Ch—07 Alternating Current

Daily Practice Problem 02

Q1. An ac voltage is represented by

$E = 220\sqrt{2}cos(50\pi)t$

How many times will the current become zero in $1\ s$?

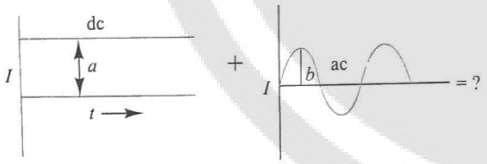
a. 50 times

b. 100 times

c. 30 times

d. 25 times

Q2. If a direct current of value a ampere is superimposed on an alternative current $I = b\ sin\ \omega t$ flowing through a wire, what is the effective value of the resulting current in the circuit?



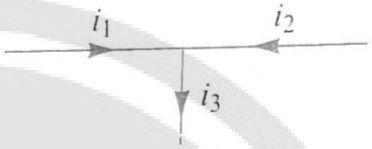
a. $\left[a^2 - \frac{1}{2}b^2\right]^{1/2}$

b. $[a^2 + b^2]^{1/2}$

c. $\left[\frac{a^2}{2} + b^2\right]^{1/2}$

d. $\left[a^2 + \frac{1}{2}b^2\right]^{1/2}$

Q3. If $i_1 = 3\ sin\omega t$ and $i_2 = 4\ cos\omega t$, then i_3 is



a. $5\ sin(\omega t + 53°)$

b. $5\ sin(\omega t + 37°)$

c. $5\ sin(\omega t + 45°)$

d. $5\ sin(\omega t + 53°)$

Q4. In a certain circuit current changes with time according to $i = 2\sqrt{t}$. r.m.s. value of current between $t = 2$ to $t = 4s$ will be

a. $3\ A$

b. $3\sqrt{3}\ A$

c. $2\sqrt{3}\ A$

d. $(2 - \sqrt{2})\ A$

Q5. A resistance of 20 ohms is connected to a source of an alternating potential $V = 220sin(100\pi t)$. The time taken by the current to changaram its peak value to $r.m.s$ value is

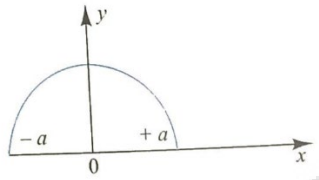
a. 0.2 sec

b. 0.25 sec

c. $25 \times 10^{-3}\ sec$

d. $2.5 \times 10^{-3}\ sec$

Q6. Determine the rms value of a semi-circular current wave which has a maximum value of a.



a. $(1/\sqrt{2})a$

b. $\sqrt{3/2}\ a$

c. $\sqrt{2/3}\ a$

d. $(1/\sqrt{3})\ a$

Q7. A sinusoidal alternating current of peak value I_0 passes through a heater of resistance R. What is the mean power output of the heater?

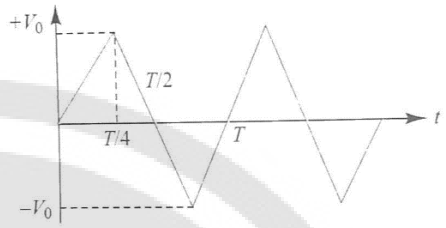
a. $I_0^2\ R$

b. $\frac{I_0^2 R}{2}$

c. $2I_0^2\ R$

d. $\sqrt{2}\ I_0^2\ R$

Q8. The voltage time $(V-t)$ graph for triangular wave having peak value V_0 is as shown in figure.



The rms value of V in time interval from $t = 0$ to $T/4$ is

a. $\frac{V_0}{\sqrt{3}}$

b. $\frac{V_0}{2}$

c. $\frac{V_0}{\sqrt{2}}$

d. None of these

ANSWERS

1. a

2. d

3. a

4. c

5. d

6. c

7. b

8. a