**3) An alternating voltage V(t) = 220 sin100πt volts is applied to a purely resistive load of 50 Ω. The time taken for the current to rise from half of the peak value is**

(a) 5 ms

(b) 2.2 ms

(c) 7.2 ms

(d) 3.3 ms

Ans:

As v(t) = 220 sin100πt

So I(t) = (220/50) sin100πt

I.e., I = Imsin100πt

For I = Im

t1 = (π/2) x (1/100π) = (1/200) sec,

And for I = Im/2

⇒ (Im/2) = Imsin(100πt2)

⇒ (π/6) = 100πt2

⇒ t2= (1/600) s

∴ treq= (1/200) – (1/600) = (2/600) = (1/300)s =3.3 ms