

Single phase and 3 phase AC circuits

1). How will you obtain the positive reading in the wattmeter if it gives negative reading during 3 phase two wattmeter method?

- (A) By interchanging the connections of 3 phase supply
- (B) By disconnecting the connection of current coil of the wattmeter
- (C) **By reversing the connection of pressure coil of the wattmeter**
- (D) By reversing the connection of both pressure coil and current coil of the wattmeter

Correct Answer : C

2). What will be the readings of two watt meters (W_1 the power factor is zero?

- (A) W_1 & W_2 both are positive reading
- (B) W_1 & W_2 both are negative reading
- (C) **W_1 is equal to W_2 but with opposite signs**
- (D) W_1 is unequal to W_2 but with opposite signs

Correct Answer : C

3). What is the formula to calculate the resonance frequency?

- (A) $2\pi\sqrt{LC}$
- (B) $\frac{1}{2\sqrt{LC}}$
- (C) $\frac{1}{2\pi LC}$
- (D) $\frac{1}{2\pi\sqrt{LC}}$

Correct Answer : D

4). What is the reciprocal of reactance in an AC parallel circuit?

- (A) Impedance
- (B) Admittance
- (C) Conductance
- (D) **Susceptance**

Correct Answer : D

5). What is the reactive power in a 3 phase system, if the active power is 4 KW and the apparent power is 5 KVA?

- (A) 1 KVAR

(B) 2 KVAR

(C) **3 KVAR**

(D) 4 KVAR

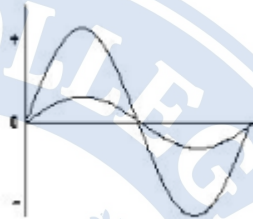
Correct Answer : C

6). What is the P.F if one of the wattmeters reading is zero and the other reads total power in 2 wattmeter method of 3 phase power measurement?

- (A) **0.5**
- (B) Zero
- (C) Unity
- (D) Below 0.5

Correct Answer : A

7). What relationship is illustrated in the figure between the current and voltage wave?



(A) **Current and voltage are "in phase"**

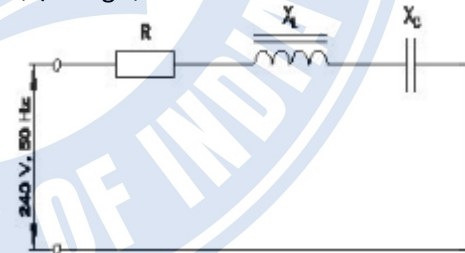
(B) Current and voltage are in out of phase

(C) Current lags behind the voltage

(D) Current leads ahead of the voltage

Correct Answer : A

8). Calculate the impedance of the circuit $R = 5\ \Omega$, $X_L = 36\ \Omega$ and $X_C = 24\ \Omega$.



(A) $69\ \Omega$

(B) $65\ \Omega$

(C) **$13\ \Omega$**

(D) $12\ \Omega$

Correct Answer : C

9). What is the ratio between the peak value and RMS value?

- (A) Form factor
- (B) RMS factor
- (C) **Peak factor**
- (D) Effective value

Correct Answer : C

10). What is the main cause for very low lagging power factor in 3 phase system?

- (A) Due to fluctuation of voltage
- (B) True power due to resistive load
- (C) **Reactive power due to more inductive load**
- (D) Reactive power due to more capacitive load

Correct Answer : C

11). What is the formula to calculate the three phase power (P) if the line voltage is (VL), line current is (IL) and phase angle is ('θ')?

- (A) $P = 3 V_L I_L \sin \theta$
- (B) $P = 3 V_L I_L \cos \theta$
- (C) $P = \sqrt{3} V_L I_L \sin \theta$
- (D) $P = \sqrt{3} V_L I_L \cos \theta$

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Correct Answer : D

12). What is the relation between the line current (IL) and phase current (IP) in delta connected system?

- (A) $I_L = I_P$
- (B) $I_L = 3 I_P$
- (C) **$I_L = \sqrt{3} I_P$**
- (D) $I_L = I_P / \sqrt{3}$

Correct Answer : C

13). How much time is required for a 50 Hz AC supply to complete one cycle?

- (A) 0.1 second
- (B) 0.02 second
- (C) 0.15 second
- (D) 0.45 second

Correct Answer : B

14). What is the condition for resonance in RLC series circuit? (Inductive reactance = 'XL', Capacitive reactance = 'XC')

- (A) $X_L > X_C$
- (B) $X_L < X_C$
- (C) **$X_L = X_C$**
- (D) $X_L > \sqrt{2} X_C$

Correct Answer : C

15). What is the value of the current in neutral conductor in 3 phase star connected unbalanced load?

- (A) No current will flow
- (B) The algebraic sum of current in 3 phases
- (C) The algebraic sum of current in 2 phases only
- (D) The vector sum of current in 3 phases

Correct Answer : D

16). What is the relation between the line voltage (VL) and phase voltage (Vp) in star connected system?

