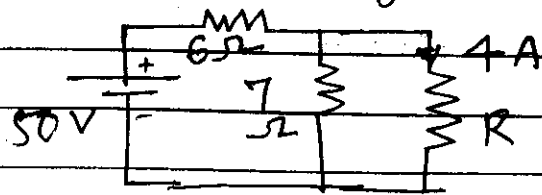


choose the correct answer.

EE-Depth.

① In the fig. given below the value of R is



Ⓐ 3.5Ω

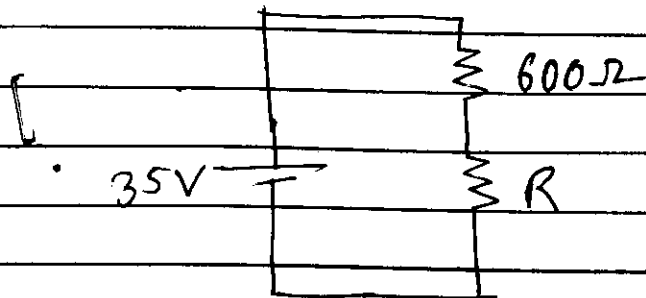
Ⓑ 2.5Ω

Ⓒ 1.0Ω

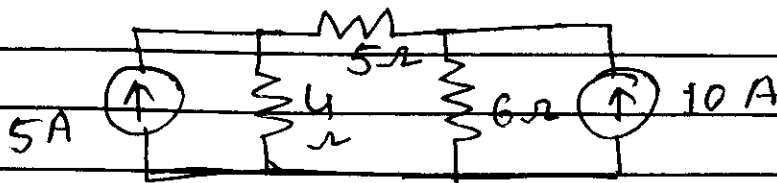
Ⓓ 4.5Ω

② A $35V$ source is connected to a series circuit of 600Ω and R as shown. If a voltmeter of internal resistance $1.2k\Omega$ is connected across 600Ω resistor, it reads $5V$. The value of R is

