NEET PHYSICS

Topic: Alternating current.

Q.1 An alternating current changes from a complete cycle in 1μs, then the frequency in Hz will be -

(1) 10^{-6} (2) 50

(3) 100 (4) 10^{6}

Q.2 An alternating voltage source is connected, in an A.C. circuit whose maximum value is 170 volt. The value of potential at a phase angle of 45º will be -

(1) 120.56 Volt (2) 110.12 Volt

(3) 240 Volt (4) Zero

Q.3 In an ac circuit, the current is given by $i = 4 \sin (100\pi t + 30º)$ ampere.

The current becomes maximum first time (after t = 0) at t equal to -

(1) (1/200) sec (2) (1/300) sec

(3) (1/50) sec (4) None of the above

Q.4 The instantaneous value of current in an ac circuit is $I = 2 \sin (100\pi t + \pi/3)$ A.

The current at the beginning (t = 0) will be -

(1) $2\sqrt{3}$ A (2) $\sqrt{3}$ A

(3) $\frac{\sqrt{3}}{2}$ A (4) Zero

Q.5 In A.C. circuit the average value per cycle of e.m.f. or current is -

(1) peak value / $\sqrt{2}$ (2) 0

(3) peak value (4) None of the above

Q.6 The form factor for sinusoidal potential is -

(1) $\pi\sqrt{2}$ (2) $2\sqrt{2}\,\pi$

(3) $\frac{\pi}{2\sqrt{2}}$ (4) $\frac{\pi}{2}$

Q.7 The r.m.s. value of potential due to superposition of given two alternating potentials $E_1 = E_0 \sin \omega t$ and $E_2 = E_0 \cos \omega t$ will be -

(1) E_0 (2) $2E_0$

(3) $E_0\sqrt{2}$ (4) 0

Q.8 If the value of E_{rms} is 5 volt, then the tolerance of the component in volt is -

(1) 1 (2) $\frac{1}{\sqrt{5}}$

(3) $\sqrt{5}$ (4) $5\sqrt{2}$

Q.9 A mixer of 1000Ω resistance is connected to an A.C. source of 200V and 50 cycle per sec. The value of average potential difference across the mixer will be -

(1) 308 V (2) 264 V

(3) 220 V (4) 0

Q.10 If instantaneous value of current is $I = 10 \sin (314\ t)$ A,

then the average current for the half cycle will be -

(1) 10 A (2) 7.07 A

(3) 6.37 A (4) 3.53 A

Q.11 The r.m.s. value of alternating current is 10 amp having frequency of 50 Hz. The time taken by the current to increase from zero to maximum and the maximum value of current will be -

(1) 2×10^{-2} sec. and 14.14 amp

(2) 1×10^{-2} sec. and 7.07 amp

(3) 5×10^{-3} sec. and 7.07 amp

(4) 5×10^{-3} sec. and 14.14 amp

Q.12 In a circuit an a.c. current and a d, c. current are supplied together. The expression of the instantaneous current is given as $i = 3 + 6 \sin \omega t$

Then the rms value of the current is -

(1) 3 (2) 6

(3) $3\sqrt{2}$ (4) $3\sqrt{3}$

Q.13 The emf and the current in a circuit are

$E = 12 \sin (100\pi t)$;

$I = 4 \sin (100\pi t + \pi / 3)$ then -

(1) The current leads the emf by 60º

(2) The current lags the emf by 60º

(3) The emf leads the current by 60º

(4) The phase difference between the current and the emf is zero

Q.14 The direction of alternating current get changed in one cycle -

(1) two times (2) one time

(3) 50 times (4) 60 times

Q.15 If the frequency of alternating potential is 50Hz then the direction of potential, changes in one second by -

(1) 50 times (2) 100 times

(3) 200 times (4) 500 times

Q.16 The time period of of alternating current with frequency of one KHz one second will be -

(1) 0.10 (2) 0.01

(3) 1×10^{-3} (4) 1×10^{-2}

Q.17 The value of alternating e.m.f. is $e = 500 \sin 100\pi t$, then the frequency of this potential in Hz is -

(1) 25 (2) 50

(3) 75 (4) 100

Q.18 The frequency of an alternating current is 50Hz, then the time to complete one cycle for current vector will be-

(1) 20 ms (2) 50 ms

(3) 100 ms (4) 1 s

Q.19 In the above question, time taken by current to rise from zero to maximum is -

(1) $\frac{1}{200}$ sec (2) $\frac{1}{100}$ sec

(3) $\frac{1}{50}$ sec (4) $\frac{1}{400}$ sec

Q.20 In the equation for A.C. $I = I_0 \sin \omega t$, the current amplitude and frequency will respectively be -

(1) I_0, $\frac{\omega}{2\pi}$ (2) $\frac{I_0}{2}$, $\frac{\omega}{2\pi}$

(3) I_{rms}, $\frac{\omega}{2\pi}$ (4) I_0, ω

Q.21 The sinusoidal voltage wave changes from 0 to maximum value of 100 volt. The voltage when the phase angle is 30º will be -

(1) 70.7 volt (2) 50 volt

(3) 109 volt (4) – 100 volt

Q.22 If the frequency of ac is 60 Hz the time difference corresponding to a phase difference of 60º is -

(1) 60 s (2) 1 s

(3) 1/60 s (4) 1/360 s

Q.23 The domestic power supply is at 220 volt. The amplitude of emf will be -

(1) 220 V (2) 110 V

(3) 311 V (4) None of this

Q.24 The phase difference between the current and the electromotive force in an ac circuit is $\pi/4$ radian. If the frequency is 50 Hz, then the time difference corresponding to this phase difference, will be -

(1) 0.25 s (2) 0.02 s

(3) 2.5 ms (4) 25 ms

Q.25 In A.C. circuit the ratio of virtual current and the r.m.s. current is –

(1) 0 (2) 0.5

(3) 1 (4) $\sqrt{2}$

Q.26 If the r.m.s. value of A.C. is I_{rms} then peak to peak value is -

(1) $\sqrt{2}\ I_{rms}/2$ (2) $I_{rms}/\sqrt{2}$

(3) $2\sqrt{2}\ I_{rms}$ (4) $2\ I_{rms}$

Q.27 The average value or alternating current for half cycle in terms of I_0 is -

(1) $\frac{2I_0}{\pi}$ (2) $\frac{I_0}{\pi}$

(3) $\frac{I_0}{\sqrt{2}}$ (4) 0

Q.28 Sinusoidal peak potential is 200 volt with frequency 50Hz.

It is represented by the equation -

(1) E = 200 sin 50t

(2) E = 200 sin 314t

(3) E = 200 $\sqrt{2}$ sin 50t

(4) E =200 $\sqrt{2}$ sin 314t

Q.29 If the instantaneous value of currents is I = 100 sin 314t Amp.

then the average of current in Ampere for half cycle is -

(1) 100 (2) 70.7

(3) 63.7 (4) 35.3

Q.30 The equation of current in an ac circuit is $I = 4 \sin(100\pi t + \pi/6)$ ampere.

The current at the beginning (t = 0) will be -

(1) 1 A (2) 2 A

(3) 3 A (4) 4 A

ANSWER KEY

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	4	1	2	2	2	3	1	4	4	3
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	4	4	1	1	2	3	2	1	1	1
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	2	4	3	3	3	3	1	2	3	2