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DEPARTMENT OF ELECTRICAL ENGINEERING

SECOND YEAR (SY)

SCHEME: I **SEMESTER: III**

NAME OF SUBJECT: ELECTRICAL CIRCUITS

Subject Code: 22324

UNIT WISE MULTIPLE CHOICE QUESTIONS BANK

Question Bank for Multiple Choice Questions

Program: Diploma in Electrical engineering	**Program Code:- EE**
Scheme:-I	**Semester:- 3**
Course:- Electrical Circuits	**Course Code:- 22324**

01 – AC Series Circuits	**Marks:-15**
Content of Chapter:- 1.1 Generation of alternating voltage, phasor representation of sinusoidal quantities. 1.2 R, L, C circuit elements its voltage and current response. 1.3 R-L,R-C,R-L-C combination of A.C series circuit, impedance, reactance, impedance triangle, power factor, active power, apparent power, power triangle and vector diagram. 1.4 1.4 Resonance, Bandwidth, Quality factor and voltage magnification in series R-L, R-C, R-L-C circuit.	

1. All definitions of power factor of a series R-L-C circuit are correct except

(A) Ratio of net reactance and impedance (B) Ratio of kW and kVA
(C) Ratio of J and Z (D) Ratio of W and VA

Answer: - Option A
Explanation: - Power factor=Cos Φ=R/Z=Active power/Apparent Power

2. Ohm is unit of all of the following except

(A) Inductive reactance (B) Capacitive reactance
(C) Resistance (D) Capacitance

Answer: - Option C
Explanation: - unit of capacitance is farads

3. If two sinusoids of the same frequency but of different amplitudes and phase angles are subtracted, the resultant is

(A) A sinusoid of the same frequency (B) A sinusoid of half the original frequency
(C) A sinusoid of double the frequency (D) Not a sinusoid

Answer: - Option A
Explanation: - sinusoidal quantities with same frequency can be added or subtracted

4. Form factor for a sine wave is

(A) 1.414. (B) 0.707
(C) 1.11. (D) 0.637

Answer: - Option C
Explanation: - form factor=RMS Value/Average Value=1.11

5. All the rules and laws of D.C. circuit also apply to A.C. circuit containing

(A) Capacitance only (B) Inductance only
(C) Resistance only (D) All above

Answer: - Option C

Explanation: - Resistance is not charge or energy storing element of electrical circuit.

6. In R-L-C series resonant circuit magnitude of resonance frequency can be changed by changing the value of

(A) R only (B) L only
(C) C only (D) L or C

Answer: - Option D

Explanation:-

$$f_o = \frac{1}{2\pi\sqrt{LC}}$$

7. In an A.C. circuit power is dissipated in

(A) Resistance only (B) Inductance only
(C) Capacitance only (D) None of the above

Answer: - Option A

Explanation: - Resistance in a circuit that has a voltage drops across it and dissipates power

8. The R.M.S. value of half wave rectified sine wave is 200 V. The r.m.s. value of full wave rectified AC. will be

(A) 282.8 V (B) 141.4 V
(C) 111 V (D) 100 V

Answer:-Option A

Explanation:·

Given,

$V_{rms} = 200V$

We know the formula $V_{rms} = \frac{V_{applied}}{\sqrt{2}}$

So, $V_{applied} = 200\sqrt{2}$

$\Rightarrow = 282.8V$

9. The voltage of domestic supply is 220 V. This figure represents

(A) Mean value (B) r.m.s. value
(C) Peak value (D) Average value

Answer: - Option A

10. The transient currents are associated with the

(A) Changes in the stored energy in the inductors and capacitors (B) Impedance of the circuit
(C) Applied voltage to the circuit (D) Resistance of the circuit

Answer: Option A

Explanation: - Oscillatory or aperiodic current that flows in a circuit for a short time following an electromagnetic disturbance is called transient current

11. 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°

Answer: - Option B
Explanation: -Power=V*I*cos Φ=V*I*cos(90)=0

12. Form Factor is the ratio of
(A) Average value/r.m.s. value (B) Average value/peak value
(C) r.m.s. value/average value (D) r.m.s. value/peak value
Answer: - Option C
Explanation: -form factor=RMS Value/Average Value=1.11

13. Capacitive reactance is more when
(A) Capacitance and frequency of supply is less (B) Capacitance is less and frequency of supply is more
(C) Capacitance is more and frequency of supply is less (D) Capacitance and frequency of supply is more
Answer: - Option A
Explanation:-

$$X_C = \frac{1}{2\pi f C}$$

14. Pure inductive circuit
(A) Consumes some power on average (B) Does not take power at all from a line
(C) Store energy in magnetic field and again return to source (D) None of the above
Answer: - Option C
Explanation: - No power is consumed in the circuit.

15. Power factor of the following pure circuit will be zero
(A) Resistance (B) Inductance
(C) Capacitance (D) Both (B) and (C)
Answer: - Option D
Explanation: - Power=V*I*cosΦ=V*I*cos(90)=0

16. **The double energy transient occur in the**
(A) Purely inductive circuit (B) R-L circuit
(C) R-C circuit (D) R-L-C circuit
Answer: - Option D

17. in any A.C. circuit always
(A) Apparent power is more than actual power (B) Reactive power is more than apparent power
(C) Actual power is more than reactive power (D) Reactive power is more than actual power
Answer: Option A
Explanation: - Apparent Power=Active Power + Reactive Power

18. Magnitude of current at resonance in R-L-C circuit
(A) Depends upon the magnitude of R (B) Depends upon the magnitude of L
(C) Depends upon the magnitude of C (D) Depends upon the magnitude of R, Land C
Answer: - Option A
Explanation: - Current=Voltage/impedance but for resonance only resistance is considered not impedance

19. When a sinusoidal voltage is applied across R-L series circuit having R = XL, the phase angle will be
(A) Lag by 45º (B) Lag by 90º

(C) Lead by 0 to 90º (D) Lead by 90º

Answer: - Option C

20. What do you know about RL circuit?

(A) An electric circuit composed of resistors and inductors in series and driven by a voltage or current source

(B) Conductor

(C) an device composed of resistors and inductors driven by a voltage or current source

(D) None of the above

Answer: - Option A

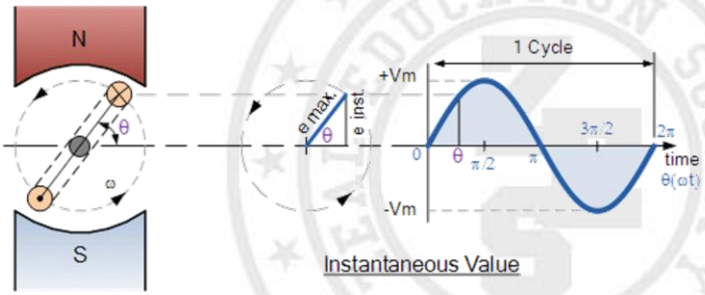
21. Equation for induced emf is given by e=BLV*sinθ where θ represent

(A) Angle made by coil with magnetic flux (B) Angle made by coil with external circuit

(C) Length of coil (D) magnetic flux density

Answer: - Option A

22.



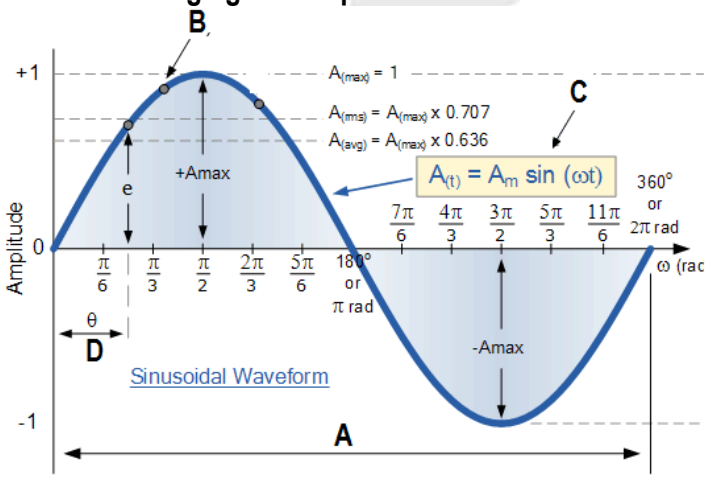
V_m represents……..

(A) Time period (B) Amplitude

(C) Cycle (D) Instantaneous Value

Answer: - Option B

23. In following figure A represents……

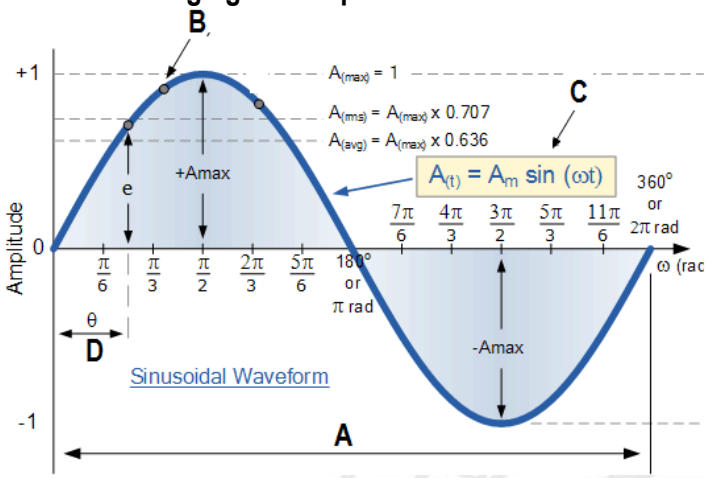


(A) Time period (B) Amplitude

(C) Cycle (D) Instantaneous Value

Answer: - Option A

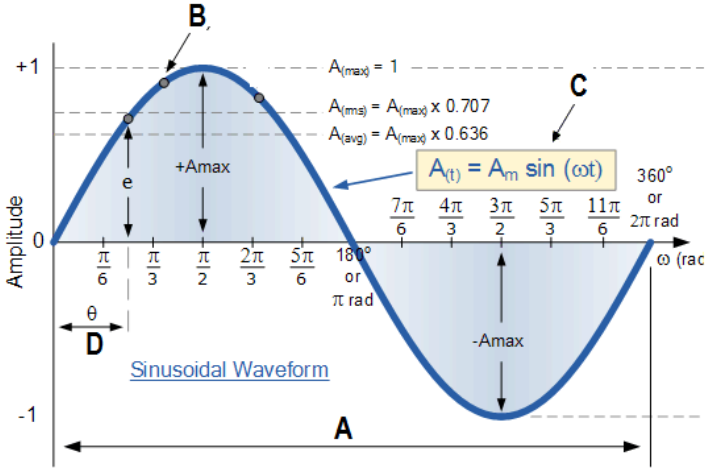
24. In following figure B represents……



(A) Time period
(B) Amplitude
(C) Cycle
(D) Instantaneous Value

Answer: - Option D

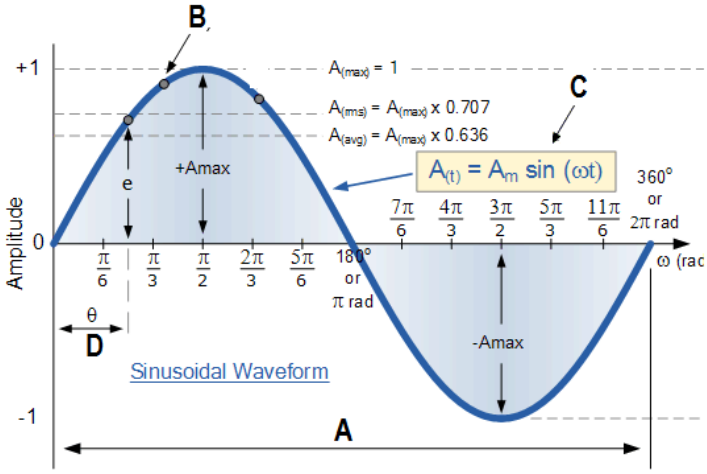
25. In following figure C represents……



(A) Time period
(B) Amplitude
(C) Cycle
(D) Equation for Instantaneous Value

Answer: - Option D

26. In following figure D represents……



(A) Time period
(B) Amplitude
(C) Phase angle
(D) Equation for Instantaneous Value

