

date
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SEM III Unit -
MJE Physics

Some ^{Solve} Questions on Carnot Engine

Q.17 What is the efficiency of a Carnot engine working between ice and steam point?

Solⁿ $T_1 = 373 \text{ K}$ (Steam point)

$T_2 = 273 \text{ K}$ (Ice point)

Efficiency

$$(\eta) = 1 - \frac{T_2}{T_1} = 1 - \frac{273}{373} = 0.268 = 26.8\%$$

Q.2 $\rightarrow$ A heat engine is 20% efficient. If the engine does 500J of work every second, how much heat does the engine exhaust every second?

Solution $\rightarrow \eta = \frac{W}{Q_1}$

$$\Rightarrow 0.20 = \frac{500}{Q_1}$$

$$Q_1 = \frac{500}{0.20} = 2500 \text{ Jule}$$

$$Q_2 = Q_1 - W = 2500 - 500 = 2000 \text{ Jule}$$