

25/10/13



B.E./B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

42

ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER II – (REGULATIONS 2012)

EE8201 – ELECTRIC CIRCUIT ANALYSIS

Time: 3 hrs

Max Marks: 100

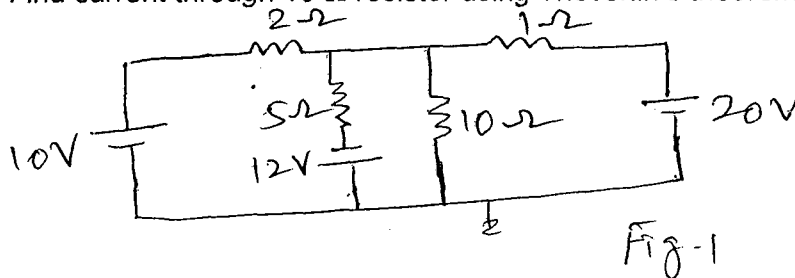
Answer ALL Questions

Part A – (10×2=20)

1. State Kirchhoff's laws
2. What is the expected efficiency of the system when maximum power transfer theorem is applied?
3. What is meant by Quality factor?
4. Define coefficient of coupling
5. Distinguish between balanced and unbalanced load
6. For a delta connected system, write the relation between line and phase values of voltage and current.
7. Define time constant for RL circuit
8. What is meant by transfer impedance?
9. Distinguish between active and passive elements
10. Give an example for two port network

Part B – (5×16=80)

11. (i) State and explain Thevenin's theorem (6)
- (ii) Find current through $10\ \Omega$ resistor using Thevenin's theorem (Fig. 1) (10)



12. a. Consider two coils with self-inductances of L_1 and L_2 are connected in series. Let M_{12} be the mutual inductance. Derive the formula for total inductance when the flux of both coils mutually aid and oppose each other. (16)

OR

b. Consider a series RLC circuit and derive the equation for current and power factor when resonance occurs. Draw the respective phasor diagram. Also discuss the properties of this (resonance condition) circuit. (16)

13. (i) Discuss the advantages of three phase system (6)

(ii) A three phase four wire 100 V system supplied a balanced star connected load having impedances of $10\angle-30^\circ$ ohm in each phase. Find line currents and current flowing through neutral. Also draw necessary phasor diagram. (10)

OR

b.(i) Derive an expression for average power consumed by a pure capacitive circuit. (8)

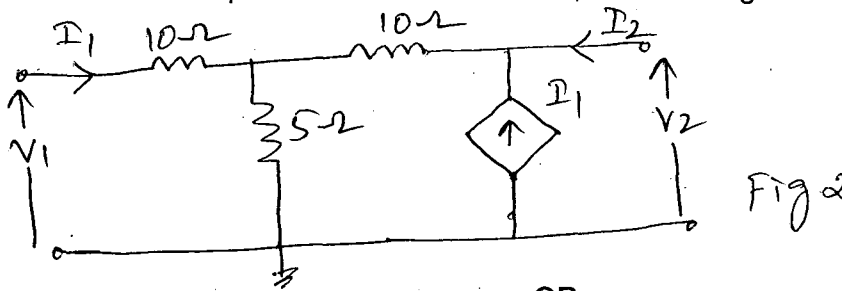
(ii) A three phase load has a resistance of $10\ \Omega$ in each phase and is connected in star and delta against a 400 V three phase supply. Calculate the power consumed in both the cases and compare. (8)

14. a A series R-C circuit is excited by a DC source of magnitude V. Derive suitable expressions and draw respective charging and discharging voltage profiles. Also find voltage drop across the resistance and capacitance during transient period. (16)

OR

b. A series R-L circuit is excited by sinusoidal source. Derive an expression for current during transient period. (16)

15. a. Determine the Z-parameters of the network, shown in Figure 2. (16)



OR

b. Find the Y parameters of the network, shown in Figure 3 (16)

