Assignments for

Basics Electrical Engineering (3110005)

B.E. Semester 1st and 2nd (All Branches)

Directorate of Technical Education, Gandhinagar, Gujarat

L. D. College, Ahmedabad
Certificate

This is to certify that Mr./Ms. _____

_____ Enrollment No. _____ of B.E. Semester _____

Electrical Engineering of this Institute (GTU Code: 028) has satisfactorily completed the Practical / Tutorial work for the subject **Basics Electrical Engineering (3110005)** for the academic year 2022-23.

Place: _____

Date: _____

Name and Sign of Faculty member

Head of the Department

Assignments – Course Outcome matrix

Course Outcomes (COs):
CO-1 : Apply fundamental electrical laws and circuit theorems to electrical circuits.
CO-2 : Analyze single phase and three phase AC circuits.
CO-3 : Describe operating principle and applications of static and rotating electrical machines.
CO-4 : Comprehend electrical installations, their protection and personnel safety.

| Sr. No.	Objective(s) of Experiment	CO1	CO2	CO3	CO4
1.	Assignment-1	√			
2.	Assignment-2		√		
3.	Assignment-3			√	
4.	Assignment-4				√

Index
(Progressive Assessment Sheet)

| Sr. No.	Objective(s) of Experiment	Page No.	Date of perform ance	Date of submiss ion	Assessme nt Marks	Sign. of Teacher with date	Remar ks
1	Assignment-1						
2	Assignment-2						
3	Assignment-3						
4	Assignment-4						
	Total						

Assignment-1:

Date:

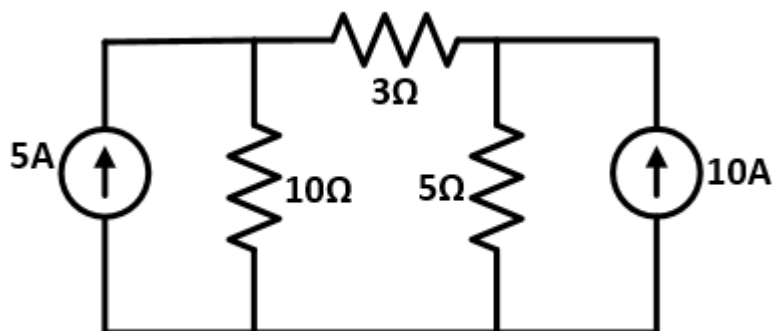**Relevant CO:** Apply fundamental electrical laws and circuit theorems to electrical circuits.