Answer: - Option C

27. Unit of frequency is…….

(A) Ohm
(B) Hertz
(C) Siemens
(D) Second

Answer: - Option B

28. Unit of Resistance is…….

(A) Ohm
(B) Hertz
(C) Siemens
(D) Second

Answer: - Option A

29. Unit of inductive or capacitive Reactance is…….

(A) Ohm
(B) Hertz
(C) Siemens
(D) Second

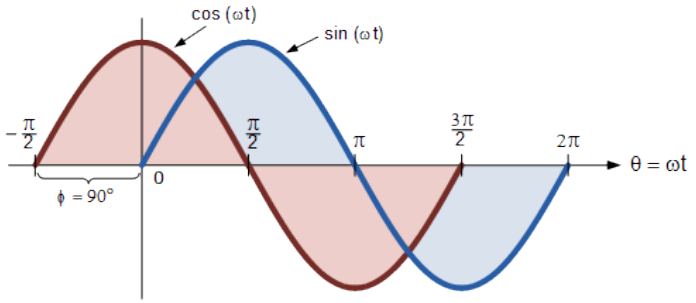
Answer: - Option A

30. Unit of Impedance is…….

(A) Ohm
(B) Hertz
(C) Siemens
(D) Second

Answer: - Option A

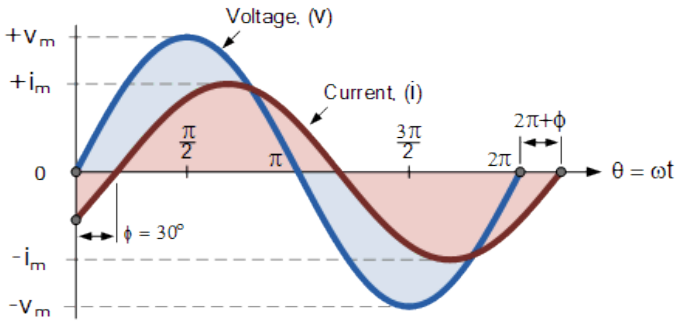
31. In following figure Phase difference is……



(A) 45°
(B) 90°
(C) 30°
(D) 0°

Answer: - Option B

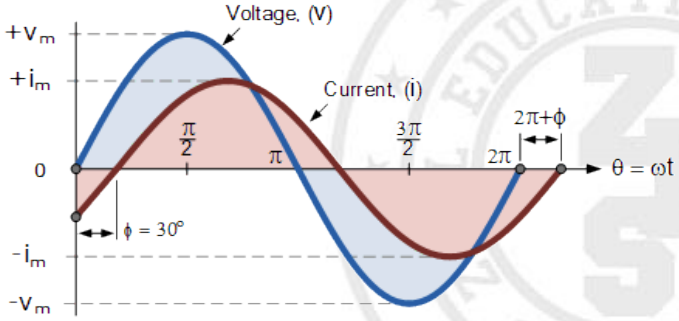
32. In following figure .....



(A) Current leads voltage by 30°
(B) Current lags voltage by 30°
(C) Current leads voltage by 45°
(D) Current lags voltage by 45°

Answer: - Option B

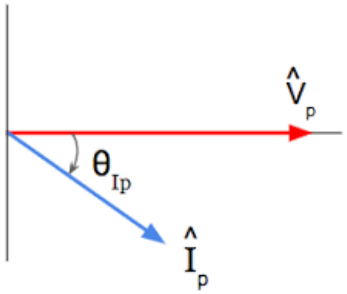
33. In following figure .....



(A) Voltage leads current by 30°
(B) Voltage lags current by 30°
(C) Voltage leads current by 45°
(D) Voltage lags current by 45°

Answer: - Option A

34. In following figure .....



(A) Voltage lags current
(B) Voltage leads current
(C) Both are in Phase
(D) none of these

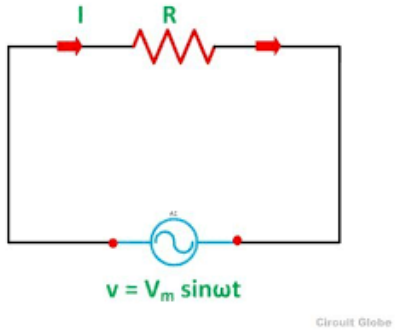
Answer: - Option B

35. Reactance means.....

(A) Opposition to current by inductor
(B) Opposition to current by capacitor
(C) Both A & B
(D) none of these

Answer: - Option C

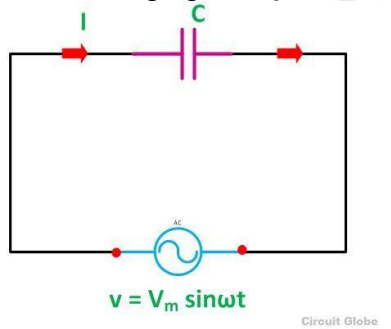
36. Following figure represents which type of AC Circuit…..



(A) Pure Resistive
(B) Pure capacitor
(C) Pure Inductive
(D) none of these

Answer: - Option A

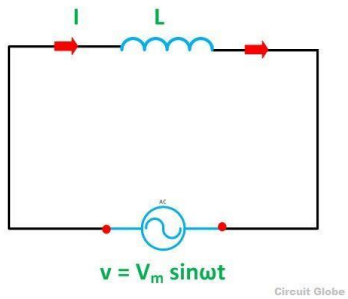
37. Following figure represents which type of AC Circuit…..



(A) Pure Resistive
(B) Pure capacitor
(C) Pure inductive
(D) none of these

Answer: - Option B

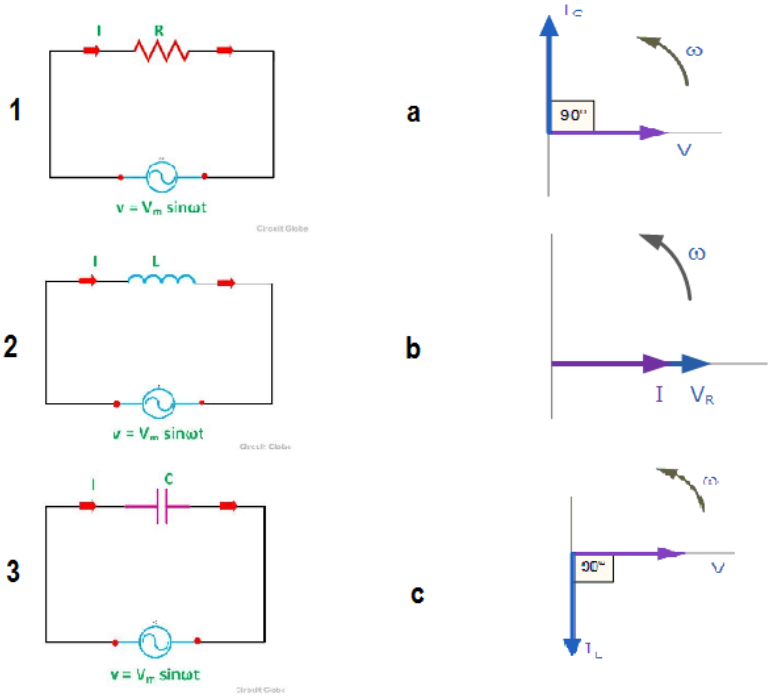
38. Following figure represents which type of AC Circuit…..



(A) Pure Resistive
(B) Pure capacitor
(C) Pure inductive
(D) none of these

Answer: - Option C

39. Which of following is correct sequence …..



(A) 1-a, 2-b, 3-c
(B) 1-b, 2-a, 3-c
(C) 1-b, 2-c, 3-a
(D) None of these

Answer: - Option C

40. Impedance for Pure Resistive circuit is …..

(A) $Z=X_L$
(B) $Z=X_C$
(C) $Z=0$
(D) $Z=R$

Answer: - Option D

41. Impedance for Pure Inductive circuit is …..

(A) $Z=X_L$
(B) $Z=X_C$
(C) $Z=0$
(D) $Z=R$

Answer: - Option A

42. Impedance for Pure Capacitive circuit is …..

(A) $Z=X_L$
(B) $Z=X_C$
(C) $Z=0$
(D) $Z=R$

Answer: - Option B

43. Identify type of circuit from voltage and current equation's

$$\text{Voltage, } v = V_m \sin \omega t$$

$$\text{Current, } i = I_m \sin\left(\omega t + \frac{\pi}{2}\right)$$

(A) Purely Resistive
(B) Purely Inductive
(C) Purely Capacitive
(D) None

Answer: - Option C

44. Identify type of circuit from voltage and current equation's

Applied Voltage, $v = V_m \sin \omega t$

Resultant Current, $i = I_m \sin \omega t$

(A) Purely Resistive (B) Purely Inductive
(C) Purely Capacitive (D) None

Answer: - Option A

45. Identify type of circuit from voltage and current equation's

Applied Voltage, $v = V_m \sin \omega t$

Resultent Current, $i = I_m \sin(\omega t - \frac{\pi}{2})$

(A) Purely Resistive (B) Purely Inductive
(C) Purely Capacitive (D) None

Answer: - Option B

46. Formula & Unit of Active Power is

(A) S=V*I, VA (B) Q=V*I*SinΦ, VAR
(C) P=V*I*CosΦ, Watt (D) None

Answer: - Option C

47. Formula & Unit of Reactive Power is

(A) S=V*I, VA (B) Q=V*I*SinΦ, VAR
(C) P=V*I*CosΦ, Watt (D) None

Answer: - Option B

48. Formula & Unit of apparent Power is

(A) S=V*I, VA (B) Q=V*I*SinΦ, VAR
(C) P=V*I*CosΦ, Watt (D) None

Answer: - Option A

49. Which of following is correct sequence?

Sr.	Condition		Power Factor (CosΦ)
1	$X_L > X_C$	a	Less than one and leading
2	$X_C > X_L$	b	Unity
3	$X_L = X_C$	c	Less than one and lagging

(A) 1-a, 2-b, 3-c (B) 1-c, 2-a, 3-b
(C) 1-c, 2-b, 3-a (D) None

Answer: - Option B

50. Formula for Q factor at resonance in RLC series circuit is?

A. $Q = \sqrt{\frac{L}{C}}$	B. $Q = \frac{1}{R}\sqrt{\frac{L}{C}}$
C. $Q = \frac{1}{R}\sqrt{\frac{C}{L}}$	D. $Q = \sqrt{\frac{C}{L}}$

Answer: - Option B

Prepared By Mr. Mandale R. K.	**Verified By** Mr. Lavhate V. J. Module Coordinator	**Re-Verified By** Mr. Patil S. S. Academic Coordinator	**Approved By** Mr. Mandale R.K. HoD EE

02 – AC Parallel Circuits	**Marks:-13**

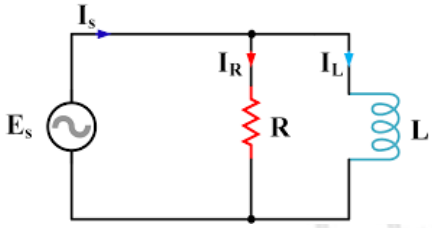
Content of Chapter:-

2.1 R-L, R-C and R-L-C parallel combination of A.C circuits, Impedance, reactance, phasor diagram, impedance triangle.

2.2 R-L, R-C and R-L-C parallel A.C circuits power factor, active power, apparent power, reactive power, power triangle.

2.3 Resonance in parallel R-L, R-C, R-L-C circuit, Bandwidth, Quality factor and voltage magnification.

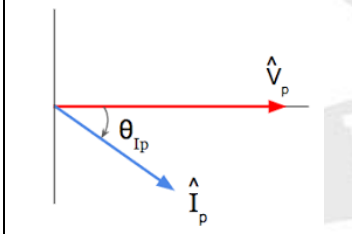
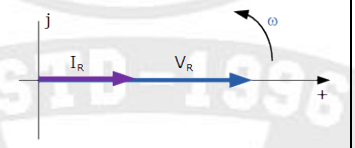
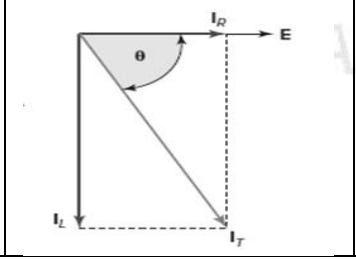
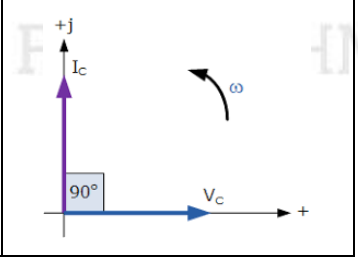
1. Identify the circuit given in figure



(A) R Circuit
(B) L Circuit
(C) R-L Circuit
(D) R-L parallel Circuit

Answer: - Option D

2. Identify phasor diagram for R-L parallel circuit

A		**B**	
C		**D**	

Answer: - Option C

3. Resultant impedance for R-L Parallel Circuit is calculated using relation

A	$Z = \frac{Z_1 + Z_2}{Z_1 * Z_2}$	**B**	$Z = \frac{Z_1 * Z_2}{Z_1 + Z_2}$
C	$Z = \frac{Z_1 - Z_2}{Z_1 * Z_2}$	**D**	**None Of These**

Answer: - Option B

4. **Formula for impedance in R-L Parallel circuit is**

A	$\boldsymbol{Z = \frac{R * X_C \angle 90}{\sqrt{R^2 + {X_C}^2} \angle \tan^{-1} \frac{X_C}{R}}}$	**B**	$\boldsymbol{Z = \frac{R * X_L \angle 90}{\sqrt{R^2 + {X_L}^2} \angle \tan^{-1} \frac{X_C}{R}}}$
C	$\boldsymbol{Z = \frac{R * X_L \angle 90}{\sqrt{R^2 + {X_L}^2} \angle \tan^{-1} \frac{X_L}{R}}}$	**D**	**None Of These**

Answer: - Option C

5. An A.C. voltage is impressed across a pure resistance of 3.5 ohms in parallel with a pure inductance of impedance of 3.5 ohms,

(A) The current through the resistance is more (B) The current through the resistance is less
(C) Both resistance and inductance carry equal currents (D) None of the above

Answer: - Option C

6. **Power factor for R-L Parallel circuit is**

(A) Leading (B) unity
(C) Lagging (D) None of above

Answer: - Option C

7. **Power factor of electric bulb is**

(A) Zero (B) Lagging
(C) Leading (D) Unity

Answer: - Option D

8 If a sinusoidal wave has frequency of 50 Hz with 30 A r.m.s. current which of the following equation represents this wave?

