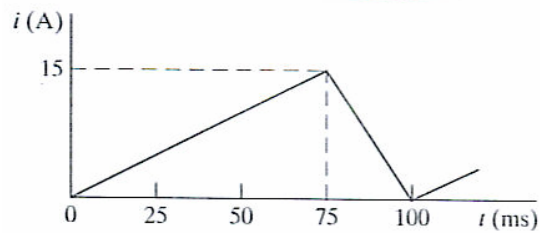


KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
ELECTRICAL ENGINEERING DEPARTMENT
EE-201 ELECTRIC CIRCUITS
Dr. Ibrahim O. Habiballah

Sec: 8 Quiz # 8 Ser. # Name:

I.D.#

Find the rms value for the periodic function shown below.



Solution

$$i(t) = 200t \quad 0 \leq t \leq 75 \text{ ms}$$

$$i(t) = 60 - 600t \quad 75 \text{ ms} \leq t \leq 100 \text{ ms}$$

$$I_{rms} = \sqrt{\frac{1}{0.1} \left\{ \int_0^{0.075} (200)^2 t^2 dt + \int_{0.075}^{0.1} (60 - 600t)^2 dt \right\}}$$
$$= \sqrt{10(5.625) + 10(1.875)} = \sqrt{75} = 8.66 \text{ A(rms)}$$