Ⓐ $1.2k\Omega$ Ⓑ $2.4k\Omega$ Ⓒ $3.6k\Omega$ Ⓓ $7.2k\Omega$

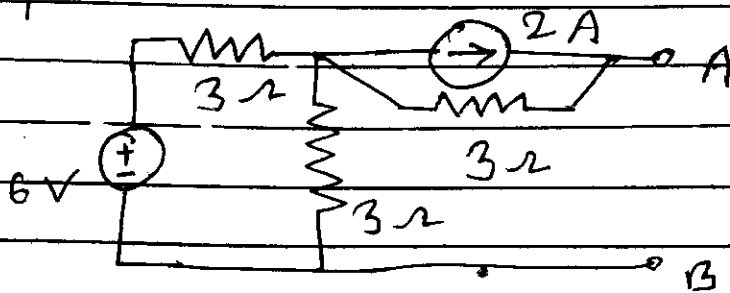


③ Current flowing through 5Ω resistor in the ckt. shown is



Ⓐ $3.67A$ Ⓑ $4.67A$ Ⓒ $2.67A$ Ⓓ $1.67A$

④ For the circuit shown in fig. the Norton equivalent source current value is



Ⓐ $1A$

Ⓑ $2A$

Ⓒ $3A$

Ⓓ $4A$

⑤ Ideal voltage source should have

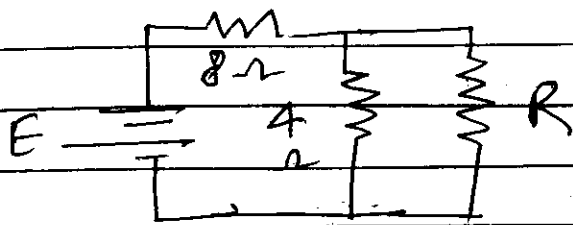
Ⓐ zero internal resistance

Ⓑ infinite internal resistance

Ⓒ large value of emf

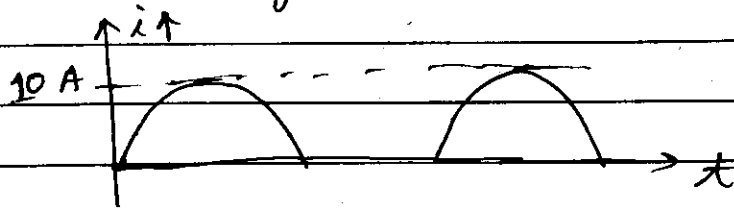
Ⓓ low value of current

6) What should be the value of R in the circuit shown if it has to absorb the maximum power from the source?



- (a) 8Ω
 (b) 4Ω
 (c) $3/8 \Omega$
 (d) $8/3 \Omega$

7) Average value for the waveform shown



- (a) 1.18 A
 (b) 2.18 A
 (c) 3.18 A
 (d) 4.18 A

8) Form factor is the ratio of

- (a) Peak value to RMS value.
 (b) RMS value to Peak value
 (c) RMS value to Average value
 (d) Average value to RMS value.

9) A 100 ohm resistance is carrying a sinusoidal current given by $3 \cos \omega t$. The value of average power is

- (a) 900 W (b) 300 W (c) 450 W (d) 0 W

10) For a series RLC circuit, the power factor at the lower power frequency is

- (a) 0.5 lagging (b) 0.5 leading
 (c) unity (d) 0.707 leading

11) An R-L-C series circuit has f_1 and f_2 as the half power frequencies and f_0 as the resonant frequency. The Q-factor of the circuit is given by

- (a) $\frac{f_1 + f_2}{2f_0}$ (b) $\frac{f_1 - f_0}{f_2 - f_0}$
 (c) $\frac{f_0}{f_1 - f_2}$ (d) $\frac{f_1 - f_2}{f_0}$

(12) A choke coil of inductance L and series resistance R is shunted by a capacitor C . The dynamic impedance of the resonant circuit would be

a) $\frac{R}{LC}$

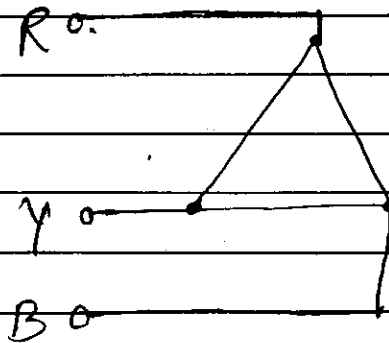
b) $\frac{C}{RL}$

c) $\frac{L}{RC}$

d) $\frac{1}{RLC}$

(13) The phase sequence of the 3-phase system shown in given figure is

- a) RYB
- b) RBY
- c) BRY
- d) YBR



(14) The rated voltage of a 3-phase power system is given as

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

(15) An alternator is delivering power to a balanced load at unity pf. The phase angle between the line voltage and the line current is

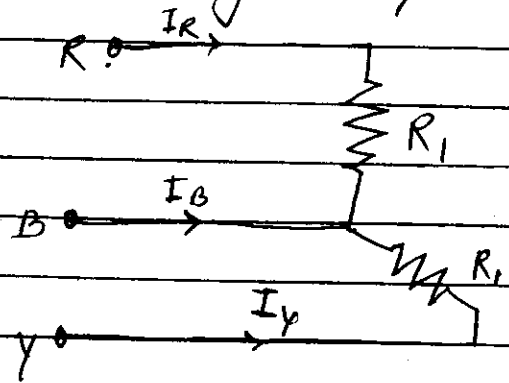
- a) 90°
- b) 60°
- c) 30°
- d) 0°

(16) A 3-phase, star-connected balanced load consumes P watts of power from a 400V (line-to-line voltage) supply. If the same load is connected in delta across that same supply, what is the power consumption?