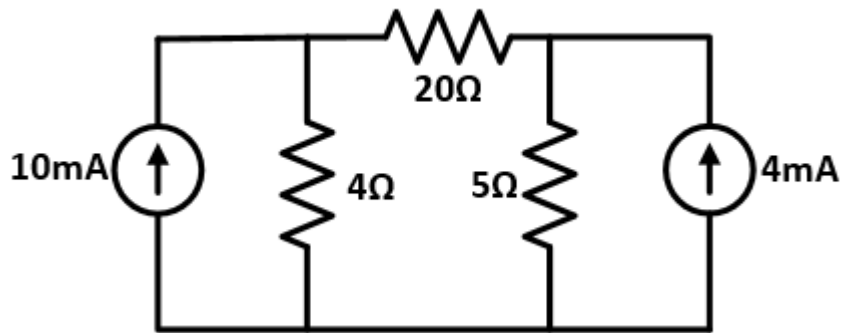1) Find the current delivered by battery in the given circuit.
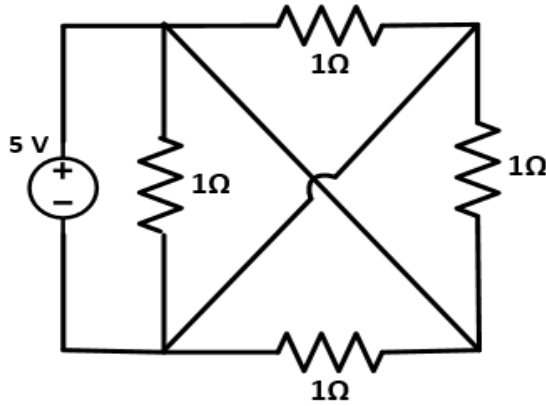
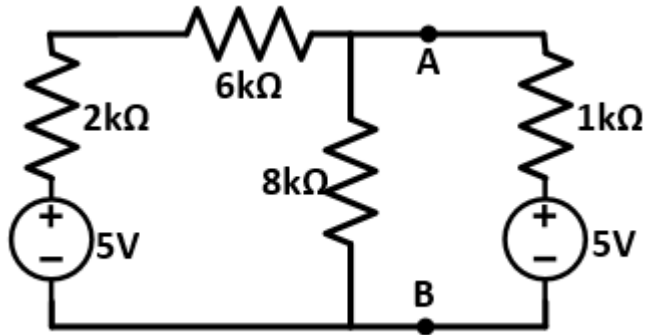2) Find the equivalent resistance between A & B for given circuit.
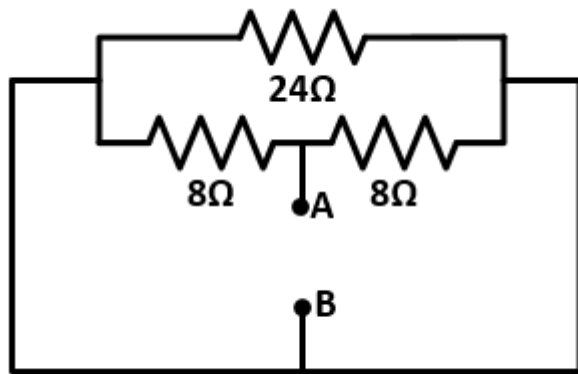
3) Derive equations for star to delta transformations.
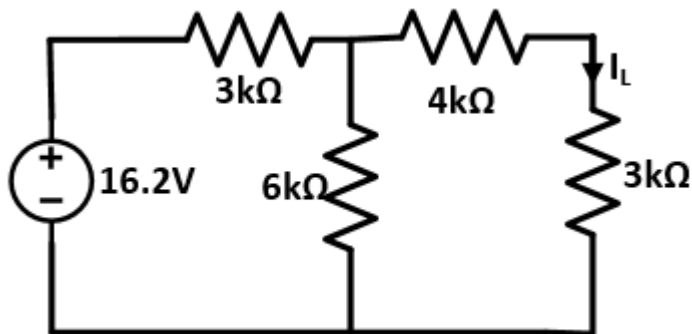4) Determine the current in each branch using the Nodal analysis for given circuit.

5) Using superposition theorem, calculate branch current I_{20}.

6) Determine thevenin's equivalent circuit between terminal A & B.

7) Find I_L using Norton's theorem for given circuit.

8) An initially uncharged capacitor is in series with resistor and connected to dc supply at t=0. State their expression and define the time constant.

Rubric wise marks obtained:

5=Excellent	4=Very Good	3=Good	2=Fair	1=Needs more work	
Rubrics	Knowledge	Calculations	Writing skills	Journal work and submission	Total
Marks					

Assignment-2

Date:

Relevant CO: Analyze single phase and three phase AC circuits.

1) A coil takes a current of 10.0 A and dissipates 1410 W when connected to a 230 V, 50 Hz sinusoidal supply. When another coil is connected in parallel with it, the total current taken from the supply is 20.0 A at a power factor of 0.866. Determine the current and the overall power factor when the coils are connected in series across the same supply.

2) A circuit, having a resistance of 4.0 Ω with an inductance of 0.5H and a variable capacitance in series, is connected across a100V,50Hz supply. Calculate capacitance required to attain resonance, voltages across inductor and capacitor at resonance and Q factor.

