



(Pages : 3)

8687

Reg. No. :

Name :

**Combined First and Second Semester B.Tech. Degree Examination,
December 2015
(2013 Scheme)**

13.108 : BASIC ELECTRICAL AND ELECTRONICS ENGINEERING (FR)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. State and explain Kirchhoff's laws.
2. Obtain the step response of a series RC circuit.
3. Define bandwidth of a series resonant circuit.
4. Define self inductance and mutual inductance.
5. Explain the differences between three wire and four wire three phase systems.
6. Explain the concept of power applied to ac circuits.
7. Explain the construction of a single phase core type transformer.
8. Explain the protection methods provided in domestic wiring.
9. Explain the significance of filter in rectifier circuits.
10. Explain the principle of working of any power semiconductor device.



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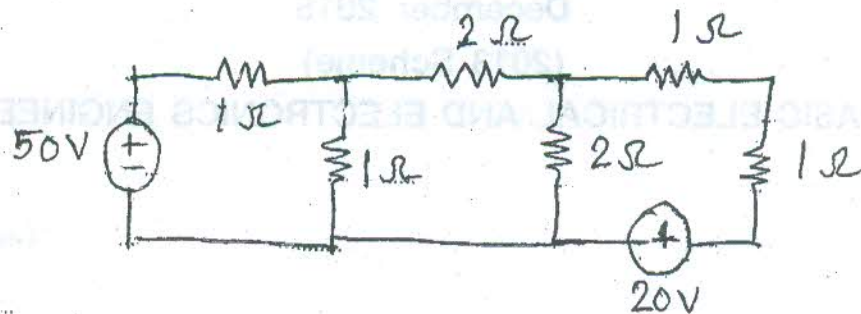


PART - B

Answer **any one full** question from **each** Module. **Each** question carries **20** marks.

MODULE - I

11. a) Find the current taken from the 50V source. 7



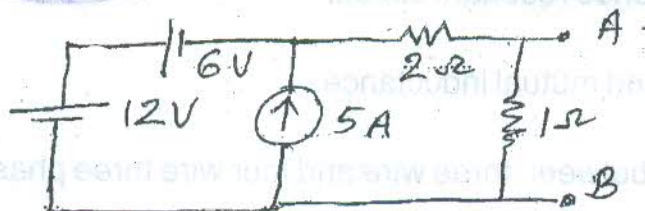
b) Explain the concept of time constant in a dynamic circuit. 6

c) Explain the terms Q factor and selectivity of a resonant circuit. 7

OR

12. a) Explain star-delta transformation. 8

b) Find the voltage across terminals A, B.



c) Find an expression for bandwidth of a series resonant circuit. 5

MODULE - II

13. a) Define rms value and average value of an alternating waveform.

b) A 50 Hz, 230 V is applied to a capacitor of value $0.636 \mu\text{F}$. Write equations for instantaneous voltage and current as functions of time 't'.

c) Derive an expression for line and phase values of currents in a delta connected balanced three phase system.

OR



14. a) Differentiate between statically induced emf and dynamically induced emf. 5
- b) Two identical coils P and Q each having 500 turns lie in parallel planes. Current in coil P changing at the rate of 500 A/sec induces an emf of 12 V in coil Q. Calculate the mutual inductance between the coils. If the self inductance of each coil is 50 mH, calculate the flux produced in coil P per ampere of current and coefficient of coupling between the coils. 8
- c) Find the power factor and power consumed by a circuit consisting of $10\ \Omega$ resistor in series with 0.2H inductor connected across a 240 V, 50 Hz supply. 7

MODULE – III

15. a) What are the losses in a transformer ? What is the condition for maximum efficiency ? 6
- b) Explain the electrical characteristics of dc shunt motor in comparison with a dc series motor. 7
- c) Explain the basic concepts of domestic wiring. 7

OR

16. a) Explain the construction of a core type three phase transformer. 7
- b) Derive the emf equation of a dc generator. 6
- c) Explain any one method of earthing. 7

MODULE – IV

17. a) Explain dynamic resistance and static resistance of a diode. 7
- b) Explain the working of a zener voltage regulator. 6
- c) Explain the working of a MOSFET. 7

OR

18. a) Explain with the help of a block diagram the working of a dc power supply. 8
- b) Explain the principle of working of BJT. 6
- c) Explain the working of triac. Also give its applications. 6

