

Roll No.

[2]

EE-111**B.E. I & II Semester**

Examination, June 2017

**Choice Based Credit System (CBCS)
Fundamentals of Electrical Engineering****Time : Three Hours****Maximum Marks : 60**

- Note :** i) Total No. of questions eight.
 ii) Attempt any five questions.
 iii) All questions carry equal marks.

1. a) State and explain Thevenin's theorem applicable to electrical circuits.
 b) Define and explain:
 - i) Active, reactive and apparent power
 - ii) Power factor
2. a) Explain briefly the following as applied to A.C. series and parallel circuits:
 - i) Resonance frequency
 - ii) Q-Factor
 b) A coil takes 2.5 amps. when connected across 200Volts 50Hz mains. The power consumed by the coil is found to be 400 Watts. Find the inductance and the power factor of the coil.
3. a) State and explain KCL and KVL.
 b) Using Superposition theorem determine the current in 5Ω resistance. Fig-1

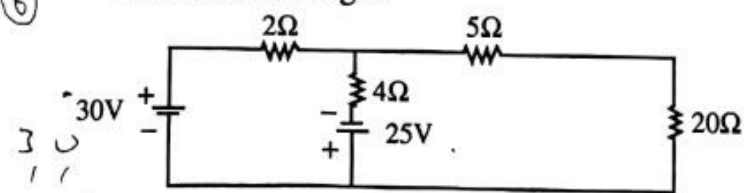


Figure-1

4. a) Establish relationship between line and phase voltages and current in balanced star connected load. Draw complete phasor diagram of voltages and currents.
 b) A three phase, 440V motor load has a power factor of 0.6. Two wattmeters connected to measure the power show the input to be 25kW. Find the reading on each instrument. <http://www.rgpvonline.com>
5. a) Describe the principle of operation of single phase transformer. What is ideal transformer and transformation ratio?
 b) Explain the similarities and dissimilarities between electric and magnetic circuit.
6. a) A single phase transformer is connected to a 230V, 50Hz supply. The net cross sectional area of the core is 60cm^2 . The number of turns in the primary is 500 and in the secondary 100. Determine:
 - i) Transformation ratio
 - ii) Maximum value of flux density in the core
 - iii) emf induced in secondary winding
 b) Specify the necessary condition for a given three-phase balanced system. How will you measure the power in balanced three-phase circuit?
7. a) Explain working principle of D.C motor with necessary diagram.
 b) A Six pole lap wound D.C. generator has 720 conductors, a flux of 40m Wb per pole is driven at 400rpm. Find the generated e.m.f.
8. a) Compare induction machine and synchronous machine on the basis of construction and applications.
 b) Discuss the effect of hysteresis and eddy current in magnetic circuit.

EE-111

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