

POKHARA UNIVERSITY

Level: Bachelor
 Programme: BE
 Course: Basic Electrical Engineering

Semester: Spring

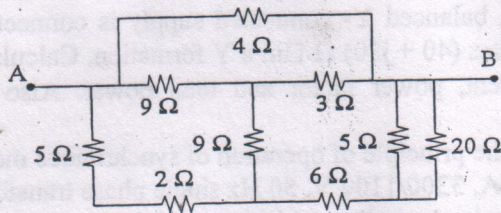
Year : 2016
 Full Marks: 100
 Pass Marks: 45
 Time : 3hrs.

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

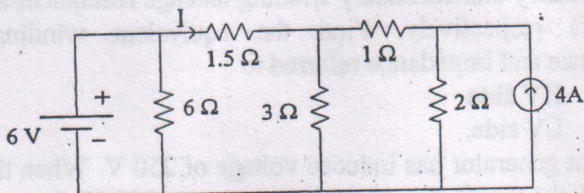
The figures in the margin indicate full marks.

Attempt all the questions.

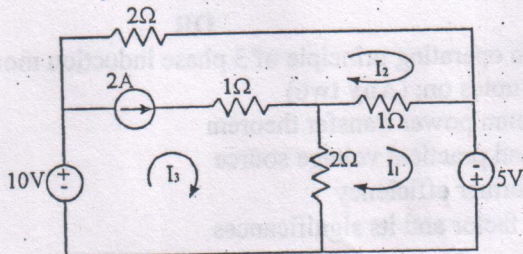
1. a) Explain the importance of electricity in real life. How the life would be in the absence of electricity? 5
- b) Illustrate about voltage divider and current divider circuit. 5
- c) Find the equivalent resistance R_{AB} for the network given below. 5



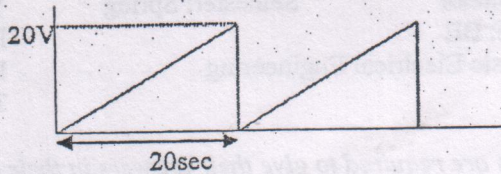
2. a) Find the current I using superposition theorem. 8



- b) Find the mesh current I_1 , I_2 and I_3 in the circuit given below using the concept of mesh analysis. 7



3. a) Find the average value, RMS value and form factor for a wave given below. 8



OR

Find the average value, effective (RMS) value, form factor and amplitude (peak) factor of the sinusoidal waveform.

- b) Explain the parallel resonance in RLC circuit. 7
4. a) Explain how three phase AC voltage is generated. Differentiate between single phase and three phase system. 8
- b) Two impedances $(20+j5) \Omega$ and $(30+j8) \Omega$ are connected in series across a 200V, 50Hz supply. Find current, active power, reactive power, apparent power and power factor of the whole circuit. 7
5. a) A 400V, balanced Y- connected supply is connected to three equal impedances $(40 + j30) \Omega$ in a Y formation. Calculate: phase current, line current, power factor and total power. Also draw the phasor diagram. 8
- b) Explain the principle of operation of synchronous motor. 7
6. a) A 25 KVA, 3300/1100 V, 50 Hz single phase transformer has primary and secondary winding resistances of 0.2Ω and 0.06Ω respectively. The primary and secondary winding leakage reactances are 0.32Ω and 0.012Ω respectively. Find the equivalent winding resistance, reactance and impedance referred to
- i. HV side
 - ii. LV side.
- b) A shunt generator has induced voltage of 250 V. When the machine is loaded, the terminal voltage drops down to 230 V. Determine the load current if the armature resistance is 0.05Ω and the field circuit resistance is 23Ω . 7

OR

Explain operating principle of 3 phase induction motor.

7. Write short notes on: (Any two) 2×5
- a) Maximum power transfer theorem
 - b) Ideal and practical voltage source
 - c) Transformer efficiency
 - d) Power factor and its significances