-3}$

4. An electric motor lifts a body of mass 2kg by 5m and consumed 107j of energy. What amount of energy is wasted by the motor?
a) 6j
b) 9j
c) 10j
d) 49j

5. ML^2T^{-3} is the dimension of -

i. work done per unit
ii. power
iii. energy used per unit of time

Which of the following is correct?

a) i and ii
b) ii and iii
c) i and iii
d) i, ii and iii

6. If a runner of 60kg passes 100m distance within 12.5 sec, how much will be the kinetic energy in joule?

a) 240
b) 480
c) 1920
d) 3840

7. What is the power (in watt) of a boy of mass 40kg if he steps up 6m high stair in 12s?

a) 20
b) 32.66
c) 196
d) 786

8. A body of mass 5kg was dropped from the roof of a building. What will be the kinetic energy just before it touches the ground?

a) 245j
b) 845j
c) 1225j
d) 2450j

9. A boy of mass 50kg runs with a velocity $7ms^{-1}$. What is his kinetic energy?

a) 350j
b) 490j
c) 1225j
d) 3430j

10. Which one is the main fuel of thermal power station?

a) coal
b) mineral oil
c) wind
d) solar energy

11. A machine is able to lift 200kg of object vertically up to a height of 30m above the ground in 50s. What is the power of the machine?

a) 0.12 kw
b) 1.2 kw
c) 6.0 kw
d) 300 kw

12. A car of 1000 kg mass is moving with $10ms^{-1}$ velocity. What is the kinetic energy in joule?

a) 5×10^4
b) 5×10^3
c) 5×10^2
d) 5×10

13. Which one is a part of mechanical energy?

a) chemical energy
b) kinetic energy
c) electrical energy
d) magnetic energy

14. What is the unit of potential energy?
a) pascal
b) newton
c) watt
d) joule

15. Before releasing an arrow which type of energy is stored in arrow and bow?
a) kinetic energy
b) potential energy
c) chemical energy
d) heat energy

16. If a boy crosses 6m high stair in 12s and if the mass of the boy is 40kg, then what is the power of the body?
a) 20w
b) 32.67w
c) 196w
d) 2352w

17. Which is the correct relation between kinetic energy and momentum?
a) $E_k = P/2m$
b) $E_k = P/2m$
c) $E_k = 2P/m$
d) $E_k = 2P^2/m$

18. What will be the potential energy of a body of mass 7kg if it is raised to a height of 2000 cm above the surface of the earth?
a) 1372j,
b) 32.67j
c) 1176j
d) 1376j

19. If we through stone at mango it may fall down for which energy?
a) used energy
b) potential energy
c) kinetic energy
d) solar energy

20. Efficiency -
i. will not be above 100%
ii. a quantity without unit
iii. the ratio between energy output and energy input

Which of the following is correct?
a) i and ii
b) i and iii
c) ii and iii
d) i, ii and iii

21. In the equation $E = mc^2$, m is -
a) mass of nucleus
b) lost mass of nucleus
c) atomic mass
d) mass of uranium

Which of the following is correct?
e) i and ii
f) i and iii
g) ii and iii
h) i, ii and iii

22. At what condition the kinetic energy of a boy will be 16 times
a) mass twice, velocity twice
b) mass eight times, velocity half
c) mass four times, velocity unchanged
d) mass unchanged, velocity four times

23. Which one is correct for the energy conversion of a car engine?

a) mechanical energy → chemical energy
b) chemical energy → mechanical energy
c) thermal energy → chemical energy
d) chemical energy → electrical energy

24. Which one is the correct transformation of energy of a running fan?

a) electric energy → magnetic energy → mechanical energy → heat energy
b) electric energy → mechanical energy → sound energy → heat energy
c) electric energy → heat energy → magnetic energy → mechanical energy
d) electric energy → mechanical energy → magnetic energy → heat energy

25. Which one is correct for freely falling body?

a) The potential energy is increased
b) The kinetic energy is increased
c) Potential energy and kinetic energy are equal
d) The kinetic energy is increased

26. The potential energy of an object will be higher if -

i. the magnitude of the force is higher
ii. the mass of the object is increased
iii. displacement of the object is increased

Which of the following is correct?

a) i and ii
b) i and iii
c) ii and iii
d) i, ii and iii

27. Read the following words regarding petroleum.

i. Petroleum is a Greek word.
ii. Petroleum products are used mainly to produce electric and mechanical energy.
iii. There is nothing like petrol to be used as fuel of vehicle.

Which one is correct?

a) i and ii
b) ii and iii
c) i and iii
d) i, ii and iii

28. A body falls under the action of gravity, the changes of energy are -

i. the potential energy is decreased
ii. the kinetic energy is increased
iii. total energy is unchanged

Which one is correct?

a) i and ii
b) ii and iii
c) i and iii
d) i, ii and iii

Read the stem carefully and answer the questions no. 29 and 30.

A carpenter is being made to enter a nail into a wood by a hammer.

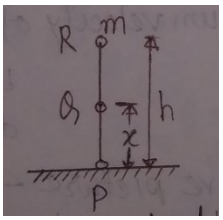
29. What type of energy transformation takes place when the hammer falls down?

a) potential energy → kinetic energy → sound energy
b) chemical energy → sound energy → kinetic energy
c) mechanical energy → kinetic energy → sound energy
d) potential energy → sound energy → heat energy

30. What type of energy transformation takes place when the carpenter lifts the hammer up?

a) heat energy → potential energy
b) chemical energy → potential energy
c) mechanical energy → potential energy
d) potential energy → mechanical energy

From the figure below, answer the questions no. 31 and 32



31. What will be the kinetic energy of the freely falling body at points Q if it falls from R?

a) 0
b) max
c) mgh
d) mg(h-x)

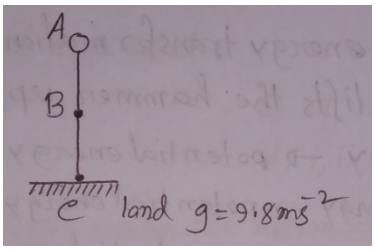
32. In case of a freely falling body from point R -

i. the body will gain velocity
ii. the kinetic energy will be transformed into potential energy
iii. velocity will increase as distance increases

Which one is correct?

a) i and ii
b) i and iii
c) ii and iii
d) i, ii and iii

According to the picture below answer the questions no. 33 and 34.



An object of weight 50kg is allowed to drop down from the point A [AC = 100m and AB = $^{AC}/_{2}$]

33. What will be the maximum velocity of the object?

a) $100ms^{-1}$
b) $44.72ms^{-1}$
c) $44.27ms^{-1}$
d) $31.61ms^{-1}$

34. According to the above picture -

i. the highest potential energy will be in point 'A'
ii. potential energy and kinetic energy will be equal in point B
iii. potential energy of point A is 100j

Which one is correct?

a) i and ii
b) i and iii
c) ii and iii
d) i, ii and iii