3) For the balanced system shown in figure, find: a) The magnitude of the line current b) The magnitude of the line and phase voltages at the load c) The real, reactive and apparent powers consumed by the load d) The power factor of the load
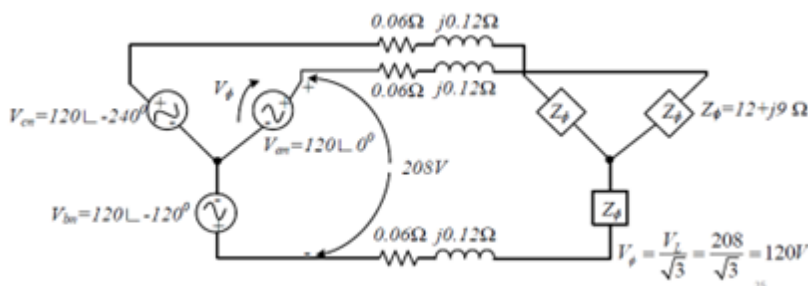
4) The line voltage and wattmeter reading of balanced Y connected load are V_L=400W, W_1=-540W, W_2=750W respectively. Find the total active power and reactive power absorbed, impedance and power factor of the load.

5) An alternating voltage has the equation v = 141.4 sin 377t, what are the values of (a) RMS voltage (b) frequency (c) the instantaneous voltage when t = 3 ms?

6) Prove the average power in an AC circuit is equal to **cos Ø** .

7) Compare the relation between star and delta connections of line voltage, phase voltage, line current and phase current.

8) Write the properties of series and parallel resonance.

Rubric wise marks obtained:

5=Excellent	4=Very Good	3=Good	2=Fair	1=Needs more work	
Rubrics	Knowledge	Calculations	Writing skills	Journal work and submission	Total
Marks					

Assignment-3

Date:

Relevant CO: Describe operating principle and applications of static and rotating electrical machines

1) LV winding is always nearer to the core. Interpret the statement.

2) classify the types of transformer.

3) Give the advantages of three phase transformer over three 1-phase transformer.

4) Explain working of single phase induction motor.

5) Explain the generation of rotating magnetic field three phase induction motor.

6) A 2000/200V, 20 kVA transformer has 66 turns in the secondary. Calculate a) Primary turns b) Primary and secondary full load currents (neglect the loss).

7) An ideal 25 kVA transformer has 500 turns on the primary winding and 40 turns on the secondary winding. The primary is connected to 3000V, 50 Hz supply. Calculate a) primary and secondary currents on full load b) secondary emf c) the maximum core flux.

8) A 50 Hz, single phase transformer has 6600/400V having emf per turn is 10 V and the maximum flux density in the core is 1.6T. Find the (a) Suitable number of primary and secondary turns (b) Cross sectional area of the core.

Rubric wise marks obtained:

5=Excellent	4=Very Good	3=Good	2=Fair	1=Needs more work	
Rubrics	Knowledge	Calculations	Writing skills	Journal work and submission	Total
Marks					

Assignment-4

Date:

Relevant CO: Comprehend electrical installations, their protection and personnel safety..

1) Write safety precautions for Electrical Appliances.

2) State and explain in brief important electrical characteristics of battery

3) Give the comparison of fuse and MCB.

4) Explain plate earthling with diagram.

5) Explain different methods of power factor improvement.

6) Calculate the electricity bill amount for a month of April, if 4 bulbs of 40 W for 5 h, 4 tube lights of 60 W for 5 h, a TV of 100 W for 6 h, a washing machine of 400 W for 3 h, a water pump of 0.5 HP for 15 minutes are used per day. The cost per unit is Rs 3.50. Consider 1 HP = 746 watts

Rubric wise marks obtained:

5=Excellent	4=Very Good	3=Good	2=Fair	1=Needs more work	
Rubrics	Knowledge	Calculations	Writing skills	Journal work and submission	Total
Marks					

Basics Electrical Engineering
3110005

Assignments prepared by
Prof.M.I.Siddiqui
Assistant Professor, Electrical Engineering,
L.D. College of Engineering
Ahmedabad

Branch Coordinator
Dr. J.R.Iyer
Professor, Electrical Engineering
L.D. College of Engineering
Ahmedabad

Committee Chairman
Dr N M Bhatt
Professor of Mechanical Engineering
L. E. College, Morbi