- (a) $\frac{P}{3}$ W
- (b) P W
- (c) $\sqrt{3} P$ W
- (d) $3 P$ W

17) For the three-phase circuit shown in the fig. the ratio of the currents $I_R : I_Y : I_B$ is given by

- a) $1 : 1 : \sqrt{3}$
- b) $1 : 1 : 2$
- c) $1 : 1 : 0$
- d) $1 : 1 : \sqrt{3/2}$



18) While measuring power in a three phase load by two-wattmeter method, the readings of the two wattmeters will be equal and opposite when

- a) Pf is unity
- b) load is balanced
- c) phase angle is between 60° and 90°
- d) the load is purely inductive

19) A moving coil galvanometer is made into a dc-ammeter by connecting

- a) a low resistance across the meter
- b) a high resistance in series with the meter
- c) a pure inductance across the meter
- d) a capacitor in series with the meter

20) Transmission line connects

- a) generating station to a switching station / stepdown transformer station.
- b) stepdown transformer station to service transformer banks
- c) distribution transformer to consumer premises.
- d) service points to consumer premises.

21) feeder is designed to mainly from the point of view of

- a) its current carrying capacity
- b) voltage drop in it.
- c) operating voltage
- d) operating frequency.

(22) The conductance of electrical circuit is analogous in magnetic circuit by (3)

- a) flux b) reluctance c) permeance d) relative permeability

(23) When two coils having self inductances of L_1 and L_2 are coupled through a mutual inductance M , the coefficient of coupling, K is given by

a) $K = \frac{M}{\sqrt{L_1 L_2}}$ b) $K = \frac{M}{L_1 L_2}$ c) $K = \frac{2M}{\sqrt{L_1 L_2}}$ d) $K = \frac{L_1 L_2}{M}$

(24) Area of hysteresis loop represents

- a) copper loss b) eddy current loss c) hysteresis loss

(28) The losses in a transformer are:

~~I~~ copper loss ~~II~~ eddy current loss ~~III~~ hysteresis loss

- (a) I only (b) I and II only (c) II and III only
d) I, II and III

(26) If P_c and P_{sc} represent core and full-load ohmic losses respectively, the maximum kVA delivered to load corresponding to maximum efficiency is equal to rated kVA multiplied by

(a) $\frac{P_c}{P_{sc}}$ (b) $\sqrt{\frac{P_c}{P_{sc}}}$ (c) $\left(\frac{P_c}{P_{sc}}\right)^2$ (d) $\left(\frac{P_{sc}}{P_c}\right)^2$

(27) Wave winding is employed in a dc machine of

- a) high current and low voltage rating.
b) low current and high voltage rating.
c) high current and high voltage rating.
d) low current and low voltage rating.

(28) The mmf produced by the current of a 3-phase induction motor

- a) rotates at the speed of rotor in the air gap.
- b) is stand still with respect to stator mmf.
- c) rotates at slip speed with respect to stator mmf.
- d) rotates at synchronous speed with respect to rotor.

29) An induction motor having 8 poles runs at ~~725~~ 727.5 rpm. If the supply frequency is 50 Hz, the emf in the rotor will have a frequency of

- a) 1.5 Hz
- b) 48.5 Hz
- c) 5.15 Hz
- d) 75 Hz.

(30) For a slip-ring induction motor, if the rotor resistance is increased, then

- a) starting torque and efficiency increase.
- b) starting torque decreases but efficiency increases.
- c) starting torque increases but efficiency decreases.
- d) starting torque and efficiency decrease.

(31) Breakdown torque of a 3-phase induction motor of negligible stator impedance is

- a) directly proportional to the rotor resistance.
- b) inversely proportional to the rotor resistance.
- c) directly proportional to the reactance.
- d) inversely proportional to the rotor leakage reactance.

(32) Compared to a resistor split phase motor a capacitor start motor has

- a) high starting torque (b) lower starting torque
- c) higher running torque (d) lower running torque.