

KLINE MEMORIAL SCHOOL OF UBS, PUNE

WORKSHEET 4– 2020 – 2021

SUBJECT: PHYSICS

Topic : Work, Power and Energy – Part B And Part C

Class : X

Date : 21-05-2020

Instructions:

*Answers to all worksheets must be written in **Physics notebook** along with the questions.*

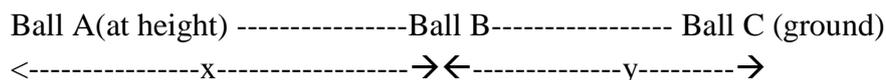
1. Calculate the change in the kinetic energy of a moving body if its velocity is reduced to $1/3^{\text{rd}}$ of the initial velocity? [Year 2014]
2. A body is thrown vertically upwards. Its velocity keeps on decreasing. What happens to its kinetic energy as its velocity becomes zero? [Year 2014]
3. When an arrow is shot from a bow it has kinetic energy in it. Explain briefly from where it gets its kinetic energy. [Year 2008]
4. Two bodies, A and B of equal masses are kept at heights 20 m and 30 m respectively. Calculate the ratio of their potential energies. [Year 2007]
5. A body of mass 5 kg is moving with a velocity of 10 ms^{-1} . What will be the ratio of its initial kinetic energy and final kinetic energy, if the mass of the body is doubled and its velocity is halved? [Year 2009]
6. A spring is kept compressed by a small trolley of mass 0.5 kg lying on a smooth horizontal surface as shown in the figure given below : [Year 2010]

Refer the text book diagram on pg 42 (fig2.16). Spring is a compressed spring.

When the trolley is released, it is found to move at a speed of 2 ms^{-1} . What potential energy did the spring possess when compressed?

7. A ball of mass 200 g falls from a height of 5 m. What will be its kinetic energy when it just reaches the ground? ($g = 9.8 \text{ ms}^{-2}$) [Year 2011]
8. (i) State the conservation of energy. (ii) Name the form of energy which a body may possess even when it is not in motion. [Year 2013]
9. A ball is placed on a compressed spring. When the spring is released the ball is observed to fly away. (i) What form of energy does the compressed spring possess? (ii) Why does the ball fly away? [Year 2012] **Refer the diagram on website where Board Papers are available.**
10. A body of mass 0.2 kg falls from a height of 10 m to a height of 6 m above the ground. Find the loss in potential energy taking place in the body. ($g = 10 \text{ ms}^{-2}$) [Year 2012]

11. Draw a diagram to show the energy changes in an oscillating simple pendulum. Indicate in your diagram how the total mechanical energy in it remains constant during the oscillation. [Year 2011]
12. A body of mass 50 kg has a momentum of 3000 kg ms^{-1} . Calculate:
 (i) the kinetic energy of the body. (ii) the velocity of the body. [Year 2010]
13. An object of mass 'm' is allowed to fall freely from a point A as shown in the figure. Calculate the total mechanical energy of object at: (i) Point A (ii) Point B (iii) State the law which is verified by your calculations. [Year 2009] **Refer the diagram on website.**



Miss has drawn horizontal but in question paper it is vertically.

14. State one important advantage and disadvantage each of using nuclear energy for producing electricity. [Year 2014]
15. State the energy changes that takes place in the following when they are in use
 (i) a photovoltaic cell (ii) an electromagnet [Year 2009]
16. What energy conversions take place in the following when they are working?
 (i) Electrical toaster (ii) Microphone [Year 2008]
17. A girl of mass 35 kg climbs up from the first floor of a building at a height 4 m above the ground to the third floor at a height 12 m above the ground. What will be the increase in her gravitational potential energy? ($g = 10 \text{ ms}^{-2}$) [Year 2013]
18. A body P has a mass of 20 kg and is moving with a velocity of 5 ms^{-1} . Another body Q has a mass of 5 kg and is moving with a velocity of 20 ms^{-1} . Calculate:
 (i) The ratio of the momentum of P and Q.
 (ii) The kinetic energy of P in S.I. units [Year 2010]
19. State the energy in the following changes in the following cases while in use:
 (i) An electric iron (ii) A ceiling fan [Year 2018]
20. Name the unit of physical quantity obtained by the formula $2K / V^2$. [Year 2018]
21. A force is applied on a body of mass 20 kg moving with a velocity of 40 ms^{-1} . The body attains a velocity of 50 ms^{-1} in 2 seconds. Calculate the work done by the body. [Year 2013]