(A) 42.42 sin 314 t (B) 60 sin 25 t
(C) 30 sin 50 t (D) 84.84 sin 25 t

Answer: - Option A

Explanation: -Peak value=RMS Value/$\sqrt{2}$=42.42

9 Power factor of the system is kept high

(A) To reduce line losses
(B) To maximize the utilization of the capacities of generators, lines and transformers
(C) To reduce voltage regulation of the line
(D) Due to all above reasons

Answer: - Option D

10. **At _____ frequencies the parallel R-L circuit behaves as purely resistive.**

(A) Low (B) Very low
(C) High (D) Very high

Answer: - Option D

11. In parallel circuit power loss is due to…….

(A) Conductance alone (B) Susceptance alone
(C) Both A& B (D) none of above

Answer: - Option A

12. Domestic appliances connected in parallel because

(A) Acquire less space (B) Voltage across each will be rated
(C) Operation of each become independent (D) B & C

Answer: - Option D

13. Power taken by circuit in fig. 1 is

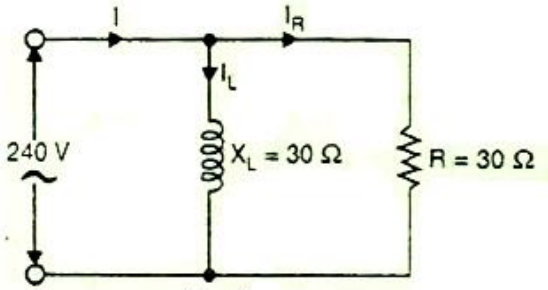


Fig 1

(A) 1820 W (B) 1920 W
(C) 2020W (D) 1620 W

Answer: - Option B

14. Current taken by circuit in fig. 1 is

(A) 2 A (B) 3 A
(C) 4 A (D) 5 A

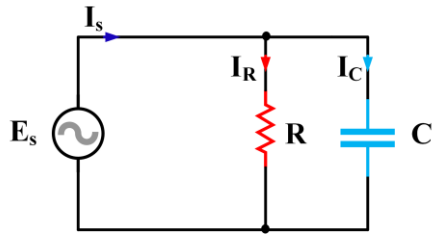
Answer: - Option C

15. Power factor of circuit in fig. 1 is

(A) 0.77 lag (B) 0.88 lead
(C) 0.77 lead (D) 1

Answer: - Option A

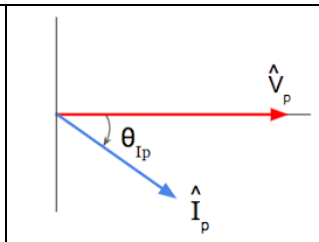
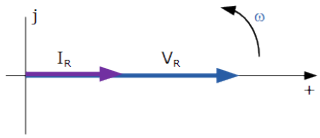
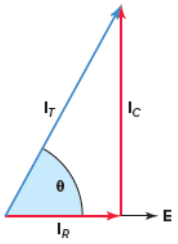
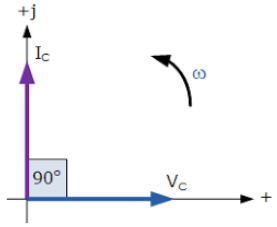
16. Identify the circuit given in figure



(A) R Circuit (B) L Circuit
(C) R-C Circuit (D) R-C parallel Circuit

Answer: - Option D

17. Identify phasor diagram for R-C parallel circuit

A		B	
C		D	

Answer: - Option C

18. Resultant impedance for R-C Parallel Circuit is calculated using relation

A	$Z = \frac{Z_1 + Z_2}{Z_1 * Z_2}$	B	$Z = \frac{Z_1 * Z_2}{Z_1 + Z_2}$
C	$Z = \frac{Z_1 - Z_2}{Z_1 * Z_2}$	D	None Of These

Answer: - Option B

19. Formula for impedance in R-C Parallel circuit is

A	$Z = \frac{R * X_C \angle 90}{\sqrt{R^2 + {X_C}^2} \angle \tan^{-1} \frac{X_C}{R}}$	B	$Z = \frac{R * X_L \angle 90}{\sqrt{R^2 + {X_L}^2} \angle \tan^{-1} \frac{X_C}{R}}$
C	$Z = \frac{R * X_L \angle 90}{\sqrt{R^2 + {X_L}^2} \angle \tan^{-1} \frac{X_L}{R}}$	D	None Of These

Answer: - Option A

20. An A.C. voltage is impressed across a pure resistance of 3.5 ohms in parallel with a pure capacitor of impedance of 3.5 ohms,

(A) The current through the resistance is more (B) The current through the resistance is less
(C) Both resistance and inductance carry equal currents (D) None of the above

Answer: - Option C

21. Power factor for R-C Parallel circuit is

(A) Leading (B) unity
(C) Lagging (D) None of above

Answer: - Option A

22. Power factor of Capacitor is

(A) Zero (B) Lagging

(C) Leading (D) Unity

Answer: - Option C

23. **At _____ frequencies the parallel R-C circuit behaves as purely resistive.**

(A) Low (B) Very low

(C) High (D) Very high

Answer: - Option D

24. **In a parallel R-C circuit, the current always _____the applied voltage**

(A) Lags (B) Leads

(C) Remains in phase with (D) None of the above

Answer: - Option B

25. At very low frequencies a series R-C circuit behaves as almost purely

(A) Resistive (B) Inductive

(C) Capacitive (D) None of the above

Answer: - Option C

26. In a parallel circuit, we consider _____ instead of impedance.

(A) Resistance (B) Capacitance

(C) Inductance (D) Admittance

Answer: -D

Explanation: In a parallel circuit, we consider admittance instead of impedance, where admittance is the reciprocal of impedance.

27. In a parallel circuit, we consider admittance instead of _____

(A) Resistance (B) Capacitance

(C) Inductance (D) Impedance

Answer: -D

Explanation: In a parallel circuit, we consider admittance instead of impedance, where admittance is the reciprocal of impedance.

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

(A) Z=Y (B) Z=1/Y

(C) Z=Y2 (D) Z=1/Y2

Answer: -B

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

29. Which, among the following is the correct expression for admittance?

(A) Z=Y (B) Z=1/Y

(C) Z=Y2 (D) Z=1/Y2

Answer: -B

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

30. What is the unit of admittance?

(A) Ohm (B) henry

(C) farad (D) ohm^{-1}

Answer: -D

Explanation: The unit for admittance is ohm^{-1} because the unit of impedance is ohm and admittance is the reciprocal of impedance.

31. As the impedance increases, the admittance _____

(A) Increases (B) Decreases
(C) Remains the same (D) becomes zero

Answer: -B

Explanation: As the impedance increases, the admittance decreases because admittance is equal to 1/impedance.

32. If the impedance of a system is 4 ohm, calculate its admittance.

(A) 0.25 ohm^{-1} (B) 4 ohm^{-1}
(C) 25 ohm^{-1} (D) 0.4 ohm^{-1}

Answer: -A

Explanation: We know that: Y=1/Z.
Substituting the value of Z from the question, we get Y = 1/4 = 0.25 => Y= 0.25 ohm^{-1}.

33. The admittance of a system is 10 ohm-1, calculate its impedance.

(A) 10 ohm (B) 0.1 ohm
(C) 1 ohm (D) 1.1 ohm

Answer: -B

Explanation: We know that: Z=1/Y.
Z = 1/10 = 0.1 => Z = 0.1 ohm.

34. In A parallel circuit, with any number of impedances, the voltage across each impedance is

(A) Equal (B) Divided equally
(C) Divided proportionally (D) zero

Answer: -A

Explanation: In parallel circuits, the current across the circuits vary whereas the voltage remains the same. So, voltage across each impedance is equal in parallel circuit

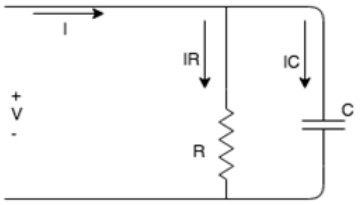
35. In a parallel circuit, current in each impedance is_____

(A) equal (B) different
(C) zero (D) infinite

Answer: -B

Explanation: In parallel circuits, the current across the circuits vary whereas the voltage remains the same. So, current in each impedance is different

36. From the given circuit, find the value of IR.

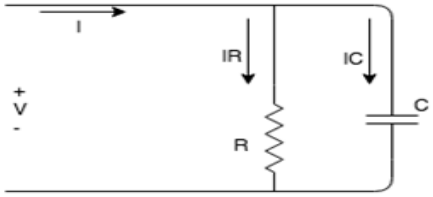


a) 0 b) V/I
c) V/R d) Cannot be determined

Answer: -C

Explanation: In the given circuit, the voltage across the resistor is the same as the source voltage as they are connected in parallel. The current in the resistor is I_R hence I_R=V/R.

37. What is the relation between IR and V in the following circuit?

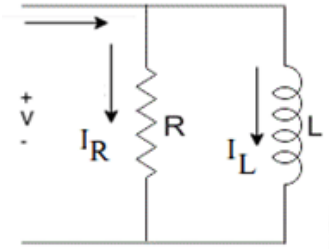


a) I_R leads V
b) I_R lags V
c) I_R and V are in phase
d) No relation

Answer: -C

Explanation: In the following circuit I_R and V are in phase because I_R is the current in the resistor and the current in the resistor is always in phase with the voltage across it.

38. What is the expression for the current in the inductor from the following circuit?

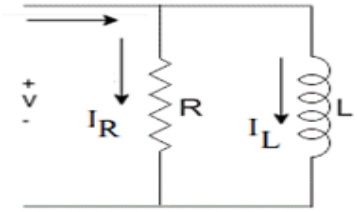


a) V/I
b) V/X_L
c) 0
d) cannot be determined

Answer: B

Explanation: In the given circuit, the voltage across the inductor is the same as the source voltage as they are connected in parallel. The current in the inductor is I_L hence $I_L=V/X_L$.

39. What is the phase relation between IL and V from the following circuit?

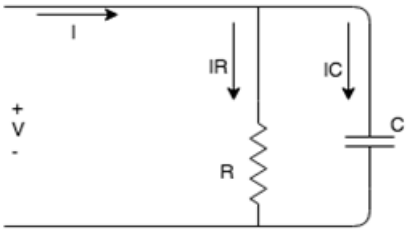


a) I_L lags V
b) I_L leads V
c) I_L and V are in phase
d) No relation

Answer: A

Explanation: IL is the current across the inductor and we know that the current across the inductor always lags the voltage across it. Hence IL lags V.

40. Find the expression for the current I from the given circuit.

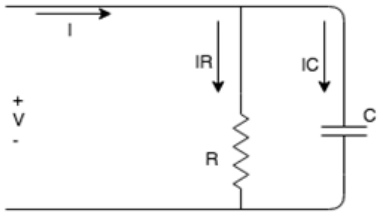


a) $I=I_C$
b) $I=I_R$
c) $I=I_C+I_R$
d) I=0

Answer: C

Explanation: I is the total current in the circuit. Since this is a parallel connection, the total current in the circuit is equal to the sum of the currents in each branch of the circuit. Hence $I=I_C+I_R$.

41. Find the total current if IC=2A and IR=5A.

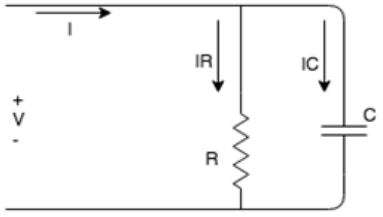


a) 3A b) -3A
c) 7A d) 10A

Answer: C

Explanation: I is the total current in the circuit. Since this is a parallel connection, the total current in the circuit is equal to the sum of the currents in each branch of the circuit. Hence $I=I_C+I_R$.
I=2+5=7A.

