



Acharya Institute of Technology
 Holadevannahalli, Bangalore-560107
Department of Electrical & Electronics Engineering
INTERNAL ASSIGNMENT - I (2018-19 Odd Sem.)

Sub with Code: Basic Electrical Engineering (18ELE13)

Semester: I

Max Marks: 50

Note: All questions carry equal marks

DATE: 17/10/2018

Time: 90 min

Qn. No.	Question	CO addressed
1. a)	State Ohm's Law and mention its limitations.	CO1
b)	State Kirchoff's current Law and Kirchoff's voltage Law with example.	CO1
OR		
2. a)	Define R.M.S value, Average value, peak factor and form factor of an alternating quantity.	CO1
b)	List the advantages of three phase system.	CO1
3. a)	Find i) current in the $15\ \Omega$ resistor, ii) voltage across $18\ \Omega$ resistor and iii) Power dissipated in the $7\ \Omega$ resistors for the circuit shown in Fig.1.	CO3
<p style="text-align: center;">Fig.1</p>		CO3
b)	Find the value of resistance 'R' as shown in fig.2 so that current drawn from the source is 250mA.	CO3
<p style="text-align: center;">Fig.2</p>		CO3
OR		
4. a)	For the bridge circuit shown in fig 3. Calculate current in all the branches and power consumed in the circuit.	CO3
b)	Calculate the currents in the network shown in fig 4. Using branch currents method.	CO3

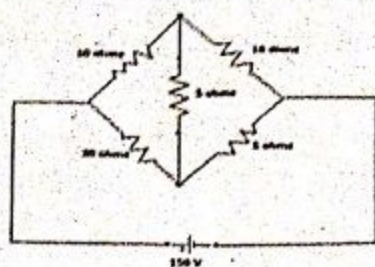


Fig.3

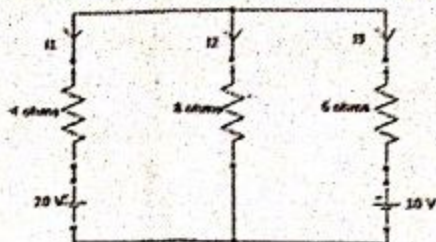


Fig.4

5.	Show that the average power consumed in a purely inductive circuit is zero. Draw the voltage, current and power waveform.	CO2
OR		
6.	Show that an R-C series circuit takes a leading current. Draw the phasor diagram indicating the supply voltage, current and the two voltage drops.	CO2
7. a)	Two impedances $(150-157j) \Omega$ and $(100+110j) \Omega$ are connected in parallel across 200V, 50Hz supply. Find branch currents, total current and power consumed in the circuit. Draw the phasor diagram.	CO3
b)	A series circuit with a resistor of 100Ω , capacitor of $25\mu\text{F}$ and inductance of 0.15 H is connected across 220 V, 50Hz supply. Calculate impedance, current, power and power factor of the circuit.	CO3
OR		
8. a)	Compute power, power factor and line current in a balanced 3 phase star connected system drawing power from 440 V supply in which two wattmeter connected indicate $W_1 = 5\text{kW}$ and $W_2 = 1.2\text{kW}$.	CO3
b)	A balanced 3-phase star connected load of 150kW takes a leading current of 100A , with a line voltage of 1100 V , 50 Hz . Find the circuit constants of the load per phase.	CO3
9.	Show that in a 3- Φ star- connected, the line voltages is $\sqrt{3}$ times of the phase voltage. Also indicate the equation for three phase power.	CO2
OR		
10.	Show that in a balanced 3- Φ circuit, two watt meters are sufficient to measure the 3- Φ power. Also develop an expression for power factor in terms of wattmeter readings.	CO2