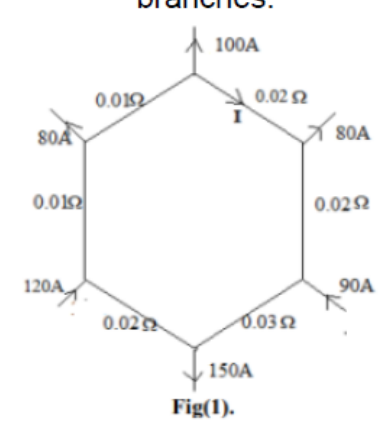
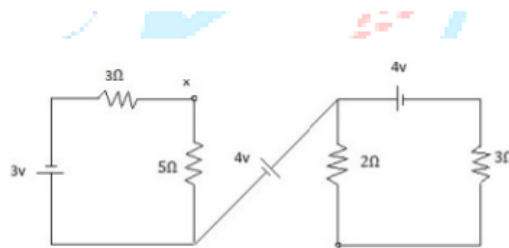
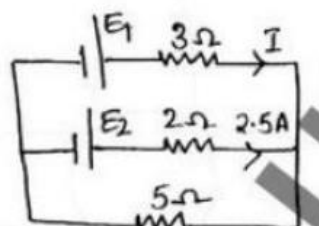


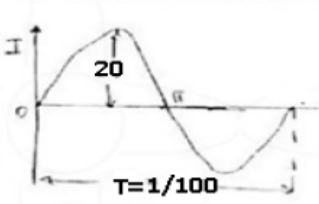
UNIT 1

Theory questions and Numerical questions

THEORY QUESTIONS		
SL NO	QUESTIONS	MARKS
1.	State and explain Kirchhoff's Laws. With example.	6
2.	With graphical representation state and explain Ohm's Law.	5
3.	State Ohm's law. Mention its limitation.	5
4.	With an example explain Current divider rule.	5
5.	With an example explain Voltage divider rule.	5
6.	State the characteristics of series and parallel circuits.	6
7.	Sketch the sinusoidal alternating waveform and define: Instantaneous value, waveform, Cycle, Frequency, Time period	6
8.	Define average value of an alternating quantity. Obtain the relation between average value and the maximum value.	6
9.	Define effective or R.M.S value of an alternating quantity. Obtain the relation between R.M.S value and the maximum value.	6
10.	Define Peak factor, Form factor, Power & Energy.	6
11.	Show that the rms value of current is equal to 0.707 times the maximum value.	8
12.	Derive an expression for the voltage and current and power for a pure Resistive or Inductive or Capacitive circuit when excited by sinusoidal voltage	8
13.	With phasor diagram obtain the voltage, current relations in pure capacitor (or) pure inductive circuit and also Show that average power consumed in capacitive circuit is zero.	8
14.	Derive an expression for the impedance of an ac circuit consisting of a resistance, inductance and capacitance (R-L-C) connected in series.	8
15.	What is meant by power factor in ac circuit? State its significance.	6
16.	Define 1) Active Power 2) Reactive power 3) Apparent power	6

NUMERICAL QUESTIONS

1.	<p>For given network Shown in Fig (1). Find the Current in various the branches.</p>  <p style="text-align: center;">Fig(1).</p>	8
2.	<p>A current of 20A flows through two ammeters A and B in series. The potential difference across A is 0.2V and across B is 0.3V. Find how the same current will divide between A and B when they are in parallel.</p>	6
3.	<p>A circuit consist of two parallel resistors having resistances of 20Ω and 30Ω respectively connected in series with a 15Ω resistor .If current through 15Ω resistor is 3A, Find(i).Current through the branches. (ii)Voltages across whole circuit. (iii)Power consumed by 20Ω and 15Ω resistors.</p>	6
4.	<p>Find the potential difference between XY for the network shown in Fig (2).</p> 	6
5.	<p>Find E_1, E_2 and I when the power dissipated in the 5Ω resistor is 125W (Ref. Fig.3)</p>  <p style="text-align: center;">Fig.3</p>	8
6.	<p>Two 12V batteries with internal resistances 0.2Ω and 0.25Ω respectively are joined in parallel and a resistance of 1Ω is placed</p>	6

	across the terminals. Find the current supplied by each battery.	
7.	An Equation of an alternating current is given by $i=42.42\sin 628t$ calculate the maximum value, Frequency, RMS value, Average value, Form factor & Peak factor.	6
8.	The equation for an AC voltage is given as $V = 0.04 \sin(200t + 60^\circ)V$. Determine the frequency, the angular frequency . Instantaneous voltage when $t = 160 \mu\text{sec}$. What is the time represented by a 60° phase angle.	6
9.	Given $V=200\sin 377$ volts and $I=8\sin (377t-30^\circ)$ Amps for ac circuit, Evaluate power factor, True power, Apparent power and Reactive power indicate the unit of power calculated.	6
10.	For the current waveform shown in Fig. Find i) Peak current ii) Average value iii) Periodic time iv) Frequency v) Instantaneous value at $t = 3\text{ms}$. 	6
11.	A series circuit with resistance of 10 ohms inductance of 0.2H and capacitance $40\mu\text{F}$ is supplied with a 100V supply at 50Hz. Find current, power and power factor.	8
12.	An inductor coil is connected to supply of 250v at 50 Hz and takes a current of 5amp. The coil dissipates 750watts calculate Power, power factor, resistance and inductance of coil.	8
13.	A series RLC circuit with 100Ω , $25\mu\text{F}$ and 0.15H is connected across 415V, 50Hz AC supply. Calculate i) impedance ii) current iii) power factor iv) voltage drop across inductor and capacitor.	8