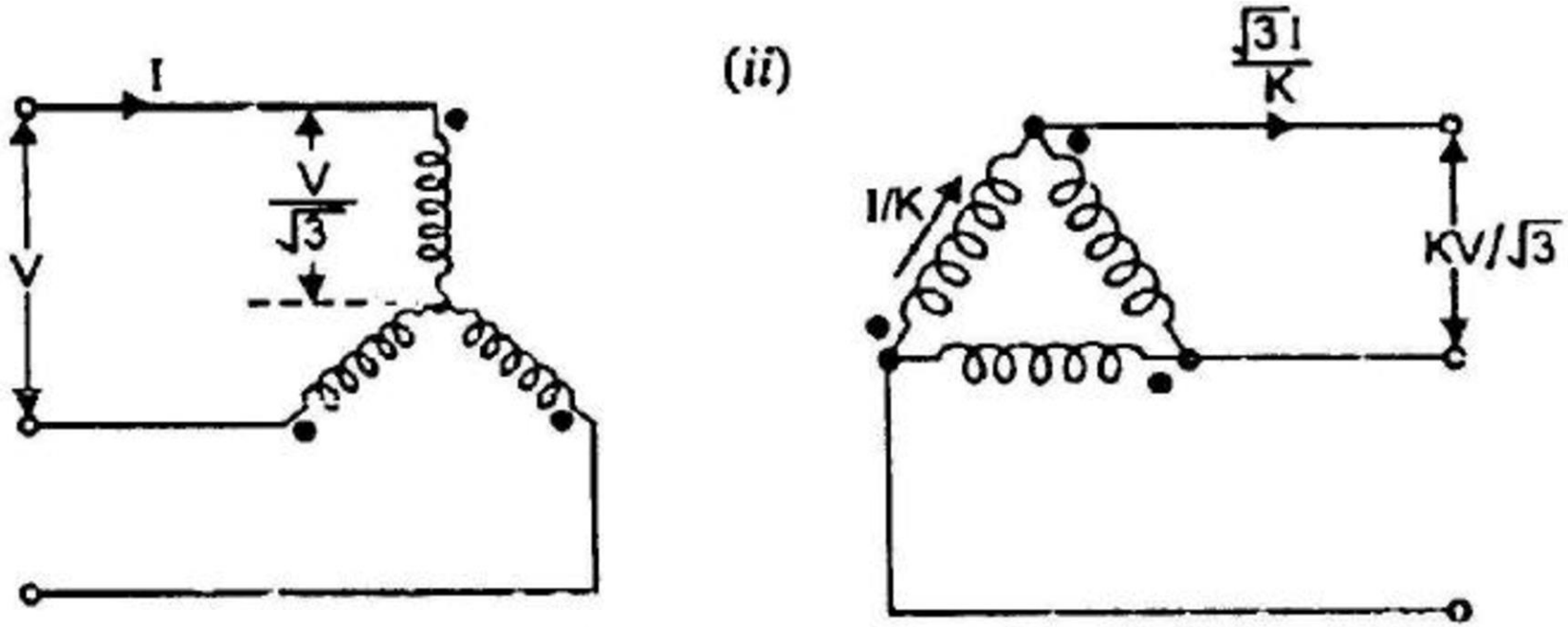
Star- Delta connection



Y – Δ Connection

- **Used to step down voltage ie end of transmission line**

Star- Delta connection

Advantages

1. The primary side is star connected. Hence fewer number of turns are required. This makes the connection economical

2. The neutral available on the primary can be earthed to avoid distortion.

3. Large unbalanced loads can be handled satisfactory.

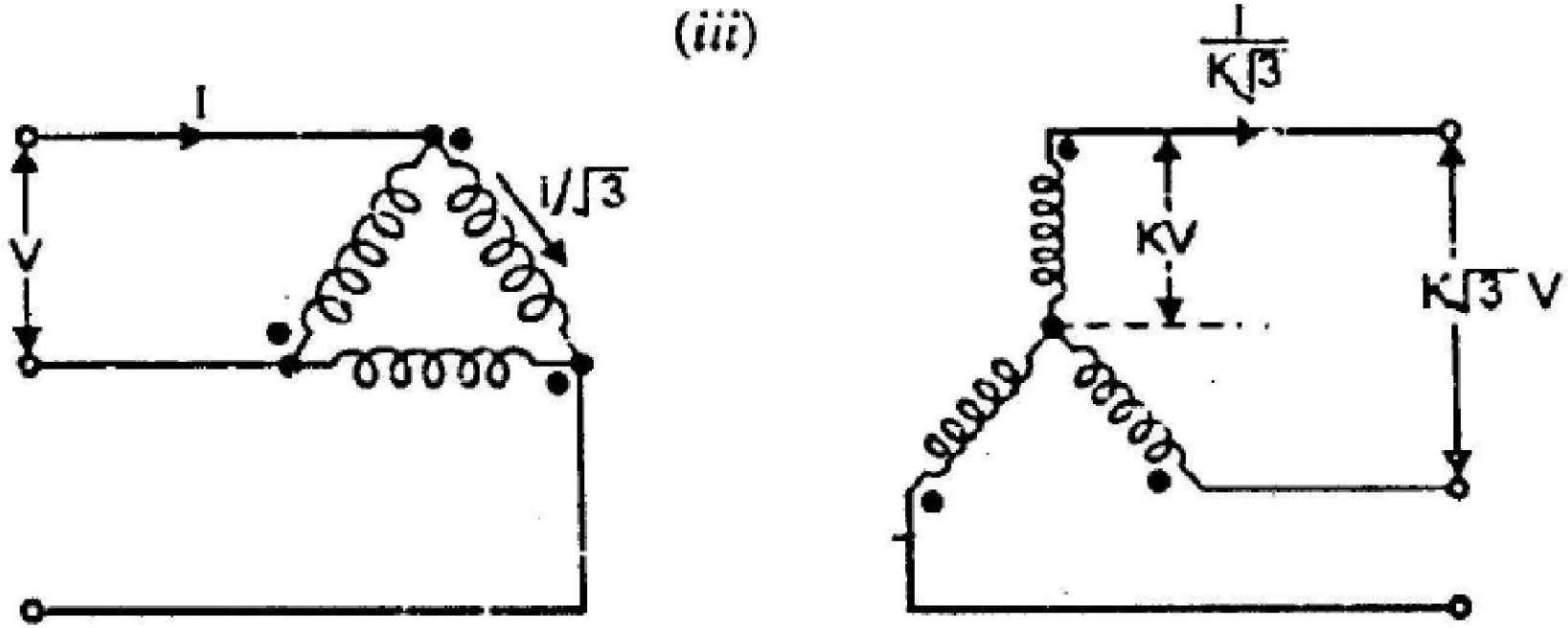
Star- Delta connection

Disadvantages

The secondary voltage is not in phase with the primary. (30 ^{o} phase difference)

Hence it is not possible to operate this connection in parallel with star-star or delta-delta connected transformer.

Delta - Star connection



Δ – Y Connection

- **This connection is used to step up voltage ie. Beginning of high tension line**

Delta - Star connection

Features

- secondary Phase voltage is 1/√3 times of line voltage
-
- neutral in secondary can be grounded for 3 phase 4 wire system

- Neutral shifting and 3^{rd} harmonics are there

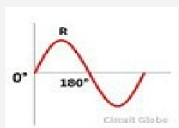
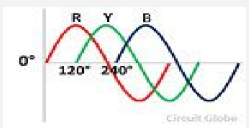
- Phase shift of 30^{o} between secondary and primary currents and voltages

If the resonant frequency in a series RLC circuit is 50kHz along with a bandwidth of 1kHz, find the quality factor.

a) 5
b) 50
c) 100
d) 500

At resonance condition, the voltage across the capacitor and inductor is _____ the source voltage.

