EE23BTECH11047 - Deepakreddy P

32 A single-phase full-bridge diode rectifier feeds a resistive load of 50Ω from a 200 V, 50 Hz single phase AC supply. If the diodes are ideal, then the active power, in watts, drawn by the load is _____ (round off to nearest integer).
(GATE EE 32)

Solution:

Table I
Input Parameters

Symbol	Description	value
R	Load Resistance	50Ω
V_{rms}	RMS Voltage	200V
f	Frequency	50Hz

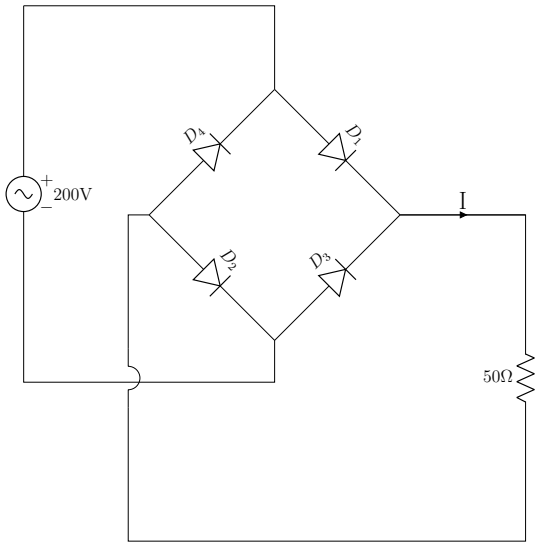

Figure 1. Circuit-1

$$V_{rms} = 200 \tag{1}$$

$$P = \frac{(V_{rms})^2}{R} \tag{2}$$

$$P = \frac{(200)^2}{50} W \tag{3}$$

$$P = 800W \tag{4}$$

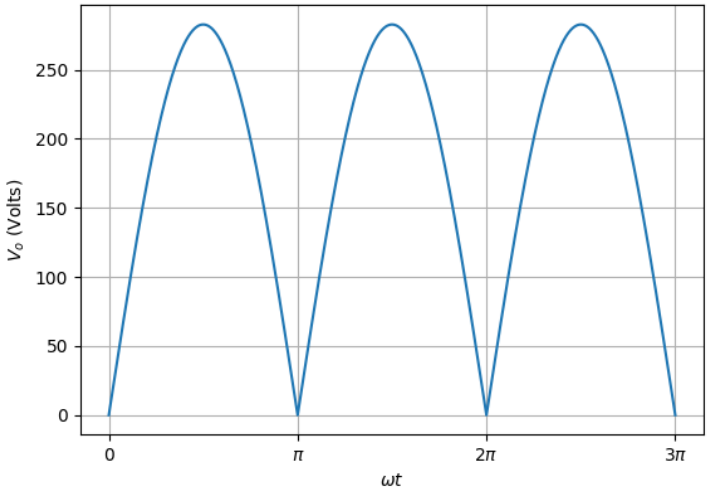

Figure 2. Output voltage waveform of single-phase full bridge rectifier