42. Find the value of IR if I=10A and IC=8A.

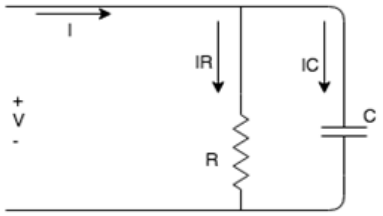


a) 5A b) 18A
c) 12A d) 2A

Answer: D

Explanation: I is the total current in the circuit. Since this is a parallel connection, the total current in the circuit is equal to the sum of the currents in each branch of the circuit. Hence $I=I_C+I_R$.
$10=8+I_R \Rightarrow I_R=2A$.

43. Find the value of IL if IC=10A and IR=6A.

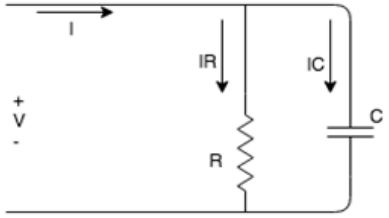


a) 4A b) 18A
c) 12A d) 2A

Answer: A

Explanation: I is the total current in the circuit. Since this is a parallel connection, the total current in the circuit is equal to the sum of the currents in each branch of the circuit. Hence $I=I_C+I_R$.
$10=I_C+6 \Rightarrow I_C=4A$.

44. What is the expression for the current in the capacitor from the following circuit?

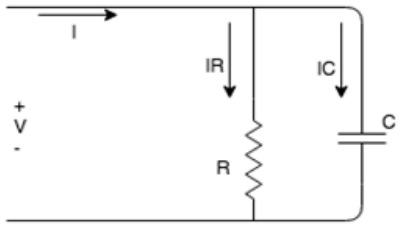


a) V/C
b) V/I
c) 0
d) V/X_C

Answer: D

Explanation: In the given circuit, the voltage across the capacitor is the same as the source voltage as they are connected in parallel. The current in the capacitor is I_C hence $I_C=V/X_C$.

45. What is the phase relation between IC and V from the following circuit?



a) I_C lags V
b) I_C leads V
c) I_C and V are in phase
d) No relation

Answer: B

Explanation: I_C is the current across the capacitor and we know that the current across the capacitor always leads the voltage across it. Hence I_C leads V.

45. In an impedance parallel network, the reactive component will _____ the voltage by 90 **degrees.**

a) Lead
b) Lag
c) Either lead or lag
d) Depends on the circuit

Answer: C

Explanation: In an impedance parallel network the reactive component will either lead or lag the voltage by 90 degrees.

46. In an impedance parallel network, the reactive component will either lead or lag the voltage by _____ degrees.

a) 0
b) 90
c) 45
d) 180

Answer: C

47. In an impedance parallel network, the reactive component will either lead or lag the _____ by 90 degrees.

a) Voltage
b) Current
c) Either voltage or current
d) Cannot be determined

Answer: A

Explanation: In an impedance parallel network the reactive component will either lead or lag the voltage by 90 degrees.

48. The reactive component in an impedance parallel circuit leads the voltage when the current _____ the voltage.

a) Leads b) Lags
c) Either leads or lags d) Cannot be determined

Answer: A

Explanation: The reactive component in an impedance parallel circuit leads the voltage when the current leads the voltage.

49. The active component in an impedance parallel circuit will _____ the voltage.

a) Leads b) Lags
c) Be in phase with d) Either leads or lags

Answer: C

Explanation: The active component in an impedance parallel network will always be in phase with the voltage in the circuit.

50. The phase difference between the active component of an impedance parallel circuit and the voltage in the network is _____

a) 0 b) 90
c) 180 d) 360

Answer: A

Explanation: The active component in an impedance parallel network will always be in phase with the voltage in the circuit. Hence the phase difference is 0.

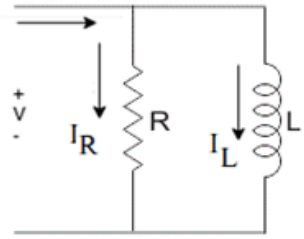
51. The quadrature component is also known as?

a) Active component b) Reactive component
c) Either active or reactive component d) Neither active nor reactive component

Answer: B

Explanation: The quadrature component is also known as the reactive component because the reactive component forms a quadrature with the voltage.

52. Find the expression for the current I from the given circuit.

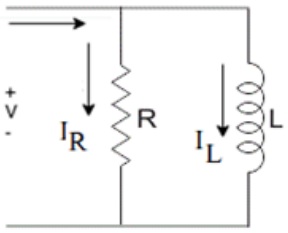


a) $I=I_L$ b) $I=I_R$
c) $I=I_L+I_R$ d) $I=0$

Answer: C

Explanation: I is the total current in the circuit. Since this is a parallel connection, the total current in the circuit is equal to the sum of the currents in each branch of the circuit. Hence $I=I_R+I_L$.

53. Find the value of IR if I=10A and IL=8A.



a) 5A
b) 18A
c) 12A
d) 2A

Answer: D

Explanation: We know that $I=I_R+I_L$.
$10=I_R+8 \Rightarrow I_R=2A$.

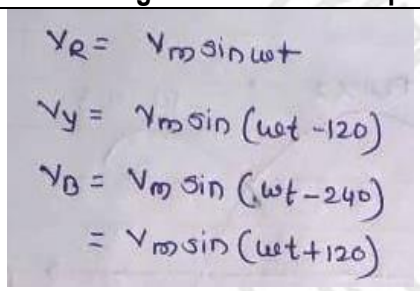
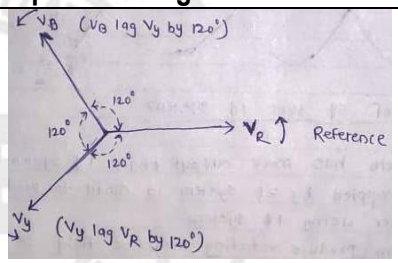
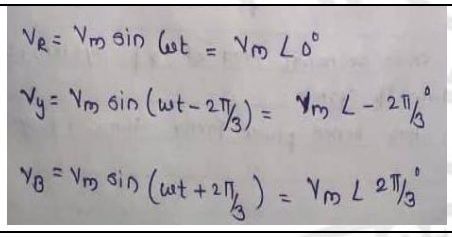
Prepared By Mr. Mandale R. K.	**Verified By** Mr. Lavhate V. J. Module Coordinator	**Re-Verified By** Mr. Patil S. S. Academic Coordinator	**Approved By** Mr. Mandale R.K. HoD EE

03 – AC Parallel Circuits	**Marks:-13**

Content of Chapter:-

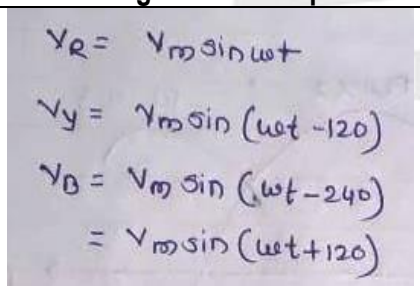
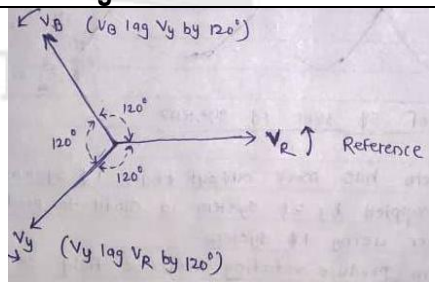
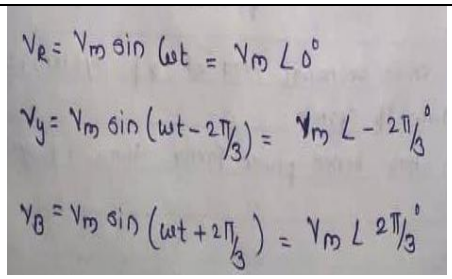
3.1 Phasor and complex representation of three phase supply.
3.2 Phase sequence and polarity.
3.3 Types of three phase connections, phase and line quantities in three phase star and delta system.
3.4 Balanced and unbalanced load, neutral shift in unbalanced load.
3.5 Three phase power, active, reactive and apparent power in star and delta system.

1. Which of following is mathematical representation of 3 phase voltages?

(A) 	**(B)** 
(C) 	**(D)** **None of these**

Answer: - Option A

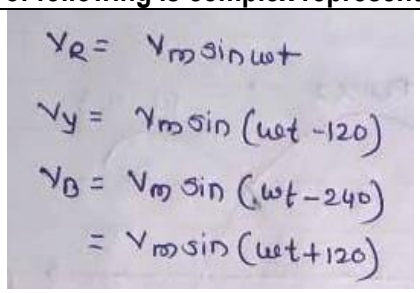
2. Which of following is Phasor representation of 3 phase voltages?

(A) 	**(B)** 
(C) 	**(D)** **None of these**

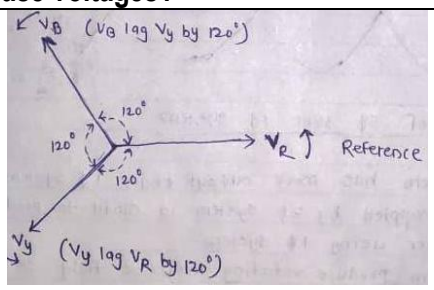
Answer: - Option B

3. Which of following is complex representation of 3 phase voltages?

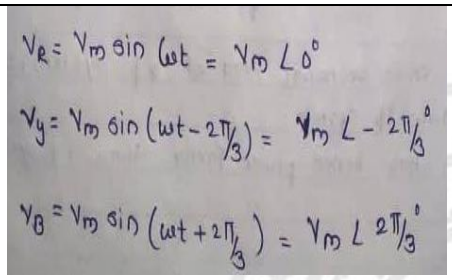
(A)



(B)



(C)



(D)
None of these

Answer: - Option C

4. Which of following is advantage on 3 Phase AC over 1 Phase AC System?

(A) More output power
(B) Less space required to produce same power
(C) Self-starting of machine is possible
(D) All of them

Answer: - Option D

5. Phase Sequence is a sequence in which 3 phase voltages reach their …….. Values

(A) Minimum positive
(B) Maximum Positive
(C) Minimum Negative
(D) Maximum Negative

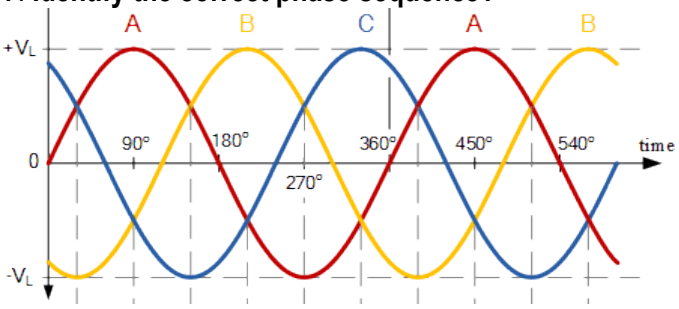
Answer: - Option B

6. What happens if Phase sequence is changed?

(A) Motor takes large current
(B) Motor rotation direction changes
(C) Motor Stops
(D) Motor continue rotation in same direction

Answer: - Option B

7. Identify the correct phase sequence?

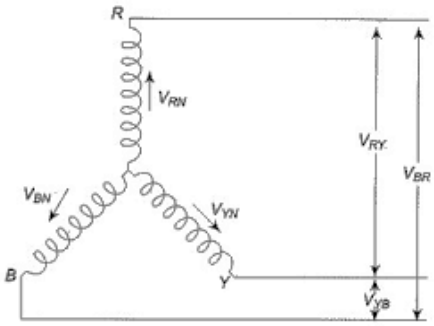


(A) B-C-A
(B) A-B-C
(C) C-A-B
(D) None of above

Answer: - Option B

Explanation: - Phase Sequence is a sequence in which 3 phase voltages reach their maximum positive values

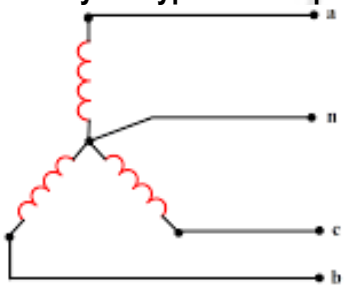
8. Identify the type of three phase connection?



(A) Three Phase Three Wire Star Connected System
(B) Three Phase Four Wire Star Connected System
(C) Three Phase Three Wire Delta Connected System
(D) None of above

Answer: - Option A

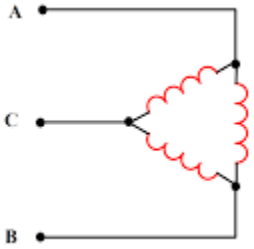
9. Identify the type of three phase connection?



