[20 Q x 0.5 =10 marks]

1. The current through 5 KΩ resistor is _____ mA when the power dissipated by that resistor is 20 mW.
   [a] 2 [b] 4 [c] 6 [d] 8

2. The value of I for the circuit of figure 1 is _____ mA
   [a] 1.8 [b] -1.8 [c] -3.6 [d] 3.6

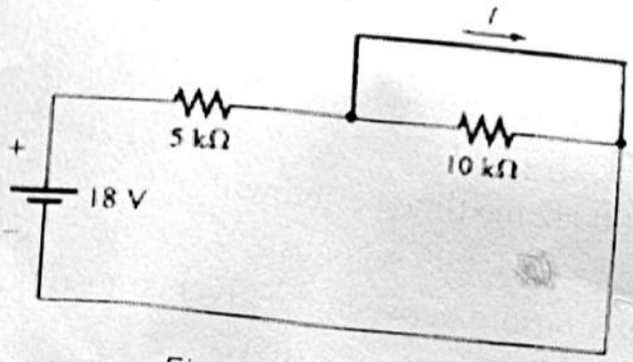

Figure 1

3. For a star network of three equal resistors, the value of each resistor of the equivalent delta network is equal to _____ times the value of any resistor of the star network.
   [a] 1/3 [b] 3 [c] 1/2 [d] 2

4. The power mentioned on the name plate of an electric motor indicates _____
   [a] the power drawn in KW [b] the power drawn in kVA
   [c] the gross power [d] the output power at the shaft

5. 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°

6. The inductance needed to resonance at 5 kHz with a capacitance of 12 nF is _____.
   [a] 2652 H [b] 3.333 H [c] 11.844 H [d] 84.43 mH

7. A 20 W FM radio connected in a car with a 6 V battery is to be moved to a new car with a 12V battery. The value of resistor that should be connected in series with the radio to limit the current is _____ Ω.
   [a] 1.8 [b] 7.2 [c] 3.6 [d] 4.2

8. The magnitude of voltage across resistor is _____ in the circuit of figure-2.
   [a] 33.33V [b] 60V [c] 80 V [d] 100 V

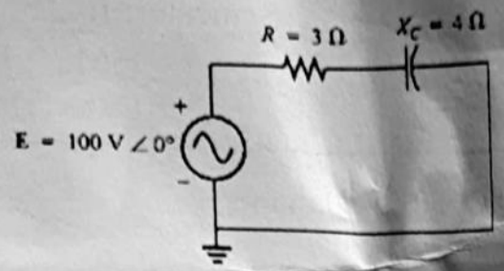

Figure2

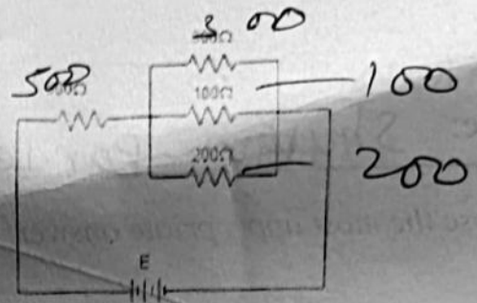

Figure 2

9. For maximum power transfer to the load, the value of load resistance (R_L) should be _____.
   [a] maximum [b] minimum [c] R_{TH} [d] $4R_{TH}$
10. The current across the short circuit is _____.
   [a] zero [b]negative [c] maximum [d] minimum
11. For any value of battery voltage, E in the figure-3 the smallest current will flow in the resistance of _____.
   [a] 300 Ω [b] 500 Ω [c] 100 Ω [d] 200 Ω
12. For a frequency of 200 Hz the time period will be_____.
   [a] 0.05 seconds [b] 0.005 seconds [c] 0.5 seconds [d] 0.0005 seconds
13. What is the phase relationship between the given sinusoidal waveforms?
   V= 10 sin (ωt + 30°) and I = 5 sin (ωt - 70°)
   [a] V leads I by 70° [b] I leads V by 30° [c] V leads I by 100° [d] I leads V by 100°
14. The apparent power drawn by an AC circuit is 10kVA and active power is 8KW. The reactive power in the circuit is _____.
   [a] 2 kVAR [b] 6 kVAR [c] 8 kVAR [d] 10 kVAR
15. The peak value of a sine wave is 200 V. The RMS value is _____.
   [a] 127.7 V [b] 200 V [c] 82.8 V [d] 141.4 V
16. A series R-L-C circuit has a series resonating frequency of 12,000 Hz. If R = 5 Ω and if X_L at resonance is 300 Ω, the bandwidth is _____.
   [a] 200 Hz [b] 60 Hz [c] 40 Hz [d] 8 Hz
17. You have to connect 1500 Ω resistor in a circuit but you have some 1000 Ω resistors only, how would you connect 1000 Ω resistors to obtain 1500 Ω?
   [a] 2 in parallel [b] 2 in parallel and 1 in series
   [c] 2 in series [d] 2 in series and 1 in parallel
18. In a resonant circuit, the resonant frequency bisects the bandwidth if quality factor (Q) is _____.
   [a] less than 10 [b] not equal to 10
   [c] greater than or equal to 10 [d] equal to 0
19. If the load has a capacitive reactance,
   [a] then θ is positive and the current lags voltage
   [b] then θ is negative and the current lags voltage
   [c] then θ is positive and the current leads voltage
   [d] then θ is negative and the current leads voltage
20. Which of the following statement is correct for the balanced three phase star connected system
   [a] $V_L = V_\varphi$ and $I_\varphi = I_L$ [b] $V_L = \sqrt{3}\,V_\varphi$ and $I_\varphi = I_L$
   [c] $V_L = V_\varphi$ and $\sqrt{3}I_\varphi = I_L$ [d] $V_L = V_\varphi$ and $I_\varphi = \sqrt{3}I_L$