

## Chapter 2

### Energy, Work and Power MCQs

**MCQ 1:** Output of a truck is 4500 J and its efficiency is 50%, the input energy provided to the truck is

- A. 5000 J
- B. 900 J
- C. 9000 J
- D. 500 J

**MCQ 2:** Potential energy and kinetic energy are types of

- A. Electrical energy
- B. Magnetic energy
- C. Thermal energy
- D. Mechanical energy

**MCQ 3:** In a typical power station, amid a series of energy transfers and conversions, about 70% of the energy input gets wasted in the form of thermal energy, the efficiency of such a power station is about

- A. 0.3
- B. 0.4
- C. 0.7
- D. 1

**MCQ 4:** A car uses total energy of 2500 J and the output is 750 J. The efficiency of the car is

- A. 50%
- B. 30%

C. 25%

D. 80%

**MCQ 5:** In order to do work, energy is

A. transferred or converted

B. used up

C. lost

D. lost or transferred

**MCQ 6:** Pendulum bob stops moving when all its original gain in gravitational potential energy has been converted to

A. Sound Energy

B. Thermal Energy

C. Light Energy

D. Kinetic Energy

**MCQ 7:** Solar energy is converted by plants in the process of photosynthesis into

A. Chemical Potential Energy

B. Elastic Potential Energy

C. Gravitational Potential Energy

D. Kinetic energy

**MCQ 8:** A car travels a distance of 15 km with a constant force of 500 N, its work done is

A. 7500000 J

B. 30 J

C. 15500 J

D. 14500 J

**MCQ 9:** SI unit for work done is

- A. Pascal
- B. Joules
- C. Newton
- D. Ohms

**MCQ 10:** An object is lifted 5 m above the levelled ground, the mass of the object is 20 kg and the gravitational pull is  $10 \text{ N kg}^{-2}$ , the  $E_p$  of the object is

- A. 40 J
- B. 1000 J
- C. 2.5 J
- D. 0.4 J

**MCQ 11:** Energy is the

- A. ability to do work
- B. capacity of power
- C. efficiency
- D. input

**MCQ 12:** A bus travels with a constant force of 5000 N and the work done by the bus is 2500 J, the distance travelled by the bus is

- A. 2 m
- B. 0.5 m
- C. 7500 m
- D. 2500 m

**MCQ 13:** The formula for the gravitational potential energy is

- A.  $E_p = mg/h$ , where m is mass, g is gravitational pull and h is height
- B.  $E_p = m/gh$ , where m is mass, g is gravitational pull and h is height
- C.  $E_p = mgh$ , where m is mass, g is gravitational pull and h is height

D.  $E_p = gh/m$ , where  $m$  is mass,  $g$  is gravitational pull and  $h$  is height

**MCQ 14:** When the force is applied on an object but the object does not move, it means that

A. no power is used

B. no work is done

C. work is done

D. power is used

**MCQ 15:** Power is defined as

A.  $p = W/t$ , where  $W$  is work and  $t$  is time

B.  $p = t/W$ , where  $t$  is time and  $W$  is work

C.  $p = W/d$ , where  $W$  is work and  $d$  is distance

D.  $p = d/W$ , where  $d$  is distance and  $W$  is work

**MCQ 16:** An object of mass ' $m$ ' raised to a height ' $2h$ ' above the ground level possesses a gravitational potential energy of

A.  $1/2 \times mgh$

B.  $mgh$

C.  $2mgh$

D.  $m \times g/2h$

**MCQ 17:** A pendulum bob moves at a speed of  $2 \text{ m s}^{-1}$  and mass of  $0.5 \text{ kg}$ , its  $E_k$  would be

A.  $1 \text{ J}$

B.  $0.25 \text{ J}$

C.  $0.5 \text{ J}$

D.  $2 \text{ J}$

**MCQ 18:** Mass of a car is  $500 \text{ kg}$ , which is lifted up by a crane at a height of  $200 \text{ m}$ , the gravity is  $10 \text{ N kg}^{-1}$ . The  $E_p$  of the car will be

- A. 1000000 J
- B. 10000 J
- C. 4 J
- D. 25 J

**MCQ 19:** Work is defined as

- A.  $W = F/s$ , where  $F$  is force and  $s$  is displacement
- B.  $W = F + s$ , where  $F$  is force and  $s$  is displacement
- C.  $W = F - s$ , where  $F$  is force and  $s$  is displacement
- D.  $W = F \times s$ , where  $F$  is force and  $s$  is displacement

**MCQ 20:** A girl accidentally dropped her mobile phone from the balcony. If the mass of the mobile phone is 0.6 kg and the height from where the mobile phone was dropped is 120 m, keeping in front the gravitational pull of earth, the  $E_p$  of the mobile phone is

- A. 7.2 J
- B. 200 J
- C. 72 J
- D. 720 J

**MCQ 21:** A moving object always possesses

- A. Potential Energy
- B. Kinetic Energy
- C. Thermal energy
- D. Magnetic energy

**MCQ 22:** Work can only be done when there is

- A. Force
- B. Power
- C. Energy

D. Efficiency

**MCQ 23:** Work done must have the same unit as

A. Force

B. Power

C. Energy

D. Efficiency

**MCQ 24:** Knocking a nail into a wooden block with a hammer involves conversion between different forms of energy, which of the following choices present this conversion in correct order.

A. chemical energy  $\rightarrow$  gravitational potential energy  $\rightarrow$  kinetic energy  $\rightarrow$  (sound energy + heat energy)

B. chemical energy  $\rightarrow$  kinetic energy  $\rightarrow$  gravitational potential energy  $\rightarrow$  (sound energy + heat energy)

C. chemical energy  $\rightarrow$  (sound energy + heat energy)  $\rightarrow$  kinetic energy  $\rightarrow$  gravitational potential energy

D. (sound energy + heat energy)  $\rightarrow$  chemical energy  $\rightarrow$  kinetic energy  $\rightarrow$  gravitational potential energy

**MCQ 25:** We can say that one watt is defined as

A. rate of work done or energy conversion of one joule per second

B. rate of time of one second per joule

C. rate of distance of one meter per joule

D. rate of work done or energy conversion of one joule per meter

**MCQ 26:** Wind and waves are used by the turbines to convert

A. Mechanical Energy into Electrical Energy

B. Kinetic Energy into Electrical Energy

C. Potential energy into Kinetic Energy

D. Potential Energy into Electrical Energy

**MCQ 27:** If a bulb uses energy of 100 J and remains on for 25 s, the power consumed by the bulb will be

- A. 125 W
- B. 4 W
- C. 2500 W
- D. 75 W

**MCQ 28:** As the pendulum bob swings, some of its energy is converted into

- A. Sound Energy
- B. Thermal Energy
- C. Light Energy
- D. Kinetic Energy

**MCQ 29:** A ball of an unknown mass is thrown upward at a speed of  $10 \text{ m s}^{-1}$ , calculate the maximum height reached by the ball if the acceleration due to gravity is assumed to be  $10 \text{ m s}^{-2}$ .

- A. 5 m
- B. 10 m
- C. 0.5 m
- D. 1 m

**MCQ 30:** Energy cannot be

- A. converted or transferred
- B. destroyed or transferred
- C. created or transferred
- D. created or destroyed

**MCQ 31:** Formula for efficiency is

- A.  $(\text{energy input} / \text{energy output}) \times 100$