- (A) $V_L = \sqrt{3} V_P$
- (B) $V_L = 3 V_P$
- (C) $V_L = V_P / \sqrt{3}$
- (D) $V_L = V_P / 3$

Correct Answer : A

17). Which formula is used to calculate the impedance (z) of a RLC series circuit?

- (A) $Z = R^2 + (X_L - X_C)^2$
- (B) $Z = \sqrt{R^2 + (X_L - X_C)^2}$
- (C) $Z = \sqrt{R + (X_L - X_C)^2}$
- (D) $Z = \sqrt{R^2 + (X_L - X_C)^2}$

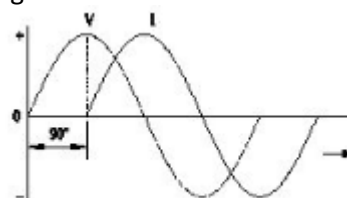
Correct Answer : D

18). When the resonance will occur in R-L-C series circuit?

- (A) Inductive reactance (XL) is zero
- (B) Inductive reactance (XL) is equal to capacitive reactance (XC)
- (C) Inductive reactance (XL) is greater than capacitive reactance (XC)
- (D) Inductive reactance (XL) is less than capacitive reactance (XC)

Correct Answer : B

19). Which AC circuit contains the phase relation between voltage (V) and current (I) as shown in figure?



- (A) Pure resistive circuit
 - (B) Pure inductive circuit
 - (C) Resistance and capacitance circuit
 - (D) Pure capacitive circuit
- Correct Answer : B

20). Calculate the power factor of coil having resistance of $24\ \Omega$, draws the current of 5A, at 240V/ 50Hz AC supply.

- (A) 0.8
- (B) 0.6
- (C) 0.5
- (D) 0.3

Correct Answer : C

Question 21 : Which power measurement method is used for both balanced and unbalanced loads?

Options:

- (A) 2 wattmeter method
- (B) Energy meter method
- (C) Single wattmeter method
- (D) Voltmeter and Ammeter method

Correct Answer: A

Question 22

Question: Calculate the value of admittance (Y) of the RLC parallel circuit connected across 240volts/50Hz AC supply and current of 8 Amps is passed through it?

Options:

- (A) 3.33 Mho
- (B) 0.33 Mho
- (C) 0.033 Mho
- (D) 0.003 Mho

Correct Answer: C

Question 23

Question: Which 3 phase system requires the artificial neutral to measure the phase voltage?

Options:

- (A) 3 wire star connected system
- (B) 4 wire star connected system
- (C) 3 wire delta connected system
- (D) Scott connected system

Correct Answer: C

Question 24

Question: Which load condition the phase currents of a 3 phase system are different?

Options:

- (A) At balanced resistive load
- (B) At balanced inductive load
- (C) At balanced RLC load
- (D) At unbalanced load

Correct Answer: D

Question 25

Question: What is the rated AC voltage for single phase domestic supply in India?

Options:

- (A) 110 V
- (B) 240 V
- (C) 415 V
- (D) 440 V

Correct Answer: B

Question 26

Question: Which conductors are used for the overhead distribution lines?

Options:

- (A) Insulated conductors
- (B) Insulated solid conductors
- (C) Bare conductors
- (D) Two core cable

Correct Answer: C

Question 27

Question: Calculate the apparent power of a star connected 3 phase load, if it is connected across 3 phase 415volt/50Hz supply at 0.8 p.f and the phase current is 10 Amps.

Options:

- (A) 12.45 KVA
- (B) 57.50 KVA
- (C) 5.75 KVA
- (D) 7.188 KVA

Correct Answer: D

Question 28

Question: When the neutral current is zero in 3 phase system?

Options:

- (A) Balanced star system
- (B) Unbalanced star system
- (C) 3 phase domestic load
- (D) 3 phase commercial load

Correct Answer: A

Question 29

Question: Calculate the power factor of R.L.C circuit having resistance (R) = $15\ \Omega$, resultant reactance (X) = $20\ \Omega$ connected across 240V /50Hz AC supply?

Options:

- (A) 0.5
- (B) 0.6
- (C) 0.7
- (D) 0.8

Correct Answer: B

Question 30

Question: What is the phase angle difference between any two phases in a 3 phase system?

Options:

- (A) 90°
- (B) 120°
- (C) 180°
- (D) 360°

Correct Answer: B

Question

31). What is the power factor if one of the wattmeter gives negative reading in two wattmeter method of 3 phase power measurement?

- (A) 0.8
 - (B) 0.5
 - (C) Unity
 - (D) Less than 0.5
- Correct Answer: D

32). What is the formula for the reactive power (Pr) in an AC circuit?

