



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

WORK, POWER AND ENERGY

Theory Based Mcq

1. Work done = force \times

A. distance

B. velocity

C. time

D. displacement

Answer: D



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2. SI unit of work

A. newton

B. joule

C. erg

D. dyne

Answer: B



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3. 1 dyne cm =

A. 1 erg

B. 1 newton cm

C. 10 newton cm

D. none of these

Answer: A



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4. Work done is a quantity.

A. pure

B. scalar

C. vector

D. dimensionless

Answer: B



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5. When is the work - done by a force is positive and when is it negative ?

A. distance is positive

B. maximum distance travelled along
direction of force applied

C. displacement is in direction of force applied

D. distance is negative

Answer: C



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6. Work done by buoyant force is

A. positive

B. negative

C. zero

D. cannot definitely say

Answer: D



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7. Power =

A. work \times time

B. time \times work

C. time/work

D. work/time

Answer: D



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8. SI unit of power is

A. watt hour

B. kilowatt

C. watt

D. joule hour

Answer: C



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9. Power = Force \times

A. velocity

B. $[\text{velocity}]^2$

C. $1/\text{velocity}$

D. $\sqrt{\text{velocity}}$

Answer: C



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10. Gravitational potential energy = ...

A. mgh

B. $\frac{1}{2}mv^2$

C. $2mgh$

D. none of these

Answer: A



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11. Kinetic energy of a body is independent of

.....

A. force applied

B. time for which force is applied

C. elasticity of the body

D. none of the above

Answer: C



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12. Power rating of a pump =

A. power output \times power input

B. power input/power output

C. power output/time

D. power output /power input

Answer: D



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13. Power rating of a pump =

A. $\frac{1}{2}mv^2$

B. work output \times time

C. work input \times time

D. work output/work input

Answer: D



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14. Energy is

A. the capacity to use power.

B. capacity to produce power

C. capacity to do work

D. capacity to do work per unit time.

Answer: C



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15. What are the two forms of mechanical energy?

A. PE and KE

B. Sound and Light

C. Heat and tidal

D. Solar and wind

Answer: A



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16. In an oscillating pendulum, KE is at extremes.

A. zero

B. negative

C. positive

D. none of these

Answer: A



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17. In an oscillating pendulum the energy is maximum at extremes.

A. potential

B. vibrational

C. gravitational potential

D. kinetic

Answer: A



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18. For a freely falling body the potential energy at the top

A. is zero

B. is completely converted to KE

C. is equal to gravitational potential energy

D. is minimum

Answer: C



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19. During energy transformation some form of energy is given out without it being used anywhere. such an energy is called

A. backup energy

B. stored energy

C. wasteful energy

D. dissipated form of energy.

Answer: D



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Application Based Mcq

1. When a body travels in a circular path and covers a distance equal to $\frac{1}{4}$ th of its circumference can we conclude that work done is zero?

A. yes

B. no

C. both (a) and (b)

D. none of these

Answer: C



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2. When a body travels a circular path such that its displacement is maximum equal to the diameter of the circle can we conclude work done is zero.

A. Yes

B. No

C. data insufficient

D. none of these

Answer: C



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3. During free fall the total energy at $3/4$ th the height is

A. constant

B. zero

C. gravitational potential energy at the top

D. $\frac{3}{4}$ th the initial potential energy.

Answer: A



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4. In a washing machine the electrical energy is converted into

A. sound energy

B. vibrational energy

C. kinetic energy

D. mechanical kinetic rotational energy

Answer: A



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5. In case of a catapult energy gets converted into kinetic energy

A. muscular

B. stretchable

C. elastic potential

D. elastic

Answer: C



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6. In a photovoltaic cell, energy converts to energy.

A. heat, chemical

B. light, electrical

C. light, wind

D. thermal, kinetic

Answer: B



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7. Charging a lead accumulator energy gets converted into chemical energy.

A. sound

B. light

C. heat

D. electrical

Answer: D



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8. A sprinter running in a 200 m \times 4 medley relay circular track does not do any work. Is this statement always true?

A. yes

B. no

C. Insufficient data

D. All of the above

Answer: C



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9. When camphor sublimes

A. chemical energy changes into heat energy

B. PE gets converted into KE

C. it simply converts into gaseous state
without attaining the liquid state

D. entire energy is lost to the surroundings

Answer: C



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10. A person drives a Lamborghini and reaches Delhi while another person travels the same on a bullock cart. Is the work done same?

