Power (Std – 10)

Numericals.

Q. no. 6.

Power = 3 kW.

time = 10 h.

(i) Energy = Power × time. = 3 kW × 10 h.

= 30 kWh.

(ii) 1 kWh = 3.6×10^6 J.

30 kWh = $30 \times 3.6 \times 10^6$ J.

= 1.08×10^8 J.

Q. no. 8.

Mass = 500 kg.

depth = 80 m.

$g = 10 ms^{-2}$.

time = 10 s.

(a) Work done by the pump = mgh = 500 × 10 × 80

= 400000 J = 4×10^5 J.

(b) The power at which the pump works = $\frac{400000}{10}$ W

= 40000 W

= 40 kW.

(c) Efficiency = $\frac{\text{useful power}}{\text{Power input}}$.

$\frac{40}{100} = \frac{40000\ W}{\text{power input}}$

Power input = $\frac{40000 \times 100}{40}$ = 100000 W = 100 kW.

Assignment → Ex 2(A), 22, 23, 24 and Numericals 7, 9, 10, 11.