

1. Hysteresis is the phenomenon in the magnetic circuit by which

- H lags behind B
- B lags behind H
- B and H are always same
- setting up a constant flux is done

[SSC. (JE)-2014]

2. The flux through each turn of a 1000 turn coil is $(t^3 - 2t) mwh$, where 't' is in seconds. Find the magnitude of the induced emf at $t = 2 s$.

- 10 V
- 0.8 V
- 0.4 V
- 0.2 V

[SSC. (JE)-2014]

3. A circuit has inductance of 2 H. If the circuit current changes at the rate of 10 A/sec, then self-induced emf is

- 5 V
- 0.2 V
- 20 V
- 10 V

[SSC. (JE)-2014]

4. The B – H curve for _____ will be a straight line passing through the origin.

- air
- soft iron
- hardened steel
- silicon steel

[SSC. (JE)-2014]

5. A current of 5mA flows in a resistance less choke from a 200 V alternating source. The energy consumed in the choke is

- 0 J
- 4.4 J
- 500 J
- 1000 J

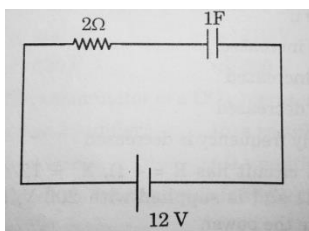
[SSC. (JE)-2014]

6. The Q-factor of a series resonant circuit is given by

- $\frac{1}{R} \sqrt{\frac{L}{C}}$
- $\frac{1}{R} \sqrt{\frac{C}{L}}$
- $\frac{1}{R} \sqrt{1/LC}$
- $\frac{R}{\sqrt{LC}}$

[SSC. (JE)-2014]

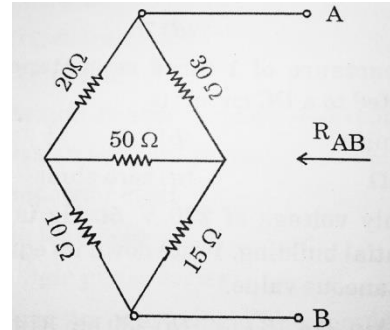
7. For the circuit shown in figure, the voltage across the capacitor during steady state condition is



- 0 V
- 4 V
- 6 V
- 12 V

[SSC. (JE)-2014]

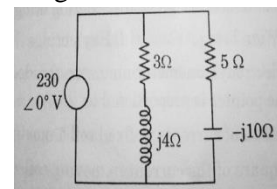
8. Find R_{AB} for the circuit shown in figure.



- 18 Ω
- 30 Ω
- 45 Ω
- 68 Ω

[SSC. (JE)-2014]

9. Calculate the total susceptance of the circuit shown in figure.



- 6.67 S
- 1.87 S
- 0.16 S
- 0.08 S

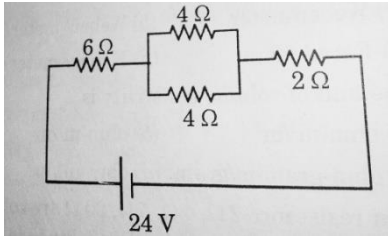
[SSC. (JE)-2014]

10. A 200 W, 200 V bulb and a 100 W, 200 V bulb are connected in series and the voltage of 400 V is applied across the series connected bulbs, Under this condition

- 100 W bulb will be brighter than 200 W bulb
- 200 W bulb will be brighter than 100 W bulb
- Both the bulbs will have equal brightness
- Both the bulbs will be darker than when they are connected across rated voltage

[SSC. (JE)-2014]

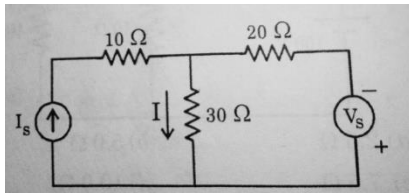
11. In the network shown, if one of the 4Ω resistance is disconnected, when the circuit is active, the current flowing now will



- a) increase very much
- b) decrease
- c) be zero
- d) increase very slightly

[SSC. (JE)-2014]

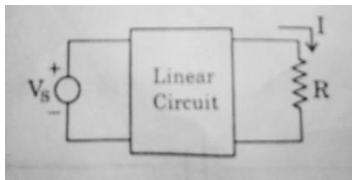
12. For the circuit shown in figure, when $V_s = 0$, $I = 3A$. When $V_s = 200V$, what will be the value of I ?



