Section-A

1.Write the V-I relations of a Resistor.
2.Write the V-I relations of an Inductor .
3.Write the V-I relations of a Capacitor.
4.Sktech the V-I characteristics of a Resistor.
5.Sktech the V-I characteristics of an Inductor .
6.Sktech the V-I characteristics of a Capacitor.
7.Identify the number of Branchesn in the circuit shown in Fig. 4.

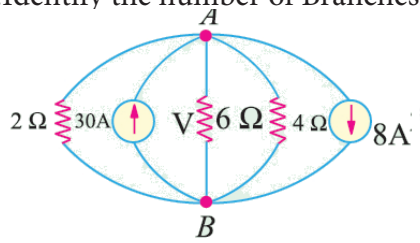

Fig.4

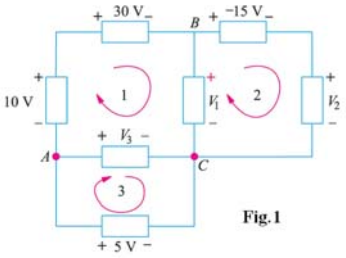

Fig.1

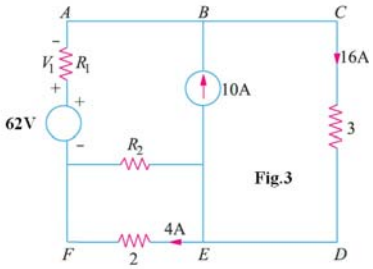

Fig.3

8.Identify the number of Nodes in the circuit shown in Fig.1.
9.Identify the number of Meshes in the circuit shown in Fig. 3.
10. Identify the number of loops in the circuit shown in Fig.3.
11.Mention the Form factor and Peak factor of the Sinusoidal signal.
12.Mention the Form factor and Peak factor of the Cosine signal.
13.Mention the Form factor and Peak factor of the Square wave signal.
14.Mention the Form factor and Peak factor of theTriangular signal.
15.Define Impedance and Reactance.
16.Mention the value of power factor in a series resonance circuit at resonance frequency.
17.Mention the value of power factor in a series resonance circuit below resonance frequency.
18.Mention the value of power factor in a series resonance circuit above resonance frequency.
19.Mention the impedance in a series resonance circuit below resonance frequency.
20.Mention the impedance in a series resonance circuit at resonance frequency.
21.Mention the impedance in a series resonance circuit above resonance frequency.

Section-B

1.State and explain Kirchoff's laws.
2.State and explain Maximum Power transfer theorem.
3.State and explain Maximum Norton's theorem.
4.State and explain Maximum Thevenin's theorem.
5.State and explain Superposition theorem.
6.List out differences between ideal and real voltage sources.
7.List out differences between ideal and real current sources.
8.List out differences between Mesh and Nodal analysis.
9.List out the steps followed in Mesh analysis.
10.List out the steps followed in Nodal analysis.
11.List out the steps followed to find Thevenin's theorem.
12.List out the steps followed to find Norton's theorem.
13. Two sinusoidal signals i1=100Sin100t and i2=200Cos(100t+30°). Calculate $i = i_1 + i_2$
14.Two sinusoidal signals i1=100Cos100t and i2=200Sin(100t+30°). Calculate $i = i_1 - i_2$
15.Two sinusoidal signals i1=100Sin100t and i2=200Sin(100t+30°). Calculate $i = i_1 * i_2$
16.Two sinusoidal signals i1=100Cos100t and i2=200Cos(100t+30°). Calculate$ei = i_1 \div i_2$
17.Two sinusoidal signals i1=100Sin100t and i2=200Cos(100t+30°). Calculate$ei = (i_1 * i_2)^3$
18. Showthat in pure resistor ac current and voltages are in same phase.
19. Showthat in pure inductor ac current lags over voltage by 90° phase.
20. Showthat in pure capacitor ac current leads over voltage by 90° phase.

Section-C

1.A 50μF capacitor is connected across a 230V, 50Hz supply. Calculate (a) the reactance offered by the capacitor (b) the maximum current (c) the r.m.s. value of the current drawn by the capacitor (d) the maximum energy stored in the capactitor and (e) plot the current and voltage waveforms.
2.For a series R-L-C circuit the inductor is variable. Source voltage is 283sin100πt. Maximum current obtainable by varying the inductance is 0.314 A and the voltage across the capacitor then is 300V. Find the circuit element values, resonance frequency, Q-factor and bandwidth of the circuit.
3.A series circuit with R = 1kΩ, L = 100 mH and C = 10pF is supplied with 100V,50 Hz. Determine the impedance, current, power factor, resonance frequency, Q-factor and bandwidth of the circuit.
4.A series circuit with R = 100Ω, L = 10 mH and C = 10nF is supplied with 230V,50 Hz. Determine the impedance, current, power factor resonance frequency, Q-factor and bandwidth of the circuit.
5. A 10mH inductor is connected across a 230V, 50Hz supply. Calculate (a) the reactance offered by the inductor (b) the maximum current and (c) the rms value of the current drawn by the inductor (d) the maximum energy stored in the inductor and (e) plot the current and voltage waveform.
6. A 1mH inductor and a 1μFcapacitor are connected in series with a 230V, 50Hz supply. Calculate (a) the reactance offered by the inductor (b) the maximum current and (c) the rms value of the current drawn by the inductor (d) the maximum energy stored in the inductor and (e) plot the current and voltage waveform.
7.Using Thevenin's theorem find the current flowing through the 8Ω resistor of the network shown in Fig.a.

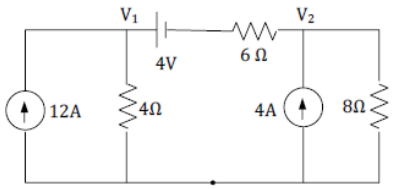

Fig.a

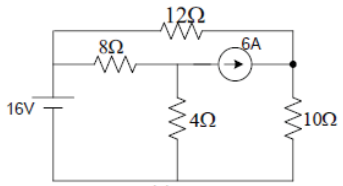

Fig.b

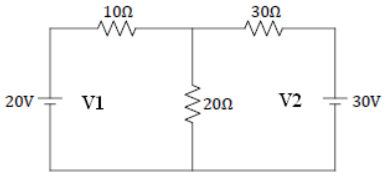

Fig.c

8.Using Norton's theorem find the current flowing through the 10Ω resistor of the network shown in Fig.b
9.Using Superposition theorem find the current flowing through the 20Ω resistor of the network shown in Fig.c
10.Using Mesh analysis determine the currents in 4Ω, 6 Ω and 8Ω resistor of the network shown in Fig.a.
11.Using Nodal analysis determine the currents in 4Ω, 6 Ω and 8Ω resistor of the network shown in Fig.b.
12. In the circuit shown in below (a) obtain the condition from maximum power transfer to the load R_L. Hence determine the maximum power transferred.