(A) Three Phase Three Wire Star Connected System
(B) Three Phase Four Wire Star Connected System
(C) Three Phase Three Wire Delta Connected System
(D) None of above

Answer: - Option B

10. Identify the type of three phase connection?



(A) Three Phase Three Wire Star Connected System
(B) Three Phase Four Wire Star Connected System
(C) Three Phase Three Wire Delta Connected System
(D) None of above

Answer: - Option C

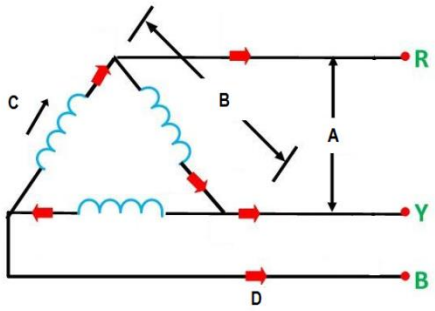
11. Voltage across any phase is…… and voltage across any two lines is……

(A) Line Voltage, Phase voltage

(B) Phase Voltage, Line voltage
(C) 3 Phase Voltage
(D) None of above

Answer: - Option B

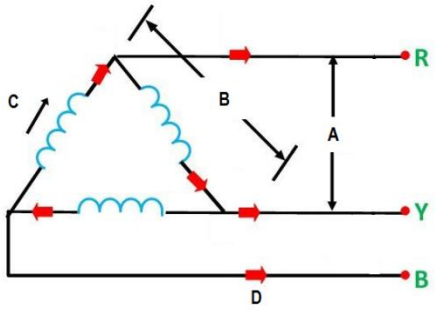
12. What is A in fig. below



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option A

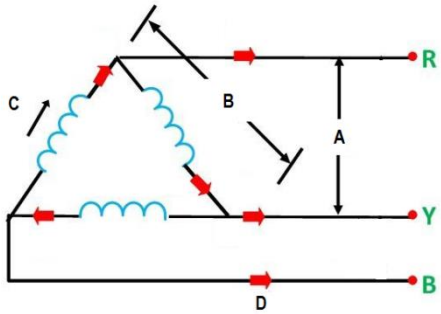
13. What is B in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option B

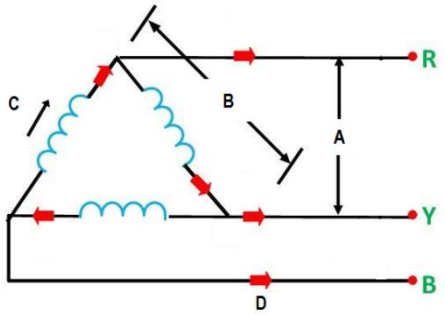
14. What is C in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option C

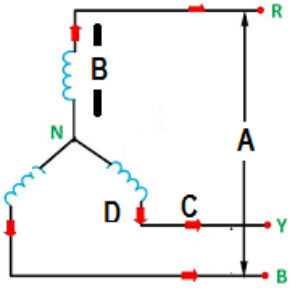
15. What is D in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option D

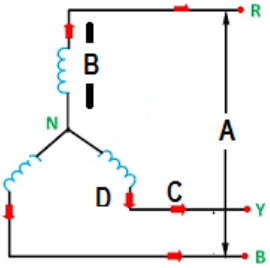
16. What is A in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option A

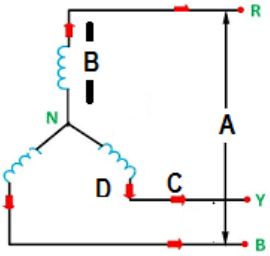
17. What is B in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option B

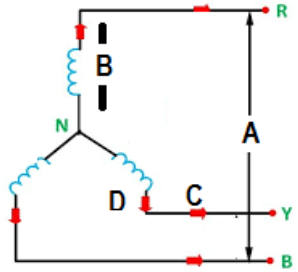
18. What is C in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option C

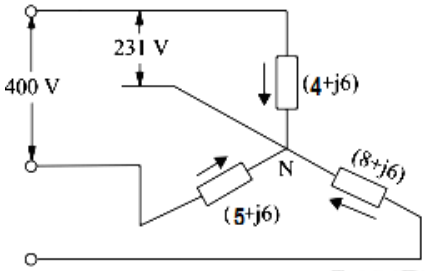
19. What is D in fig. below?



(A) Line Voltage
(B) Phase Voltage
(C) Phase Current
(D) Line Current

Answer: - Option D

20. Identify type of load

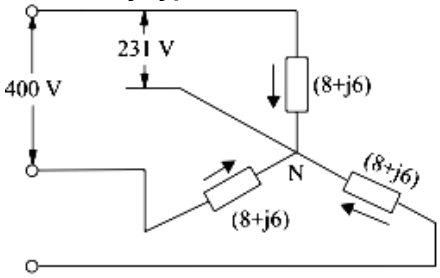


(A) Unbalanced Star Load
(B) Unbalanced Delta Load
(C) Balanced Star Load
(D) Balanced Delta Load

Answer: - Option A

Explanation: - All impedances are not equal

21. Identify type of load



(A) Unbalanced Star Load
(B) Unbalanced Delta Load
(C) Balanced Star Load
(D) Balanced Delta Load

Answer: - Option C

Explanation: - All impedances are equal

22. In balanced star or Delta connected load all phase and line values of current & voltage will be…….

(A) Unequal
(B) Depends on type of load
(C) Equal
(D) None of above

Answer: - Option C

Explanation: - All impedances are equal so all values will be equal

23. In Unbalanced star or Delta connected load all phase and line values of current & voltage will be…….

(A) Unequal
(B) Depends on type of load

(C) Equal (D) None of above

Answer: - Option A

Explanation: - All impedances are unequal so all values will be unequal

24. For a star connected three phase AC circuit ———

(A) Phase voltage is equal to line voltage and phase current is root three times the line current

(B) Phase voltage is square root three times 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: - Option B

Explanation: -

$$I_L = I_{ph}$$

$$V_L = \sqrt{3} V_{ph}$$

25. For a Delta 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 line voltage and phase current is equal to line current

(C) Phase voltage is equal to line voltage and line current is equal to square root three times phase current

(D) None of the above

Answer: - Option C

Explanation: -

$$V_L = V_P$$

$$I_L = \sqrt{3} \times I_P$$

26. Active Power in a Three Phase Circuit = _____.

(A) $P = 3 V_{Ph} I_{Ph} \text{Cos}\Phi$ (B) $P = \sqrt{3} V_L I_L \text{Cos}\Phi$

(C) Both 1 & 2 (D) None of The Above

Answer: - Option B

27. Which of following is correct?

Sr. No.	Type of Power	Equation of Power	Unit of Power
1	Active Power	a- $Q = \sqrt{3} V_L I_L \text{Sin}\Phi$	i- VA
2	Reactive Power	b- $S = \sqrt{3} VL IL$	ii- Watt
3	Apparent Power	c- $P = \sqrt{3} V_L I_L \text{Cos}\Phi$	iii- VAR

(A) 1-a-i, 2-b-ii, 3-c-iii, 1-c-ii, 2-a-iii

(B) 1-c-i, 2-a-ii, 3-b-iii, 1-c-ii, 2-a-i

(C) 3-b-i

(D) 3-b-iii

Answer: - Option C

28. A three phase delta connected balanced load having resistance of 50 ohm/phase and capacitance of 50 microfarads/phase supplied by 440 V, 50 Hz AC supply. Capacitive reactance will be.

(A) 60 ohm (B) 63.69 ohm

(C) 80 Ohm (D) 100 ohms

Answer: - Option B

29. In problem no. 28 Total Impedance will be.
(A) 60 ohm (B) 63.69 ohm
(C) 80.97 Ohm (D) 100 ohms
Answer: - Option C

30. In problem no. 28 Phase Current will be.
(A) 1 Ampere (B) 2.43 Ampere
(C) 5.43 Ampere (D) 8 Ampere
Answer: - Option C

31. In problem no. 28 Line Current will be.
(A) 1 Ampere (B) 2.43 Ampere
(C) 5.43 Ampere (D) 9.41 Ampere
Answer: - Option D

32. In problem no. 28 Active power will be.
(A) 4400 Watt (B) 4429.5 Watt
(C) 4400 VA (D) 4429.5 VA
Answer: - Option B

33. In problem no. 28 Reactive power will be.
(A) 5682.5 VAR (B) 4429.5 VAR
(C) 4400 VAR (D) 5000 VAR
Answer: - Option A

33. In problem no. 28 Power factor will be.
(A) 0.6 (B) 0.8
(C) 0.5 (D) 0.9
Answer: - Option A

34. A three phase Star connected balanced load having resistance of 6 ohm/phase and inductive reactance is 8 ohm/phase supplied by 400 V, 50 Hz AC supply. Find Phase voltage.
(A) 23.9 Volt (B) 230.9 Volt
(C) 300 Volt (D) 400 Volt
Answer: - Option B

35. In problem no. 34 Impedance will be.
(A) 20 ohm (B) 63.69 ohm
(C) 80.97 Ohm (D) 10 ohms
Answer: - Option D

36. In problem no. 34 Phase Current and line current will be.
(A) 30 Ampere (B) 23 Ampere
(C) 25 Ampere (D) 24 Ampere
Answer: - Option C

37. In problem no. 34 Active power will be.
(A) 9510 Watt (B) 9598.3Watt
(C) 9500 Watt (D) 0 Watt
Answer: - Option B

38. For a star connection network, consuming power of 1.8kW and power factor 0.5, the inductance and resistance of each coil at a supply voltage of 230 Volts, 60 Hz is _____?

(A) 0.1H, 8 Ohms
(B) 0.5H, 10 Ohms
(C) 0.3H, 7.4 Ohms
(D) 1H, 7 Ohms

Answer: - Option C

39. A three phase Delta connected balanced load having impedance of 6+j8 supplied by 400 V, 50 Hz AC supply. Find Zph.

(A) 10 Ohms
(B) 15 Ohms
(C) 7.4 Ohms
(D) 7 Ohms

Answer: - Option A

40. In problem no. 39, Find Vph.

(A) 450 Volt
(B) 400 Volt
(C) 350 Volt
(D) 230 Volt

Answer: - Option B

41. In problem no. 39, find I_{ph}

(A) 30 A
(B) 35 A
(C) 40A
(D) 45 A

Answer: - Option C

42. In problem no. 39, find I_L

(A) 70 A
(B) 75 A
(C) 80A
(D) 85 A

Answer: - Option A

43. In problem no. 39, find Active Power

(A) 20.7 Watt
(B) 22.7Watt
(C) 26.7 Watt
(D) 28.7 Watt

Answer: - Option D

Prepared By Mr. Mandale R. K.	**Verified By** Mr. Lavhate V. J. Module Coordinator	**Re-Verified By** Mr. Patil S. S. Academic Coordinator	**Approved By** Mr. Mandale R.K. HoD EE

04 – Network Reduction & Principles of DC Circuits	**Marks:-13**
Content of Chapter:- 4.1 Source transformation. 4.2 Star/delta and delta/star transformation. 4.3 Mesh Analysis. 4.4 Node Analysis	

1. In open circuit current through open branch will be?
(A) 1 A
(B) 0 A
(C) 2 A
(D) Insufficient Data
Answer: - Option B

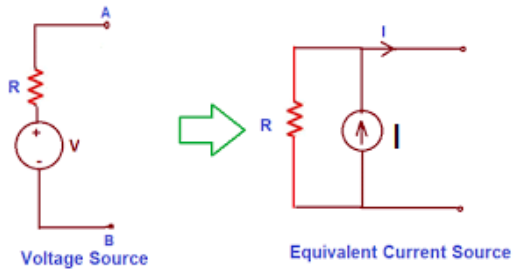
2. In open circuit Resistance across open branch will be?
((A) 0 Ohm
(B) can't calculate
(C) Infinite Ohm
(D) Insufficient Data
Answer: - Option C

3. In Short circuit voltage across short circuited branch will be?
(A) 1 Volt
(B) 0 Volt
(C) 2 Volt
(D) Insufficient Data
Answer: - Option B

4. In Short circuit resistance of short circuited branch will be?
(A) 1 Ohm
(B) 0 Ohm
(C) 2 Ohm
(D) Insufficient Data
Answer: - Option B

5. What is need of source transformation electrical circuits?
(A) Simplify Network
(B) Finding Current & voltage in Network
(C) Analysis of Complex network
(D) All of them
Answer: - Option D