- a) -4A
- b) -1A
- c) 1A
- d) 7A

[SSC. (JE)-2014]

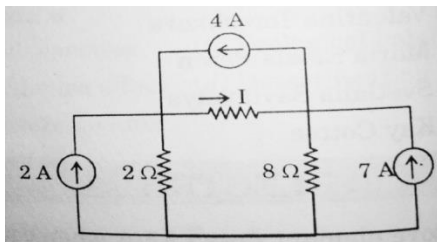
13. For the linear circuit shown in figure, when $R = \infty, V = 20V$;
when $R = 0, I = 4A$;
when, $R = 5\Omega$, the current I is



- a) 1 A
- b) 2 A
- c) 3 A
- d) 4 A

[SSC. (JE)-2014]

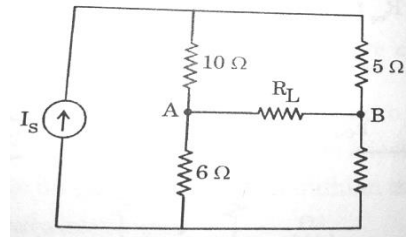
14. The current I in the circuit shown in the figure is



- a) -3.67A
- b) -1A
- c) 4A
- d) 6A

[SSC. (JE)-2014]

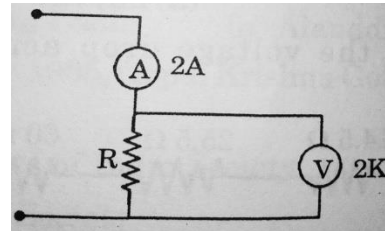
15. In the network shown in the figure, the value of R_L such that maximum possible power will be transferred to R_L is



- a) 5.76 Ω
- b) 6.0 Ω
- c) 10.0 Ω
- d) 15.0 Ω

[SSC. (JE)-2014]

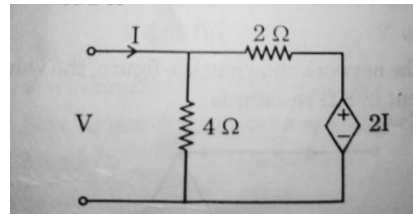
16. A resistance R is measured by ammeter – voltmeter method. The voltmeter reading is 200 V and its internal resistance is 2K. If the ammeter reading is found to be 2A, then value of R is



- a) 105.3 Ω
- b) 100.0 Ω
- c) 95.3 Ω
- d) 90.3 Ω

[SSC. (JE)-2014]

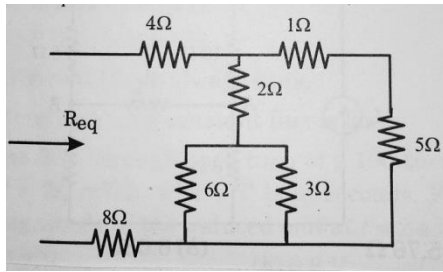
17. The circuit shown in the given figure is equivalent to a load of



- a) 4/3 Ω
- b) 8/3 Ω
- c) 4 Ω
- d) 2 Ω

[SSC. (JE)-2014]

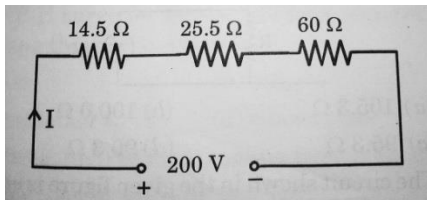
18. The R_{eq} for the circuit shown in figure is



- a) 14.4 Ω b) 14.57 Ω
c) 15.27 Ω d) 15.88 Ω

[SSC. (JE)-2014]

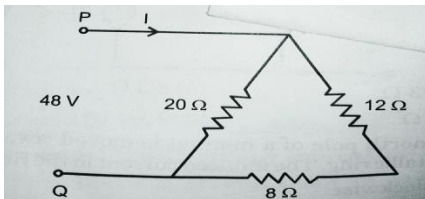
19. Calculate the voltage drop across 14.5 Ω resistance.



