Generation of AC

1. Which, among the following, is the correct expression for alternating emf generated?

a) e=2Blvsin(θ)

b) e=2B2lvsin(θ)

c) e=Blvsin(θ)

d) e=4Blvsin(θ)

Answer: c

Explanation: The correct expression for alternating emf generated is e=Blvsin(θ). Where B stands for magnetic field density, l is the length of each of the parallel sides v is the velocity with which the conductor is moved and θ is the angle between the velocity and the length.

Calculate the maximum emf when the velocity is 10m/s, the length is 3m and the magnetic field density is 5T.

a) 150V

b) 100V

c) 300V

d) 0V

Answer a

What should theta be in order to get maximum emf in sinusoidal voltage?

a) 0

b) 90

c) 180

d) 45

Answer b

In an A.C. generator, increase in number of turns in the coil _____

a) Increases emf

b) Decreases emf

c) Makes the emf zero

d) Maintains the emf at a constant value

Answer a

AC values

The r.m.s. value of alternating current is given by steady (D.C.) current which when flowing through a given circuit for given time produces

(a) the more heat than produced by A.C. when flowing through the same circuit
(b) the same heat as produced by A.C. when flowing through the same circuit
(c) the less heat than produced by A.C. flowing through the same circuit
(d) none of the above

Ans: b

The power consumed in a circuit element will be least when the phase difference between the current and voltage is

(a) 180"
(b) 90°
(c) 60°
(d) 0°

Ans: b

The r.m.s. value and mean value is the same in the case of

(a) triangular wave
(6) sine wave
(c) square wave
(d) half wave rectified sine wave

Ans: c

For the same peak value which of the following wave will 'have the highest r.m.s. value ?

(a) square wave
(b) half wave rectified sine wave
(c) triangular wave
(d) sine wave

Ans: a

For the same peak value, which of the following wave has the least mean value ?

(a) half wave rectified sine wave
(b) triangular wave
(c) sine wave
(d) square wave

Ans: a

The peak value of a sine wave is 200 V. Its average value is
(a) 127.4 V
(b) 141.4 V
(c) 282.8 V
(d)200V

Ans: a

The voltage of domestic supply is 220V. This figure represents
(a) mean value
(b) r.m.s. value
(c) peak value
(d) average value

Ans: a

The r.m.s. value of a sinusoidal A.C. current is equal to its value at an angle of_____degrees.
(a) 90
(b) 60
(c) 45
(d) 30

Ans: c

The ratio of effective value to average value is called the .... factor.

- form
- peak
- average
- Q-factor

Answer: form

The RMS value of a sine wave is 100 A. Its peak value is

- 70.7 A
- 141 A
- 150 A
- 282.8 A

Ans 141A

R/L/C circuit

In a series RLC circuit, the phase difference between the current in the capacitor and the current in the resistor is?

a) 0^0

b) 90^0

c) 180^0

d) 360^0

Answer: a

Explanation: In a series RLC circuit, the phase difference between the current in the capacitor and the current in the resistor is 00 because same current flows in the capacitor as well as the resistor.

In a series RLC circuit, the phase difference between the current in the circuit and the voltage across the capacitor is?

a) 0^0

b) 90^0

c) 180^0

d) 360^0

Answer: b

Explanation: In a series RLC circuit, voltage across capacitor lags the current in the circuit by 90 so, the phase difference between the voltage across the capacitor and the current in the circuit is 90

Which, among the following is the correct expression for impedance?

a) Z=Y

b) Z=1/Y

c) Z=Y/2

d) Z=1/2Y

Answer: b Explanation: We know that impedance is the reciprocal of admittance, hence the correct expression for impedance is: Z=1/Y

In a pure resistive circuit

A. Current lags behind the voltage by 90o

B. Current leads the voltage by 90o

C. Current can lead or lag the voltage by 90o

D. Current is in phase with the voltage

Answer:- D. Current is in phase with the voltage

For a purely resistive circuit the following statement is in correct

A. Work done is zero

B. Power consumed is zero

C. Heat produced is zero

D. Power factor is unity

Answer:- D. Power factor is unity

A 90 Ω resistor, a coil with 30 Ω of reactance, and a capacitor with 50 Ω of reactance are in series across a 12 V ac source. The current through the resistor is

a) 9 mA
b) 90 mA
c) 13 mA
d) 130 mA

Answer 130mA

How many types of power can be defined in an AC circuit?
a) 3
b) 2
c) 1
d) 5

Answer 3

Which of the following is true about power factor?
a) sinΦ=Truepower/Apparentpower
b) cosΦ=Truepower/Apparentpower
c) sinΦ=Apparentpower/Truepower
d) cosΦ=Apparentpower/Truepower

Answer: b

What is the power factor in a pure inductive or capacitive circuit?
a) -1
b) 0
c) 1
d) Infinity

Answer b

Unit of Power factor is

a) watt

b) unit less

c) Ampere

d) VAR

Answer b

Active power and apparent power are respectively represented by?

a. kW and kVAR

b. kVAR and kVA

c. kVA and kVAR

d. kW and kVA

Answer d

Three phase system

Electric power in a Three Phase Circuit = _____.

a) P = 3 VPh IPh CosΦ
b) P = √3 VL IL CosΦ
c) Both 1 & 2.
d) None of The Above

Answer C

In a three phase AC circuit, the sum of all three generated voltages is _____ ?

a) Infinite (∞)
b) Zero (0)
c) One (1)
d) None of the above

Answer b

For a star connected three phase AC circuit _____ ?

a) Phase voltage is equal to line voltage and phase current is three times the line current
b) Phase voltage is square root three times less than line voltage and phase current is equal to line current
c) Phase voltage is equal to line voltage and line current is equal to phase current
d) None of the above

Answer b

In a three phase, delta connection _____ ?

a) line current is equal to phase current
b) Line voltage is equal to phase voltage
c) None of the above
d) Line voltage and line current is zero

Answer b