6. Value of Current I will be……



(A) I=R/V
(B) I=V/Z

(C) I=V/R (D) All of them

Answer: - Option C

7. Source Transformation depends on……..law

(A) Thevnins law (B) Ohms Law

(C) Kirchoff's Law (D) All of them

Answer: - Option B

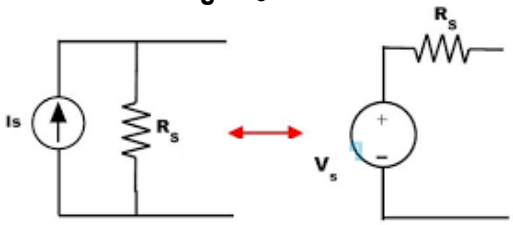
8. In source transformation series resistance of voltage source converted to ……resistance of current source

(A) Series (B) Parallel

(C) Depends on Circuit (D) none of them

Answer: - Option B

9. Value of voltage V_S will be……



(A) V_S=I*R (B) V_S=P*R

(C) V_S=I*E (D) All of them

Answer: - Option A

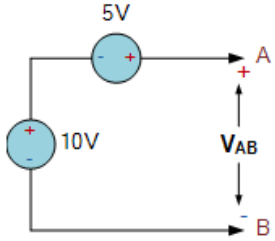
10. In source transformation Parallel resistance of current source converted to ……resistance of voltage source

(A) Series (B) Parallel

(C) Depends on Circuit (D) none of them

Answer: - Option A

11. What will be V_{AB}=…….

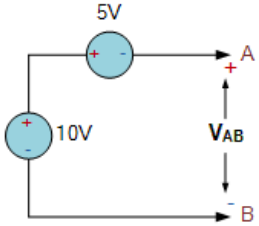


(A) 15 Volt (B) 20 Volt

(C) 10 Volt (D) 25 Volt

Answer: - Option A

12. What will be V_{AB}=…….

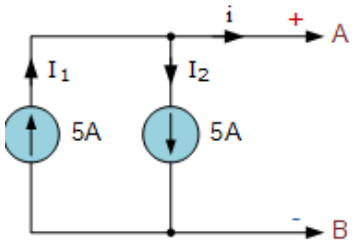


(A) 15 Volt (B) 20 Volt

(C) 10 Volt (D) 25 Volt

Answer: - Option C

13. What will be i=.....

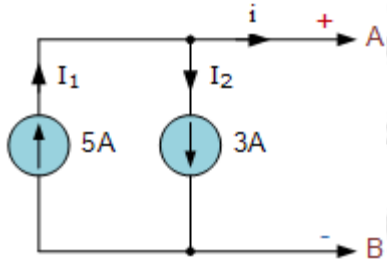


(A) 0 A (B) 2 A

(C) 10 A (D) 5 A

Answer: - Option A

14. What will be i=.....



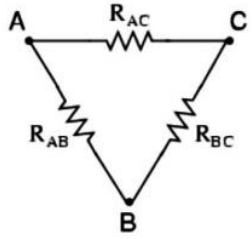
(A) 1 A (B) 2 A

(C) 3 A (D) 4 A

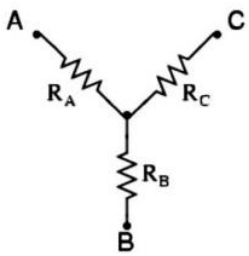
Answer: - Option B

15. State True or False

Delta (Δ) network



Wye (Y) network



To convert a Delta (Δ) to a Wye (Y)

$$R_A = \frac{R_{AB} R_{AC}}{R_{AB} + R_{AC} + R_{BC}}$$

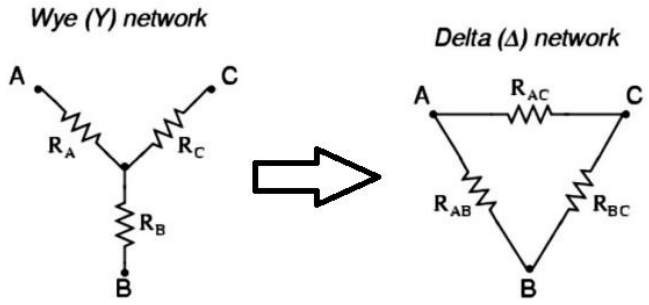
$$R_B = \frac{R_{AB} R_{BC}}{R_{AB} + R_{AC} + R_{BC}}$$

$$R_C = \frac{R_{AC} R_{BC}}{R_{AB} + R_{AC} + R_{BC}}$$

(A) True (B) False

Answer: - Option A

16. State True or False



To convert a Wye (Y) to a Delta (Δ)

$$R_{AB} = \frac{R_A R_B + R_A R_C + R_B R_C}{R_C}$$

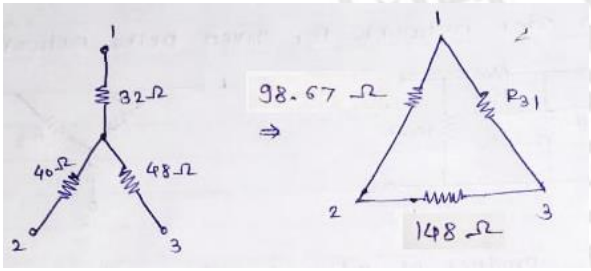
$$R_{BC} = \frac{R_A R_B + R_A R_C + R_B R_C}{R_A}$$

$$R_{AC} = \frac{R_A R_B + R_A R_C + R_B R_C}{R_B}$$

(A) True (B) False

Answer: - Option A

17. Value of R_{31} is…….

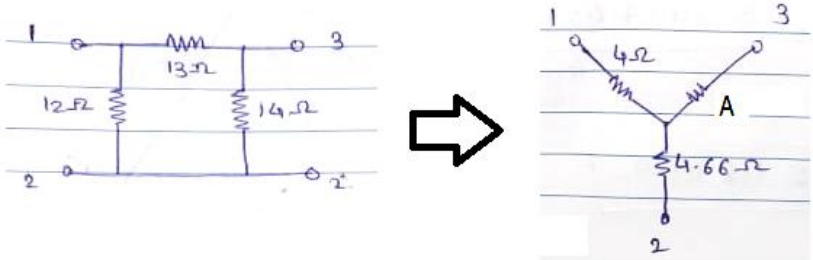


(A) 118.40 Ohm (B) 120 Ohm

(C) 110 Ohm (D) 115 Ohm

Answer: - Option A

18. Value of A is…….



(A) 4.3 Ohm (B) 5.3 Ohm

(C) 6.3 Ohm (D) 3.3 Ohm

Answer: - Option A

19. Algebraic sum of voltages around closed is……..

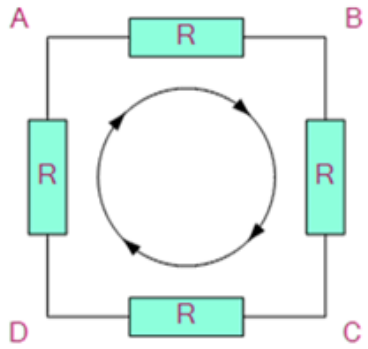
(A) 10 V (B) 0 V

(C) Can't be calculated (D) 36 V

Answer: - B

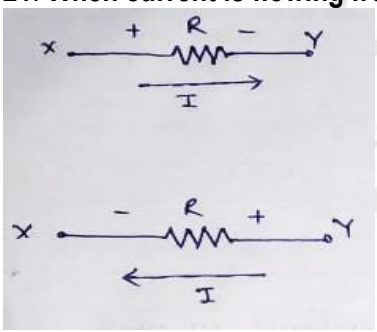
20. in following circuit

$V_{AB} + V_{BC} + V_{CD} + V_{DA} =$



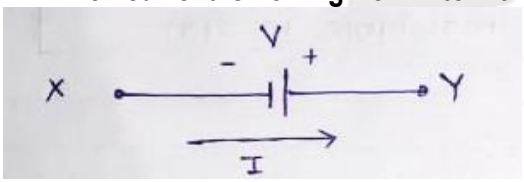
(A) 10 V
(B) 0 V
(C) Can't be calculated
(D) 36 V
Answer: - B

21. When current is flowing from X to Y or Y to X, voltage across resistance will be



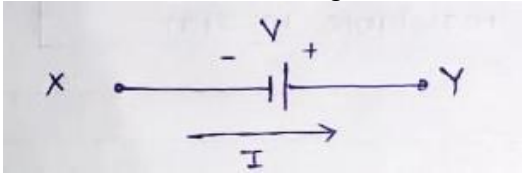
(A) Negative
(B) Positive
(C) Depends on circuit
(D) 0 V
Answer: - A

22. When current is flowing from X to Y then voltage will be ……..



(A) Negative
(B) Positive
(C) Depends on circuit
(D) 0 V
Answer: - B

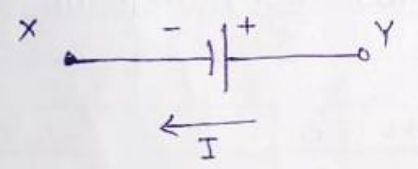
23. When current is flowing from X to Y then voltage will be ……..



(A) Negative
(B) Positive
(C) Depends on circuit
(D) 0 V

Answer: - B

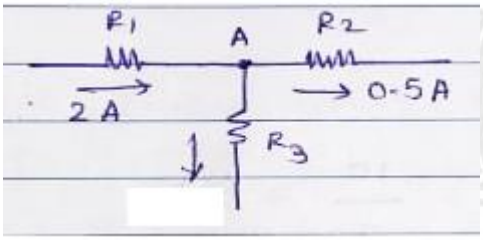
24. When current is flowing from Y to X then voltage will be ……..



(A) Negative
(B) Positive
(C) Depends on circuit
(D) 0 V
Answer: - A

25. Algebraic sum of current at junction point is……..
(A) 10 A
(B) 0 A
(C) Can't be calculated
(D) 36 A
Answer: - B

26. In following circuit current through R_3 will be



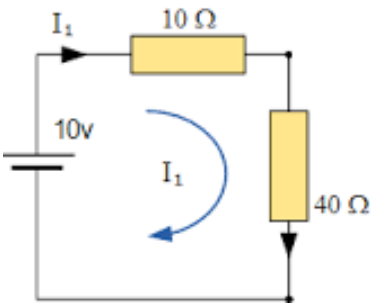
(A) 1.8 A
(B) 2 A
(C) 0.5 A
(D) 1.5 A
Answer: - D

27. Which one of following is correct sequence?

1- Kirchhoff's Current Law	a- Voltage In Closed loop is zero	i- Applied at Node
2- Kirchhoff's Voltage Law	b- Current at junction is zero	ii- Applied in mesh

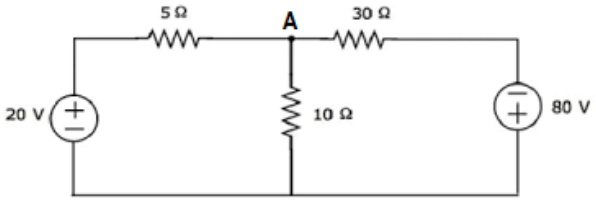
(A) 1-a-i and 2-b-ii
(B) 1-b-i and 2-a-ii
(C) 1-a-ii and 2-b-i
(D) 1-b-ii and 2-a-i
Answer: - B

28. Value of I_1 will be



(A) 1.8 A
(C) 0.5 A
(B) 0.2 A
(D) 1.5 A
Answer: - B

29. Voltage at Node A will be



(A) 10 V
(C) 30 V
(B) 20 V
(D) 40 V
Answer: - B

30. Delta/Star or star/delta transformation technique is applied to …… network
(A) One terminal
(C) Three terminal
(B) Two terminal
(D) Four terminal
Answer: - C

31. The resistor values in delta network that is equivalent to a wye containing three 120 Ω resistors is ……
(A) 360 Ω each
(C) 180 Ω each
(B) 240 Ω each
(D) 120 Ω each
Answer: - A

32. The resistor values in wye network that is equivalent to a delta containing three 12 kΩ resistors is
(A) 2 kΩ each
(C) 8 kΩ each
(B) 4kΩ each
(D) 6 KΩ each
Answer: - B

33. When a load of 1 kΩ is connected across a 20 mA current source, it is found that only 18 mA flows in the load. What is the internal resistance of the source?

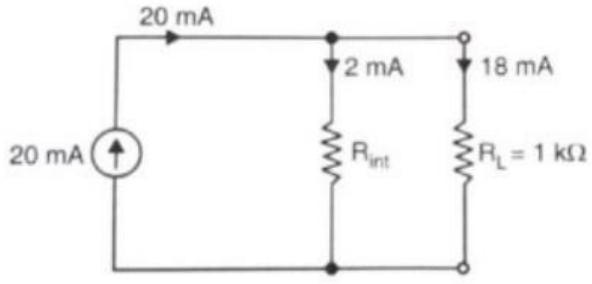


Fig. 3.23

(A) 2 kΩ each
(C) 8 kΩ each
(B) 4kΩ each
(D) 9 KΩ each
Answer: - D

Prepared By Mr. Mandale R. K.	**Verified By** Mr. Lavhate V. J. Module Coordinator	**Re-Verified By** Mr. Patil S. S. Academic Coordinator	**Approved By** Mr. Mandale R.K. HoD EE

05 – Network Theorems	**Marks:-15**

Content of Chapter:-

5.1 Superposition theorem.
5.2 Thevenin's theorem
5.3 Norton's theorem
5.4 Maximum power transfer theorem.
5.5 Reciprocity theorem.
5.6 Duality in electric circuits.