- a) 14.5 V b) 18 V
c) 29 V d) 30.5 V

[SSC. (JE)-2014]

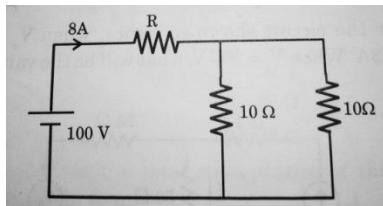
20. For the network shown in the figure, the value of current in 8 Ω resistor is



- a) 4.8 A b) 2.4 A
c) 1.5 d) 1.2 A

[SSC. (JE)-2014]

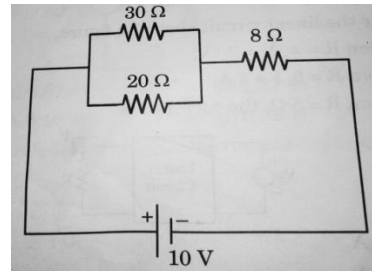
21. In the figure, the value of R is



- a) 2.5 Ω b) 5.0 Ω c) 7.5 Ω d) 10.0 Ω

[SSC. (JE)-2014]

22. Power consumed in the given circuit is



- a) 100 watts b) 5 watts
c) 20 watts d) 40 watts

[SSC. (JE)-2014]

23. A stove element draws 15 A when connected to 230 V line. How long does it take to consume one unit of energy?

- a) 3.45 h b) 2.16 h c) 1.0 h d) 0.29 h

[SSC. (JE)-2014]

24. The SI unit of conductivity is

- a) ohm-m b) ohm/m
c) mho-m d) mho/m

[SSC. (JE)-2014]

25. A piece of oil soaked paper has been inserted between the plates of a parallel plate capacitor. Then the potential difference between the plates will

- a) increase b) decrease
c) remain unaltered d) become zero

[SSC. (JE)-2014]

26. The current drawn by a tungsten filament lamp is measured by an ammeter. The ammeter reading under steady state condition will be _____ the ammeter reading when the supply is switched on.

- a) same as b) less than
c) greater than d) double

[SSC. (JE)-2014]

27. Tesla is same as

- a) Weber/meter b) Weber/(meter)²
c) Farad/meter d) Henry/(meter)²

[SSC. (JE)-2014]

28. The unit of volume resistivity is

- a) ohm-m³/m² b) ohm-m²/m
c) ohm-gram-m/gram d) ohm-m⁴/m³

[SSC. (JE)-2014]

29. Four resistance 2Ω , 4Ω , 5Ω , 20Ω are connected in parallel. Their combined resistance is in parallel. Their combined resistance is

- a) 1Ω b) 2Ω c) 4Ω d) 5Ω

[SSC. (JE)-2014]

30. Two wires A and B have the same cross-section and are made of the same materials. $R_A = 100\Omega$, $R_B = 200$. The number of times B is longer than A is:

- a) 5 b) 6 c) 2 d) 4

[SSC. (JE)-2014]

31. The power factor of an a.c. circuit is given by:

- a) $\frac{R}{Z}$ b) $\frac{X_L}{R}$ c) $\frac{Z}{R}$ d) $\frac{R}{X_L}$

[SSC. (JE)-2014]

32. Two 100 W, 200 V lamps are connected in series across a 200 V supply. The total power consumed by the lamp will be watts:

- a) 200 b) 25 c) 50 d) 100

[SSC. (JE)-2014]

33. The Biot-Savart's law is a general modification of:

- a) Faraday's laws b) Kirchhoff's law
c) Lenz's law d) Ampere's law

[SSC. (JE)-2014]

34. The active and reactive power of an inductive circuit are 60 W and 80 VAR respectively. The power factor of the circuit is:

- a) 0.8 lag b) 0.5 lag
c) 0.6 lag d) 0.75 lag

[SSC. (JE)-2014]

35. The terminal where three or more branches meet is known as:

- a) mesh b) node
c) terminus d) loop

[SSC. (JE)-2014]

36. The voltage across $5-H$ inductor is

$$V(t) = \begin{cases} 30t^2, & t > 0 \\ 0, & t < 0 \end{cases}$$

Find the energy stored at $t = 5 s$.