A. Yes

B. No

C. data is not given

D. Work done is zero

Answer: C



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11. When a substance melt

A. no energy change takes place

B. energy change takes place but is totally
dissipated

C. PE changes into KE

D. none of the above.

Answer: C



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Numerical Based Mcq

1. A parrot flying at a height of 300m above sea level with a force of 10N

- A. does no work
- B. does work equal to 3000 J
- C. does negative work
- D. none of the above

Answer: A



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2. $1\text{J} = \dots\dots\dots \text{kWh}$

A. 3.6×10^6

B. 0.278×10^{-6}

C. 3.6×10^{-6}

D. none of these

Answer: B



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3. $1000 \text{ watt} = \dots\dots\dots \text{MW}$

A. 10^6

B. 10^9

C. 10^{-12}

D. 10^{-3}

Answer: D



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4. 1 kW =

A. 1000W

B. 100J/100sec

C. 1000 J / 1000 sec

D. 10^{-3} W

Answer: A



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5. If 1kWh is MJ then 8 MJ iskWh.

A. 36,72

B. 3.6,2.22

C. 0.36,222

D. none of these

Answer: B



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6. The mass equivalent of 500 liters of water is
..... kg.

A. 5kg

B. 50kg

C. 500kg

D. none of these

Answer: C



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7. For a given mass of a body if velocity is doubled the kinetic energy is

A. halved

B. four times

C. $\frac{1}{4}$ th

D. none of these

Answer: B



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8. For a given mass and velocity the kinetic energy remains constant if

A. mass is four times and velocity is 7.

B. mass is 1 and velocity is doubled.

C. mass and velocity both are squared.

D. none of the above.

Answer: A



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9. If a body of mass 5 kg is lifted from the ground level to a height of 5m then ratio of its inertia is

A. 1:1

B. same

C. constant

D. not defined

Answer: A



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10. A boy uses a lift to reach 26 floors while a girl climbs the stairs to reach the 26th floor does same work. Comment whether true or false?

A. Yes

B. can't say

C. No

D. Boy spends more energy than girl

Answer: B



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11. What is the amount of force required to be applied on a body so as to displace it through 20m performing 8000J of work?

A. 400J

B. 40J

C. 400N

D. 40N

Answer: C



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12. Calculate the height through which a crane can lift a load of 4tonne when a motor of 1000W is operating for 20sec.

A. 4m

B. 2m

C. 1m

D. 0.5m

Answer: D



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13. The bullet weighing 100g is released from the barrel of an air gun with a velocity of

4ms^{-1} . Calculate the potential energy of the spring.

A. 0.8 J

B. 800 J

C. 8 J

D. 0.08J

Answer: A



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14. A body possesses kinetic energy of 'X'. If the mass of body increases 49 times determine its final velocity if Kinetic energy remains constant.

A. $1/5^{th}$ the original velocity

B. $1/2$ the original velocity

C. $1/7^{th}$ the original velocity

D. $1/X$ the original velocity

Answer: C



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15. A heart of a rabbit beats 100 times in a minute when a fox chases it during which the work performed is 1.5J. Find the power of the heart?

A. 2.5J

B. 25J

C. 0.25J

D. none of these

Answer: A



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16. A body possesses a linear momentum of 20kgms^{-1} and mass of 2kg. Calculate kinetic energy of the body.

A. 10J

B. 5J

C. 100J

D. 500J

Answer: C



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17. A spring is compressed by a ping pong ball of mass 100g. On its release it flies with a velocity of 20ms^{-1} . Find the elastic potential energy possessed by spring.

A. 200J

B. 20J

C. 2000J

D. 2J

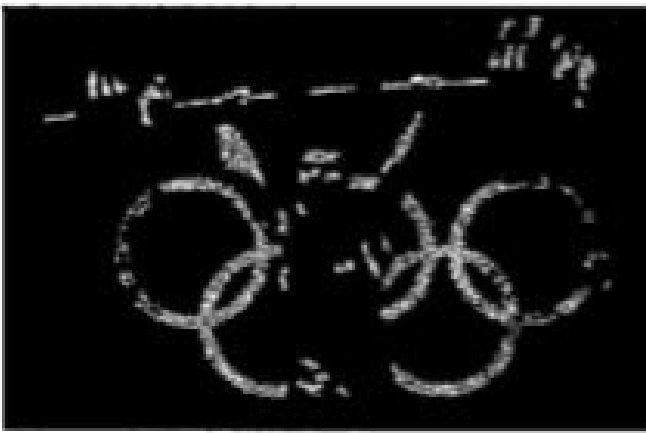
Answer: B



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Diagram Based Mcq

1. A weight lifter lifts a load of 250N while a coolie lifts same load on his head. If the height of weight lifter and coolie is same, compare the work done?



A. Work done is same

B. work done by coolie is more

C. work done by weight lifter is more

D. none of the above

Answer: C



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2. A construction worker holds a heavy tool box. How much work is done by the worker?



A. mgh

B. $\frac{1}{2}mv^2$

C. zero

D. none of the above

Answer: C



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3. The figure shows a girl pulling 5 balloons in her hand for 12m with a force of 1N at an angle of 60° below horizontal. How much work does the girl do on the balloons?



A. $-10J$

B. $6J$

C. $-6J$

D. $12J$

Answer: B



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