1. An active element in a circuit is one which ……

(A) Receives energy
(B) Supplies energy
(C) Both receives and supplies energy
(D) none of the above.

Answer: - B

2. A passive element in a circuit is one which ……

(A) supplies energy
(B) receives energy
(C) both supplies and receives energy
(D)) none of the above

Answer: - B

3. An electric circuit contains ……

(A) active elements only
(B) passive elements only
(C) both active and passive elements
(D) none of the above.

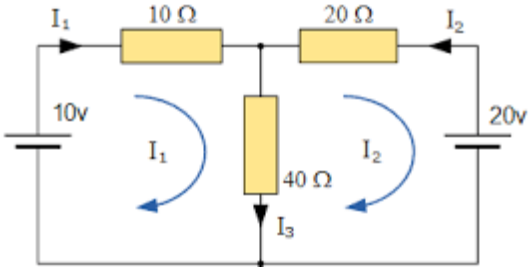
Answer: - C

4. A linear circuit is one whose parameters (e.g. resistances etc.)……..

(A) change with change in current
(B change with change in voltage
(C do not change with voltage and current
(D) none of the above.

Answer: C

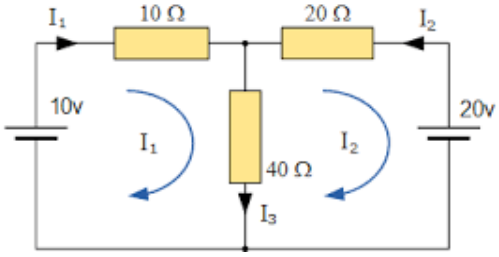
5. In the circuit shown, the number of nodes is ……..



(A) one
(B) two
(C) three
(D) four

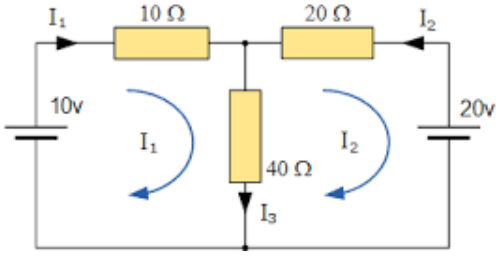
Answer: - D

6. In the circuit shown, there are …….…… junctions.



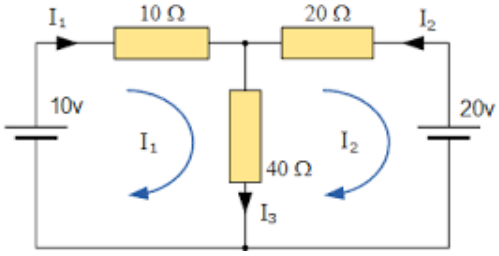
(A) one (B) two
(C) three (D) four
Answer: - B

7. The circuit shown has ……. branches.



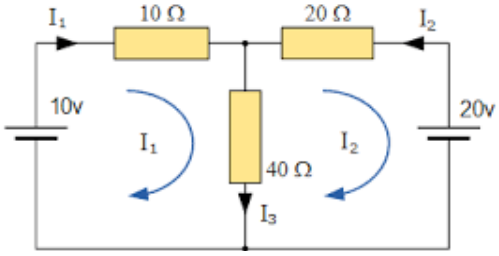
(A) one (B) two
(C) three (D) four
Answer: - C

8. The circuit shown has……..loops.



(A) one (B) two
(C) three (D) four
Answer: - C

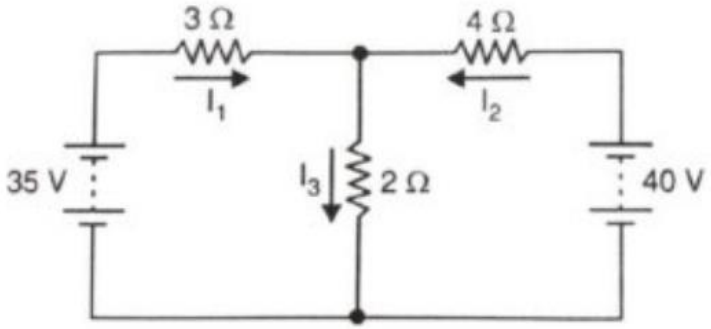
9. In the circuit shown, there are ……. meshes.



(A) one (B) two
(C) three (D) four

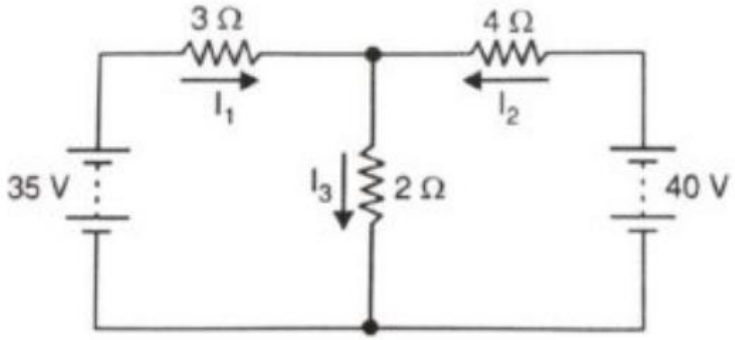
Answer: - B

10 – To solve the circuit shown in Fig. 3.17 by Kirchhoff's laws, we require……..



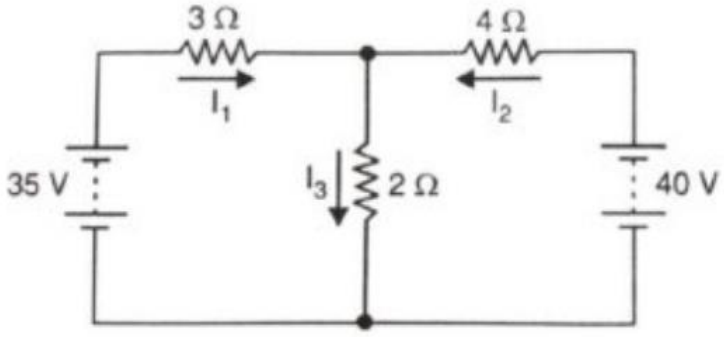
(A) one equation
(B) two equation
(C) three equation
(D) four equation
Answer: - B

11. To solve the circuit shown in Fig. 3.17 by nodal analysis, we require ……



(A) one equation
(B) two equation
(C) three equation
(D) four equation
Answer: - A

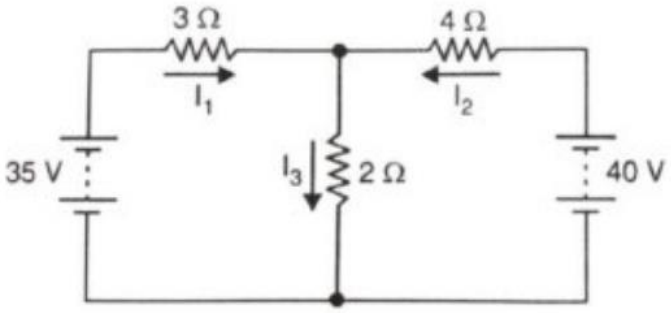
12. To solve the circuit shown in Fig. 3.17 by superposition theorem, we require …….



(A) one circuit
(B) two circuit

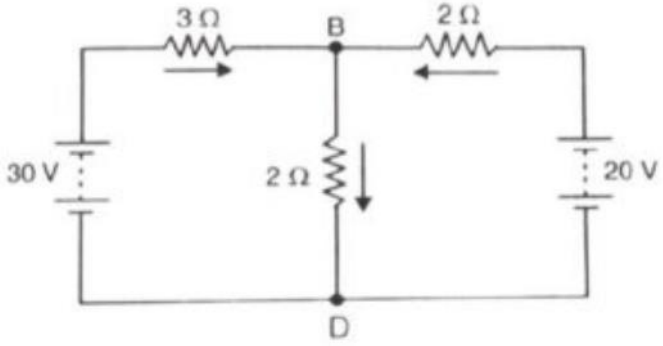
(C) three circuit (D) four circuit
Answer: - B

13. To solve the circuit shown in Fig. 3.17 by Maxwell's mesh current method, we require ……



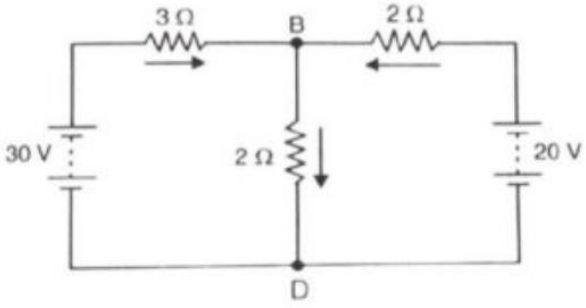
(A) one equation (B) two equation
(C) three equation (D) four equation
Answer: - B

14. In the circuit shown in Fig. 3.18, the voltage at node B with respect to D is calculated to be 15 V. The current in 3 resistors will be ……



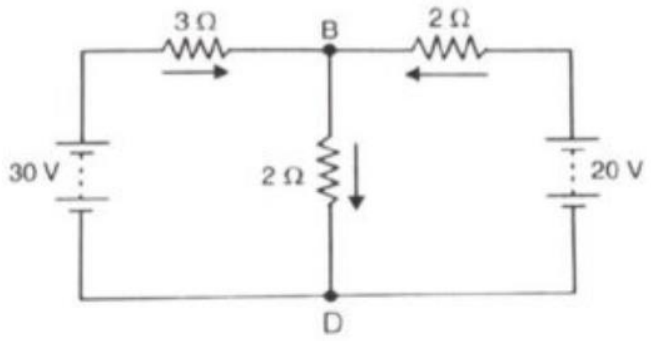
(A) 2 A (B) 5 A
(C) 2.5 A (D) 10 A
Answer: - B

15. The current in 2Ω horizontal resistor in Fig. 3.18 is ……



(A) 2 A (B) 5 A
(C) 2.5 A (D) 10 A
Answer: - C

16 – In order to solve the circuit shown in Fig. 3.18 by nodal analysis, we require

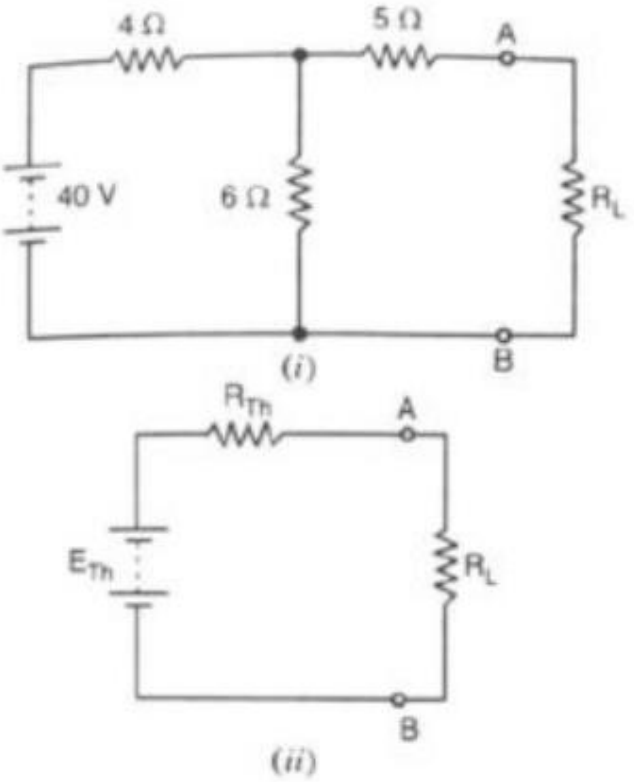


(A) one equation
(B) two equation
(C) three equation
(D) four equation
Answer: - A

17. The superposition theorem is used when the circuit contains ……..

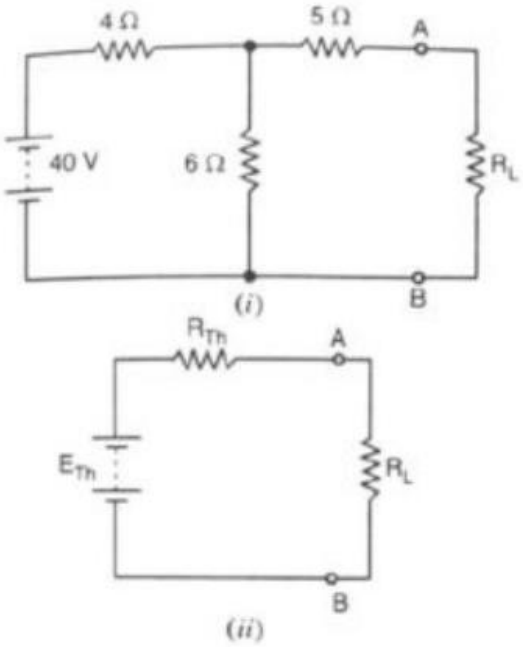
(A) a single voltage sources
(B) a number of voltage sources
(C) passive elements only
(D) none of the above
Answer: - B

