

Level: Bachelor
 Programme: BE
 Course: Basic Electrical Engineering

Semester: Fall

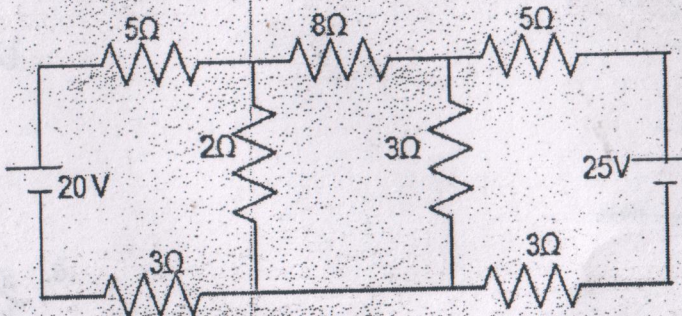
Year : 2015
 Full Marks: 100
 Pass Marks: 45
 Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

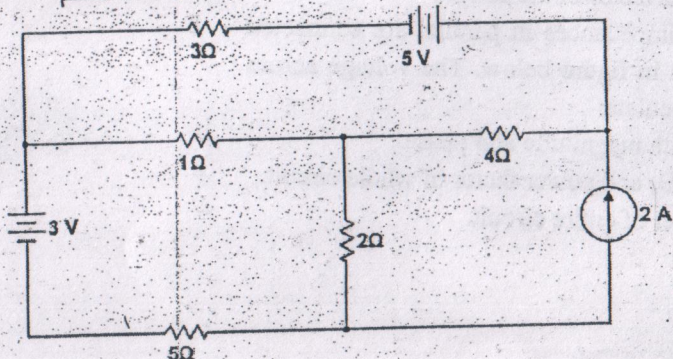
The figures in the margin indicate full marks.

Attempt all the questions.

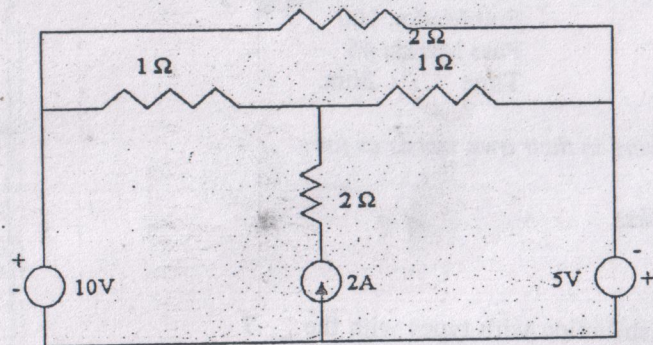
1. (a) Explain generation, transmission and distribution with types with the help of single line diagram. 7
- (b) Find the current across 8Ω resistor using nodal analysis. 8



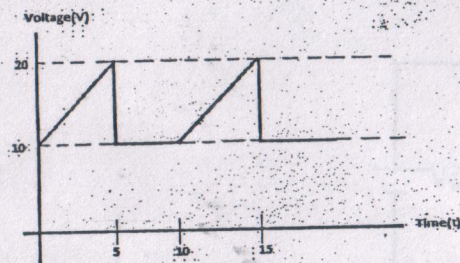
2. (a) For the circuit shown in figure, implement Norton's theorem to determine voltage drop across 1Ω resistor. 8



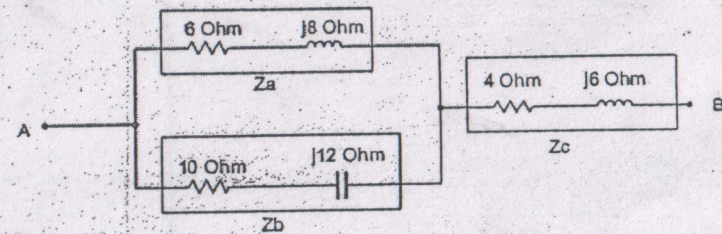
- b) Use Supermesh concept to calculate the mesh currents of the circuit show below. 7



- a) Find average value, rms value, and form factor of given waveform. 7



- b) Two impedances $(60+j15) \Omega$ and $(30-j10) \Omega$ are connected in series across a 220V, 50Hz supply. Find current, active power, reactive power, apparent power and power factor of the circuit. 8
- a) In a series parallel circuit two impedances in parallel are connected with series impedance as shown in figure below. The voltage across impedance Z_c is $(200+j0) V$. Calculate: 8
- Each branch currents, both magnitude and phase.
 - Supply voltage across AB, and power factor of whole circuit.
 - Active and reactive power of entire circuit.
 - Draw phasor diagram.



- b) Explain the measurement of three phase power by two wattmeter method with necessary derivations and phasor. 7
5. a) Three equal impedances having resistance 20Ω and inductive resistance 15Ω are connected in delta connected system. Find: 8
- Phase and line current.
 - Power factor.
 - Power consumed.
- b) A single phase 10KVA, 200/400 V, 50Hz, transformer gave the following test results: 7
- O.C test : 200V, 1.3A, 120W
S.C test : 22V, 30A, 200W
- Find the parameters of equivalent circuit as referred to HV side and LV side.
6. a) Explain working principle of induction motor with neat diagram. 7
- b) A 220v dc shunt motor runs with 1200rpm with an armature current of 50A. The value of armature resistance is 0.2Ω . Calculate the value of resistance to be connected in series with the armature so that the speed drops to 1000rpm. 8
7. Write short notes on: (Any two) 2x5
- MPT Theorem.
 - Star/Delta transformation.
 - Speed control of dc motor.