a) Greater than
b) Less than
c) Equal to
d) Much less than

Basis For Comparison	Single Phase	Three Phase
Definition	The power supply through one conductor.	The power supply through three conductors.
Wave Shape		
Number of wire.	Require two wires for completing the circuit.	Requires four wires for completing the circuit.
Voltage	Carry 230V	Carry 415V
Phase Name	Split phase	No other name
Power Transfer Capability	Minimum	Maximum
Network	Simple	Complicated
Power Failure	Occurs	Do not occur
Loss	Maximum	Minimum

What is the voltage across the inductor when the source voltage is 200V and the Q factor is 10?

a) 100V

b) 20V

c) 2000V

d) 0V

Quality factor is also known as _____

a) Voltage magnification

b) Current magnification

c) Resistance magnification

d) Impedance magnification

Calculate the resonant frequency and Q-factor (Quality factor) of a series L-C-R circuit containing a pure inductor of inductance 4 H, capacitor of capacitance 27μF and resistor of resistance 8·4Ω

A series L–R–C circuit has a sinusoidal input voltage of maximum value 12 V. If inductance, L = 20 mH, resistance, R = 80 Ω, and capacitance, C = 400 nF, determine (a) the resonant frequency, (b) the value of the p.d. across the capacitor at the resonant frequency, (

Find the Q factor when the voltage across the capacitor is 1000V and the source voltage is 100V.

a) 10

b) 20

c) 30

d) 40

93. The reactance offered by a capacitor to alternating current of frequency 50 Hz is 10Ω. If frequency is increased to 100 Hz reactance becomes.....ohm.

(A) 20 (B) 5 (C) 2.5 (D) 40

94. A complex current wave is given by $i = 5 + 5sin(100\pi t)$ ampere. Its average value is .....amperes.

(A) 10 (B) 0 (C) 5 (D) $\sqrt{50}$

95. In a purely Inductive circuit, Voltage .....the current by 90degrees.

(A) lags (B) leads (C) Both A and B (D) None

96. In purely resistive circuit Voltage and current are in .....phase.

(A) lags (B) leads (C) same (D) Different

97. Impedance is given by the vector sum of

(A) conductance and suceptance (B) resistance and conductance

(C) Resistance and reactance (D) Suceptance and resistance

98. Admittance is given by the vector sum of

(A) conductance and suceptance (B) resistance and conductance

(C) Resistance and reactance (D) Suceptance and resistance

99. How much voltage is required for 86 mA to flow through a 100 mH inductor at 50Hz?

(A) 7.2 V (B) 2.7 V (C) 20.7 V (D) 70.2 V

100. What is the capacitive reactance of a 1 μ Farad capacitance at 60Hz?

(A) 2.652 Ω (B) 2652 Ω (C) 2652 F (D) 2.652 kF

93	B
94	C
95	B
96	C
97	C
98	A
99	B
100	B

101. Capacitive suceptance is positive and Inductive suceptance is negative.Is it true or false?

(A) True (B) False (C) Neutral (D) None

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102. Power factor in series RLC is given by

(A) cos(angle between V and I) (B) Realpower/Apparent power

(C) R/Z (D) All the above

103. In a series RL circuit, V_L.....V_R by 90 degrees.

(A) lags (B) leads (C) equals (D) none

104. At resonance, In series RLC circuit, the current passing through the resistor is.....

(A) Maximum (B) Minimum (C) Meadium (D) 1

105. At resonance, In parallel RLC circuit, the current passing through the resistor is.....

(A) Maximum (B) Minimum (C) Meadium (D) 1

106. At resonance, Impedance for the parallel RLC circuit is.....

(A) Maximum (B) Minimum (C) Meadium (D) 1

107. At resonance, Impedance for the series RLC circuit is.....

(A) Maximum (B) Minimum (C) Meadium (D) 1

108. Power in an AC circuit is given by

(A) $VIcos\phi$ W (B) $VIsin\phi$ VAR (C) Real power in the circuit (D) Both a and c

