

Q 1. Define work.

Ans. When force is applied on body and it moves in particular direction.

Q2. Write formula for work.

Ans. Force (F) \times Distance (D)

Q3. Define torque.

Ans. Product of force into radius

$w = f \times r$ kg metre.





Q4. Define power.

Ans. Rate of doing work, Power (P) = Work (w)/Time (t)

Q5. Define energy ?

Ans. Capacity of doing work, Energy = Power \times Time

Q6. State the types of mechanical energy.

Ans. Kinetic energy, potential energy.

Q7. What is the formula of potential energy ?

(a) $\frac{1}{2}mv^2$

(b) $m.h.g$

(c) $2mv^2$

(d) None of these

Q8. Write the formula for kinetic energy.

(a) $2mv^2$

(b) mv^2

(c) $\frac{1}{2}mv^2$

(d) $2mv$

Q9. Write the formula for work in one second torque.

(a) force \times radius

(b) force \times radius $\times 2\pi N$

(c) force \times diameter

(d) force \times diameter $\times 2\pi N$

Q10. How many watts in one horse power (H.P.) ?

(a) 736

(b) 746

(c) 756

(d) 846

Q11. An example of potential energy is

(Sheet Metal – 2012 Mock Test)

(a) Blowing wind

(b) Rotating wheels

(c) Running flowing water

(d) water is an overhead tank

Q12. A 1200 kg. car rises 25 metre in going 250 metres up a slop. Calculate how much potential energy does the car gain ?

(a) 30,000 J

(b) 249700 J

(c) 249300 J

(d) None of these

Q13. A force of 50 Nw is applied on a body to travel a distance of 2.50 metre. Find the value of work.

(a) 200 Nw

(b) 175 Nw

(c) 150 Nw

(d) 125 Nw

Q14. A mass of 150 kg covered a distance of 5 metres in 15 seconds. Find the work in horse power.

(a) 0.651

(b) 0.75

(c) 0.55

(d) 0.45

[Hint : work = force \times distance $\times 9.81 Nwm$
Power = $\frac{\text{work}}{\text{time}}$]

Q15. A bullet weighing 50 gm moves with a velocity of 100 metre/sec. Find its kinetic energy in kgm.

(a) 250

(b) 350

(c) 450

(d) 550

[Hint : K.E. = $\frac{1}{2}mv^2$]

Q16. Find out kinetic energy of a body of mass 400 kg., moving at a speed of 36 km/hr.

(Welder – 2012 Mock Test)

$$\left[\text{Hint : } KE = \frac{1}{2} kmv^2 \right]$$

Q17. Mechanical energy posed by a body due to its position is called ?

(NCVT-2012 Fitter, Turner, Machinist)

Q18. The work (W) in joule that is required to lift up the bucket from the depth of 12 m is to be calculated? Which one of the following equations is to be used, if the rope which has an efficiency is 80% ($g = 10 \text{ m/s}^2$)

(NCVT-2012 Welder, Plumber, Carpenter, Sheet Metal)

(a) $W = \frac{50 \text{ kg. } 10 \text{ m/s}^2 \cdot 12 \text{ m}}{80}$

(b) $W = \frac{50 \text{ kg. } 10 \text{ m/s}^2 \cdot 12 \text{ m}}{0.8}$

(c) $W = 50 \text{ kg. } 10 \text{ m/s}^2 \cdot 12 \text{ m} \cdot 0.8$

(d) $W = 50 \text{ kg. } 10 \text{ m/s}^2 \cdot 12 \text{ m} \cdot 80\%$

Q19. 15 KN metres of work is done by a crane in 30 sec. What is the power in kW ?

(NCVT – 2012 Diesel Mech)

(a) 2 kW

(b) 30 kW

(c) 0.5 kW

(d) 7.5 kW

Q20. A work of 50 Nm is done. How much J does it amount to ?

(NCVT – 2012 Diesel Mech.)

(a) 50 J

(b) 51 J

(c) 430 J

(d) 500 J

Q21. Energy may be transferred from one kind to another, fans and lifts are the examples of

(NCVT – 2012 Diesel Mech.)

(a) Chemical to mechanical

(b) Heat to mechanical

(c) Electrical to mechanical

(d) Mechanical to electrical

Q22. A force of one newton moves its point of application through a distance of 1 metre. State the S.I. unit of the above statement.

(Jan.-2013 Electricians)

Q23. Calculate the power of pulley used to lift a mass if:

(Jan.-2013 Fitter, Turner, Machinist)

$$\text{Force (f)} = 750 \text{ N}$$

$$\text{Height (h)} = 12 \text{ m}$$

$$\text{Time (t)} = 3 \text{ minutes}$$

$$\left[\text{Hint: } P = \frac{F \times S}{t} = \frac{750 \times 12 \text{ m}}{800 \text{ sec}} = 50 \text{ J/sec} \right]$$



Q24. The work done by hydraulic cylinder is 200 Nm. If the total distance moved by the hydraulic piston is 0.4 m. What is the total hydraulic force on the piston in Nw-metre?

(Jan. – 2013, Diesel Mech.)

[Hint: Work (w) = Force (f) × Distance (d)

$$200 = f \times 0.4 \text{ Nw.}]$$

Q25. Energy may be transformed from one kind to another, Battery cells are the example of

(Jan.-2013, Diesel Mech.)

(a) Chemical to light

(b) Chemical to electrical

(c) Electrical to chemical

(d) light to chemical

Q26. Find the time taken by 10 H.P. engine to raise a load of 4.5 metric ton to a height of 6 metre.

(Jan.-2013, Diesel Mech.)

Hint:
$$\text{Power (P)} = \frac{\text{Force (f)} \times \text{Distance (s)}}{\text{Time (t)}}$$

$$10 \times 75 = \frac{4.5 \times 1000 \text{ kg} \times 6 \text{ m}}{t}$$

$$\therefore t = \frac{4.5 \times 1000 \times 6}{10 \times 75} \text{ sec.}$$

Q27. Fill in the blanks :

- (i) F.P.S. system the unit of work is
- (ii) 1 joule is Newton metre.
- (iii) The rate of doing work is called
- (iv) Capacity of doing work is called
- (v) The energy possessed by virtue of its motion is called
- (vi) Formula for potential energy
- (vii) One horse power is equal to watt.
- (viii) Formula for kinetic energy is equal

- 7. (b)
- 10. (b)
- 13. (d)

- 8. (c)
- 11. (d)
- 14. (a)

- 9. (b)
- 12. (c).
- 15. (a)

Answer Sheet For MCQ

16. 20000 joule

19. 0.5 Kw

22. Chemical to electrical

25. 1 Joule

27. (i) foot-pound

(iv) energy

(vii) 746

17. Potential energy (P.E.)

20. 50 J

23. 50 watts

26. 36 Sec

(ii) 1

(v) kinetic energy

(viii) $\frac{1}{2}mv^2$

$$18. W = \frac{50kg \cdot 10m/s^2 \cdot 12m}{0.8}$$

21. Electrical to mechanical

24. 50 Nw

(iii) power

(vi) mgh.

