Subject:- Physics

Q 7:-

Data i- Inductence of the coil = L

$$= 10 mH = 10 \times 10^{-3} H$$

Resistance $= R = 20\,\Omega$

voltage $= V = 240V$

Frequency $= f = \dfrac{180}{\pi} Hz$

To Find:- Power dissipate $= P = ?$

Solution :

By formula- $P = VI\cos\theta$

But $I_{rms} = \dfrac{V}{Z}$

And $Z = \sqrt{\left(2 \times \pi \times \dfrac{180}{\pi} \times 10 \times 10^{-3}\right)^2 + (20)^2}$

$= \sqrt{20.32}$

$= \sqrt{(3.6)^2 + 400}$

$= 20.32\,\Omega$

So, $I_{rms} = \dfrac{240}{20.32} = 11.81\ Amp$

Now using

$\theta = \tan^{-1} \omega L/R$

$= \tan^{-1} \dfrac{2\pi f L}{R}$

$= \tan^{-1} \left(\dfrac{2\pi \dfrac{180}{\pi} 10^{-2}}{20}\right)$

$$= \tan^{-1}\left(\frac{3.6}{20}\right)$$

$$= \tan^{-1}(0.18)$$

$$\theta = 10.20°$$

Now putting values in eq i

$$P = 240 \times 11.81 \cos 10.20°$$

$$= 2789.6 \ W$$

Q6

A choke coil, is also called an inductor, is used in circuits to block high frequency alternating current (AC) while allowing DC and lower-frequency ACs to pass through. Some resons are below:-

① Descreases current.

② Protects circuits

③ Used in fluorescent lamps

Q5

The main difference between the information and carrier is that

the carrier is a steady signal with a constant height and frequency, while the information is a signal that varies the carrier's characteristics.

Q4.

The waves carriers are the waves carry radio signals between 540 and 1600 Hz

Q3

A changing magnetic field does not induce a voltage. It induces a current. The direction of the induced current depends on whether the magnetic field is rising or falling and it opposes the current in the inductces.