109. Reactive power in a circuit is given by.....

(A) $VIcos\phi$ (B) $VIsin\phi$ (C) VI (D) None

110. The phase angle of series RLC circuit is lagging if

(A) $X_L > X_C$ (B) $X_L < X_C$ (C) $X_L = X_C$ (D) None

101	A
102	D
103	B
104	A
105	B
106	A
107	B
108	D
109	B
110	A

111. Power factor of an RC circuit is

(A) Lies between 0 and 1 (B) Negative value (C) zero (D) Unity

112. The voltage applied across an RL circuit is equal to.....of VR and VL.

(A) arithmetic sum (B) algebraic sum (C) phasor sum (D) sum of the squares

113. At half power points of resonance curve, the current is ———times the maximum current.

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

114. what is the power factor of a series RLC circuit having voltage $V(t) = 20sin(10t + 150)$ and current $I(t) = 10sin(10t + 120)$?

(A) 0.866(lag) (B) 0.866(lead) (C) 0.5(lag) (D) 0.5(lead)

115. At resonance frequency, Power factor in series or parallel RLC is.....

(A) Lies between 0 and 1 (B) Negative value (C) zero (D) Unity

116. The frequency at which Inductive reactance X_L is equal to Capacitive reactance X_C is known as.....

(A) Indian star frequency (B) PK Frequency (C) Resonant frequency (D) Power star frequency

117. RMS value of voltage for half wave rectifier output is.....

(A) $\frac{V_m}{\pi}$ (B) $\frac{2V_m}{\pi}$ (C) $\frac{V_m}{2}$ (D) $\frac{V_m}{\sqrt{2}}$

118. RMS value of voltage for full wave rectifier output is.....

(A) $\frac{V_m}{\pi}$ (B) $\frac{2V_m}{\pi}$ (C) $\frac{V_m}{2}$ (D) $\frac{V_m}{\sqrt{2}}$

119. Average value of voltage for half wave rectifier output is.....

(A) $\frac{V_m}{\pi}$ (B) $\frac{2V_m}{\pi}$ (C) $\frac{V_m}{2}$ (D) $\frac{V_m}{\sqrt{2}}$

120. Average value of voltage for full wave wave rectifier output is.....

(A) $\frac{V_m}{\pi}$ (B) $\frac{2V_m}{\pi}$ (C) $\frac{V_m}{2}$ (D) $\frac{V_m}{\sqrt{2}}$

121. Form factor for an sinusoidal signal.....

(A) $\frac{Averagevalue}{RMSvalue}$ (B) $\frac{Peakvalue}{RMSvalue}$ (C) $\frac{RMSvalue}{Averagevaluevalue}$ (D) $\frac{Averagevalue}{Peakvalue}$

111	A
112	C
113	B
114	A
115	D
116	C
117	C
118	D
119	A
120	B

135. Quality factor(Q) is defined as.....

(A) $2\pi \frac{maximumstoredenergy}{energydissipatedpercycle}$ (B) $\frac{Reactance}{Resistance}$ (C) $\frac{1}{Powerfactor}$ (D) All the above

136. Quality factor for series RLC circuit is given by:

(A) $\frac{1}{R}\sqrt{\frac{C}{L}}$ (B) $\frac{1}{R}\sqrt{\frac{L}{C}}$ (C) $R\sqrt{\frac{C}{L}}$ (D) $R\sqrt{\frac{C}{L}}$

137. Quality factor for parallel RLC circuit is given by:

(A) $\frac{1}{R}\sqrt{\frac{C}{L}}$ (B) $\frac{1}{R}\sqrt{\frac{L}{C}}$ (C) $R\sqrt{\frac{C}{L}}$ (D) $R\sqrt{\frac{C}{L}}$

138. what is the relation between bandwidth, resonance frequency and quality factor

(A) $Qualityfactor = \frac{resonancefrequency}{Bandwidth}$ (B) $Qualityfactor = \frac{resonancefrequency}{Bandwidth}$

(C) $Qualityfactor = \frac{resonancefrequency}{Bandwidth}$ (D) $Qualityfactor = \frac{resonancefrequency}{Bandwidth}$

135	D
136	B
137	C
138	ABCD