- (A) $P_r = VI$
- (B) $P_r = \sqrt{2} VI$
- (C) $P_r = VI \cos \theta$
- (D) $P_r = VI \sin \theta$

Correct Answer: D

Question

33). Which formula is used to calculate the form factor (Kf) in an AC circuit?

- (A) $K_f = \frac{\text{Effective value}}{\text{Average value}}$
- (B) $K_f = \frac{\text{Average value}}{\text{Effective value}}$
- (C) $K_f = \frac{\text{Effective value}}{\text{Maximum value}}$
- (D) $K_f = \frac{\text{Average value}}{\text{Maximum value}}$

Correct Answer: A

Question

34). What is the value of phase current if the line current is 20 Amp in delta connection?

- (A) 20 A
- (B) 15.6 A
- (C) 11.55 A
- (D) 10 A

Correct Answer: C

Question 27

35). Calculate the electrical energy in unit consumed by 500W lamp for 5 hours.

- (A) 0.5 unit
- (B) 1.0 unit
- (C) 1.5 unit

(D) 2.5 unit

Correct Answer: D

Question

36). What is the value of line current if phase current is 20 Amp in star connection?

- (A) 20 A
- (B) 17.3 A
- (C) 11.56 A
- (D) 10 A

Correct Answer: A

Question

37). What is the formula to calculate the impedance (Z) of the R.L.C series circuit, if the inductive reactance (XL) is less than capacitive reactance (XC)?

- (A) $Z = R^2 + \sqrt{X_L^2 + X_C^2}$
- (B) $Z = \sqrt{R^2 + (X_L - X_C)^2}$
- (C) $Z = \sqrt{R^2 + (X_L^2 - X_C^2)}$
- (D) $Z = \sqrt{R^2 + (X_C - X_L)^2}$

Correct Answer: D

Question

38). Calculate the apparent power in KVA of 3 phase 415V, 50 Hz, star system, if the line current (IL) is 16A at 0.8 power factor.

- (A) 15.2 KVA
- (B) 11.5 KVA
- (C) 9.2 KVA
- (D) 6.64 KVA

Correct Answer: B

39). What is the resistance of the inductive coil takes 5A current across 240V, 50Hz supply at 0.8 power factor?

- (A) 48Ω
- (B) 42.5Ω
- (C) 38.4Ω
- (D) 26.6Ω

Correct Answer: C

Question

40). What is the power factor in a 3 phase power measurement, if two wattmeters are showing equal and positive readings?

- (A) 0
- (B) 1
- (C) 0.5
- (D) 0.8

Correct Answer: B

41). What is the line voltage in 3 phase system if the phase voltage is 240V?

- (A) 380 Volt
- (B) 400 Volt
- (C) 415 Volt
- (D) 440 Volt

Correct Answer : C

42). Calculate the line current of the 3 phase 415V 50 HZ supply for the balanced load of 3000 watt at 0.8 power factor is connected in star?

- (A) 8.5 A
- (B) 5.2 A
- (C) 4.5 A
- (D) 3.4 A

Correct Answer : B

43). What is the formula to find the 3 phase reactive power (PR) if the line voltage is 'VL' and line current is 'IL'?

- (A) $P_r = V_L I_L$
- (B) $P_r = 3V_{LL} I_L \cos\theta$
- (C) $P_r = \sqrt{3}V_{LL} I_L \sin\theta$
- (D) $P_r = \sqrt{3}V_{LL} I_L \cos\theta$

Correct Answer : C

44). How the resonance frequency (fr) can be increased in A.C series circuit?

- (A) Increasing the inductance value
- (B) Reducing the capacitance value
- (C) Increasing the capacitance value
- (D) Increasing the value of resistance

Correct Answer : B

45). What is the form factor (Kf) for the sinusoidal AC?

- (A) 1.00
- (B) 1.11
- (C) 2.22
- (D) 4.44

Correct Answer : B

46). What is the standard frequency of AC supply in India?

- (A) 25 Hz
- (B) 60 Hz
- (C) 50 Hz
- (D) 75 Hz

Correct Answer : C

47). Which load condition the phase currents of a 3 phase circuit are same?

- (A) At balanced load
- (B) At unbalanced resistive load
- (C) At unbalanced inductive load
- (D) At unbalanced RLC load

Correct Answer : A

48). What is the phase displacement in a single phase AC circuit?

- (A) 90°
- (B) 120°
- (C) 180°
- (D) 270°

Correct Answer : A

49). How the lagging power factor (P.F) can be improved in AC circuits?

- (A) By connecting resistors in series
- (B) By connecting capacitors in series
- (C) By connecting inductors in series
- (D) By connecting capacitors in parallel

Correct Answer : D

50). What is the total power by two wattmeter (W₁ & W₂) method, if one of the wattmeter (W₂) reading is taken after reversing?

- (A) $W_1 \times 2$
- (B) W_1 only
- (C) $W_1 - W_2$
- (D) $W_1 + W_2$

Correct Answer : C