Assume zero initial current.

- a) 312.5 kJ b) 0.625 kJ

- c) 3.125 kJ d) 156.25 kJ

[SSC. (JE)-2014]

37. The energy stored in the magnetic field of solenoid 30 cm long and 3 cm diameter with 1,000 turns of wire carrying current of 10 A is:

- a) 1.15 J b) 0.015 J
c) 0.15 J d) 0.5 J

[SSC. (JE)-2014]

38. If resistance is 20Ω and inductance is 2 H in a RL series circuit, then time constant of this circuit will be:

- a) 100 s b) 0.001 s
c) 0.1 s d) 10 s

[SSC. (JE)-2014]

39. The mutual inductance between two unity coupled coils of 9 H and 4 H will be:

- a) 36 H b) 2.2 H c) 6 H d) 13H

[SSC. (JE)-2014]

40. The efficiency normally obtained in a circuit under the conditions of maximum power transfer is:

- a) 100% b) 25%
c) 50% d) 75%

[SSC. (JE)-2014]

41. Three resistors, each of 'R' are connected in star. What is the value of equivalent delta connected resistors?

- a) $3R\Omega$ b) $\frac{R}{2}\Omega$
c) $2R\Omega$ d) $\frac{R}{3}\Omega$

[SSC. (JE)-2014]

42. If $10-\mu F$ capacitor is connected to a voltage source with $v(t) = 50\sin 2000tV$, then the current through the capacitor is _____

A.

- a) $10^6 \cos 2000t$ b) $5 \times 10^{-4} \cos 2000t$
c) $\cos 2000t$ d) $500 \cos 2000t$

[SSC. (JE)-2014]

43. In a series resonance circuit, the impedance at half power frequencies is:

- a) $2R$ b) $\frac{R}{\sqrt{2}}$ c) $\sqrt{2}R$ d) $\frac{R}{2}$

[SSC. (JE)-2014]

44. A circuit with a resistor, inductor and capacitor in series is resonant of Hz. If all the component values are now doubled the new resonant frequency is:

- a) $\frac{f_o}{4}$ b) $2f_o$
c) f_o d) $\frac{f_o}{2}$

[SSC. (JE)-2014]

45. A 2 cm long coil has 10 turns and carries a current of 750 mA. The magnetising force of the coil is:

- a) 375 AT/m b) 225 AT/m
c) 675 AT/m d) 450 AT/m

[SSC. (JE)-2014]

46. The rated voltage of a 3-phase power system is given as:

- a) peak line to line voltage
b) rms phase voltage
c) peak phase voltage
d) rms line to line voltage

47. The voltage wave $v = V_m \sin(\omega t - 15^\circ)$ volts is applied across an ac circuit. If the current leads the voltage by 10° and the maximum value of current is I_m , then the equation of current is

- a) $i = I_m \sin(\omega t + 5^\circ)$ amps
b) $i = I_m \sin(\omega t - 25^\circ)$ amps
c) $i = I_m \sin(\omega t + 25^\circ)$ amps
d) $i = I_m \sin(\omega t - 5^\circ)$ amps

[SSC. (JE)-2013]

48. The average value of current (I_{av}) of a sinusoidal wave of peak value (I_m) is

- a) $I_{av} = \frac{I_m}{2}$ b) $I_{av} = \frac{\pi}{2} I_m$
c) $I_{av} = \frac{2}{\pi} I_m$ d) $I_{av} = \frac{I_m}{\sqrt{2}}$

[SSC. (JE)-2013]

49. The emf induced in a coil is given by

$$e = -N \frac{d\phi}{dt}$$

Where e is the emf induced, N is the number of turns and $d\phi$ is the instantaneous flux linkage with the coil in time dt .

The negative sign in the expression is due to

- a) Hans Christian Oersted
b) Andre-Marie Ampere
c) Michale Faraday
d) Emil Lenz

[SSC. (JE)-2013]

50. The mutual inductance between two coils having self inductances 3 henry and coupling coefficient 0.85 is

- a) 12.75 henry
b) 2.55 henry
c) 0.425 henry
d) 1.7 henry

[SSC. (JE)-2013]