18. Fig. 3.19 (ii) shows Thevenin's equivalent circuit of Fig. 3.19 (i). The value of Thevenin's voltage Eth is



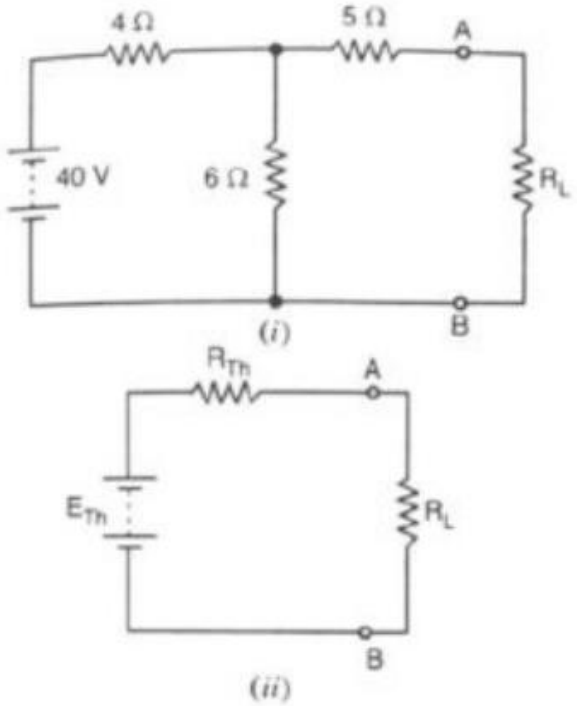
(A) 20 V
(B) 24 V
(C) 12 V
(D) 36 V
Answer: - B

19 -The value of Rtn in Fig. 3.19 (ii) is ……..



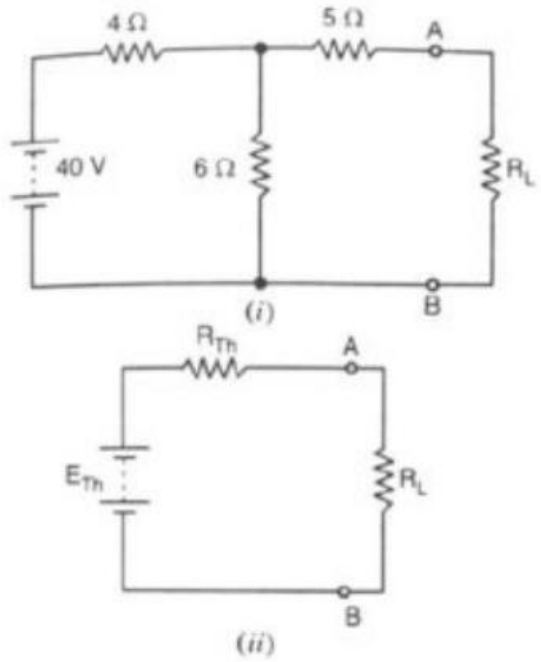
(A) 15Ω
(B) 3.5 Ω
(C) 6.4 Ω
(D) 7.4Ω
Answer: - D

20. The open-circuited voltage at terminals AB in Fig. 3.19 (i) is……..



(A) 20 V
(B) 24 V
(C) 12 V
(D) 36 V
Answer: - B

21. For transfer of maximum power in the circuit shown in Fig. 3.19 (i), the value of RL should be ……



(A) 15Ω
(B) 3.5 Ω
(C) 6.4 Ω
(D) 7.4Ω
Answer: - D

22. Thevenin's theorem is …… form of an equivalent circuit.
(A) voltage
(B) current
(C) both voltage and current
(D) none of the above
Answer: - A

23. Norton's theorem is …… Thevenin's theorem.
(A) the same as
(B) converse of
(C) none of the above
(D) cannot say
Answer: - B

24. In the analysis of a vacuum tube circuit, we generally use…….. theorem
(A) superposition
(B) Norton's
(C) Thevenin's
(D) reciprocity
Answer: - C

25. Norton's theorem is ……. form of an equivalent circuit.
(A) voltage
(B) current
(C) both voltage and current
(D) none of the above
Answer: - B

26. In the analysis of a transistor circuit, we usually use …… theorem.
(A) superposition
(B) Norton's
(C) Thevenin's
(D) reciprocity
Answer: - B

27. Fig. 3.21 (i) shows Norton's equivalent circuit of a network whereas Fig. 3.21 (ii) shows its Thevenin's equivalent circuit. The value of Eth is ……..

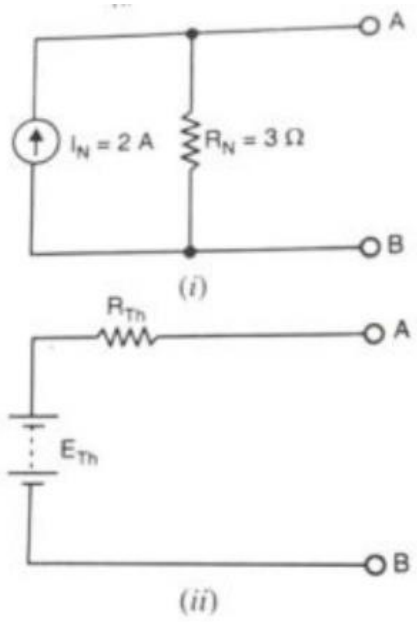


Fig. 3.21

(A) 1.5 V
(B) 0.866 V
(C) 3V
(D) 6V

Answer: - D

28. The value of Rth in Fig. 3.21 (ii) is. …….

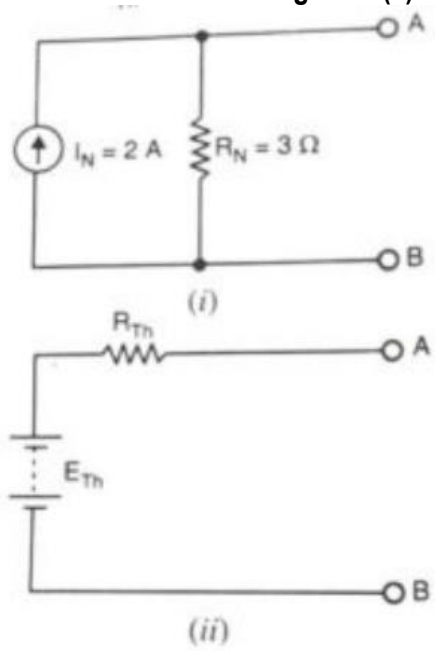


Fig. 3.21

(A) 3Ω
(B) 2Ω
(C) *1.5*Ω
(D)) 6Ω

Answer: - A

29. If in Fig. 3.21 (i), the value of In is 3 A, then value of Eth in Fig. 3.21 (ii) will be ……..

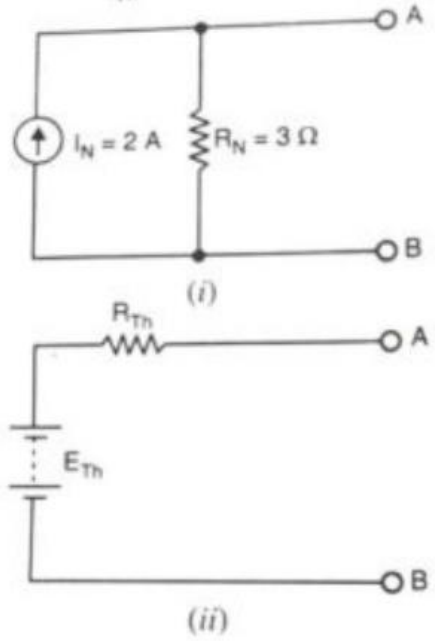


Fig. 3.21

(A) 20 V (B) 24 V
(C) 12 V (D) 09 V
Answer: - D

30. For transfer of maximum power, the relation between load resistance RL and internal resistance Ri of the voltage source is……
(A) $R_L = 2\ R_i$ (B) $R_L = 0.5\ R_i$
(C) $R_L = 1.5\ R_i$ (D) $R_L = R_i$
Answer: - D

31. Under the condition of maximum power transfer, the efficiency is …….
(A) 75% (B) 100%
(C) 50% (D) 25%
Answer: - C

32. The open-circuited voltage at the terminals of load RL is 30 V. Under the condition of maximum power transfer, the load voltage will be ……..
(A) 20 V (B) 24 V
(C) 12 V (D) 15 V
Answer: - D

33. The maximum power transfer theorem is used in ……..
(A) electronic circuits (B) power system
(C) home lighting circuits (D) none of the above
Answer: - A

34. Under the condition of maximum power transfer, a voltage source is delivering a power of 30 W to the load. The power generated by the source is ……..

(A) 45 W (B) 30 W
(C) 60 W (D) 90 W

Answer: - C

35. For the circuit shown in Fig. 3.22, the power transferred will be maximum when R, is equal to ……..

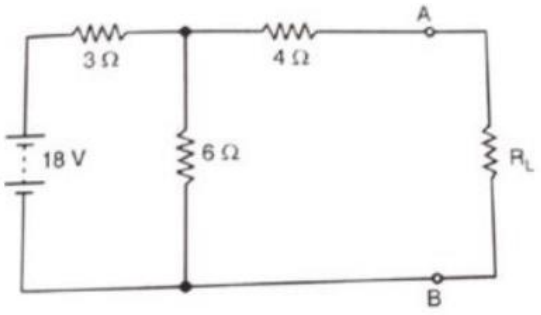


Fig. ? 22

(A) 3Ω (B) 2Ω
(C) *1.5*Ω (D) 6Ω

Answer: - D

36. The open-circuited voltage at terminals AB in Fig. 3.22 is ……

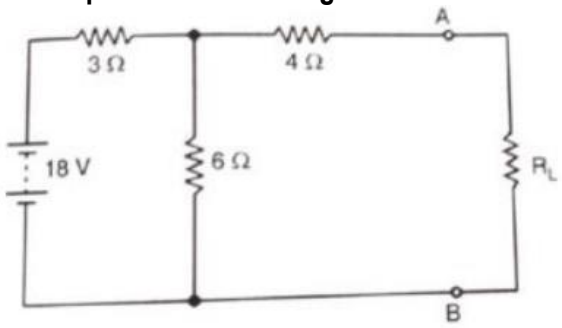


Fig. ? 22

(A) 12 V (B) 6 V
(C) 15 V (D) 9.5 V

Answer: - A

37. If in Fig. 3.22, the value of RL = 6 Ω, then current through RL is ….. …….

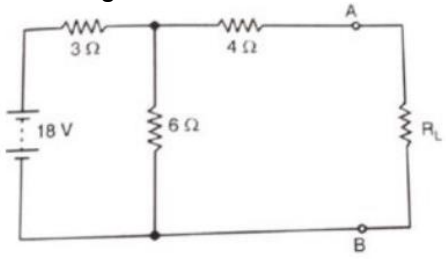


Fig. ? 22

(A) 2 A
(B) 5 A
(C) 2.5 A
(D) 1 A
Answer: - D

38. Under the condition of maximum power transfer, the voltage across RL in Fig. 3.22 is……..

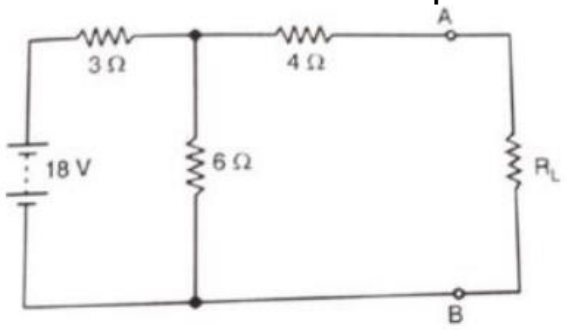


Fig. 3.22

(A) 12 V
(B) 6 V
(C) 15 V
(D) 9.5 V
Answer: - B

39. The output resistance of a voltage source is 4 Ω. Its internal resistance will be……
(A) 3Ω
(B) *4Ω*
(C) *1.5Ω*
(D) 6Ω
Answer: - B

Prepared By Mr. Mandale R. K.	**Verified By** Mr. Lavhate V. J. Module Coordinator	**Re-Verified By** Mr. Patil S. S. Academic Coordinator	**Approved By** Mr. Mandale R.K. HoD EE