Chapter 4 - Energy

A. Objective Questions

1. Write true or false for each statement

(a) A coolie does no work against the force of gravity while carrying a luggage on a road

Solution: True.

(b) The energy stored in water of a dam is the kinetic energy.

Solution: False.

(c) The energy of a flying kite is kinetic energy.

Solution: True.

(d) Work done by a boy depends on the time in which he does work.

Solution: False.

(e) Power spent by a body depends on the time for which it does work.

Solution: True.

Question 2.

Fill in the blanks:

(a) Work is said to be done by a forte only when **the body moves.**

(b) Work done = Force x **distance moved in direction of force.**

(c) The energy of a body is its capacity to do **work.**

(d) The S.I. unit of energy is **joule**.

(e) The potential energy is due to its **state rest of position** and kinetic energy of body is due to its **state of motion.**

(f) Gravitational potential energy U = mass × force of gravity on unit mass × **height.**

(g) Kinetic energy = ½ × mass × **$(speed)^2$**

(h) Power P = **work done**/time taken.

(i) The S. I. unit of power is **watt**

(j) I.H.P. = **746 W**

Question 3.

Match the following:

Column A	**Column B**
(a) A stone at a height	(i) power
(b) A moving ball	(ii) joule
(c) Energy	(iii) work done in 1s
(d) Power	(iv) potential energy
(e) watt	(v) kinetic energy

Solution:

Column A	**Column B**
(a) A stone at a height	(iv) potential energy
(b) A moving ball	(v) kinetic energy
(c) Energy	(ii) joule
(d) Power	(iii) work done in 1s
(e) watt	(i) power

Question 4.

Select the correct alternative

(a) The S.I. unit of work is

1. second

2. metre

3. joule

4. newton

Solution: 3. joule

(b) No work is done by a force if the body

1. moves in direction of force

2. does not move

3. moves in opposite direction

4. none of the these

Solution: 2. does not move

(c) Two coolies A and B do some work in time 1 minute and 2 minute respectively. The power spent is

1. same by both coolies

2. is more by coolie A than by B

3. is less by coolie A than by B

4. nothing can be said.

Solution: 2. is more by coolie A than by B

(d) The expression of power P is

1. P=mgh

2. P=P=1/2MV^2

3. P=F×d

4. P=F×d/t

Solution: 4. P=F×d/t

(e) 1 H.P is equal to

1. 1 W

2. 1 J

3. 746 J

4. 746 W

Solution: 4. 746 W

(f) When a boy doubles his speed, his kinetic energy becomes

1. half

2. double

3. four times

4. no change

Solution: 3. four times

(g) A boy lifts a luggage from height 2 m to 4 m. The potential energy will become

1. half

2. double

3. one-third

4. one-fourth

Solution: 2. double