POKHARA UNIVERSITY

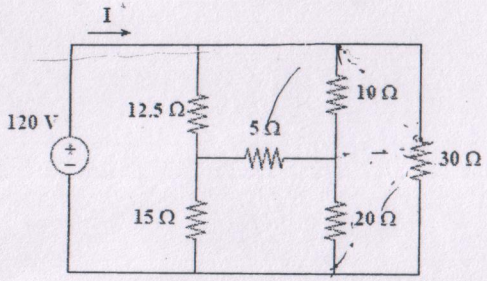
Level: Bachelor Semester: Fall Year : 2018
Programme: BE Full Marks: 100
Course: Basic Electrical Engineering Pass Marks: 45
Time : 3hrs.

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

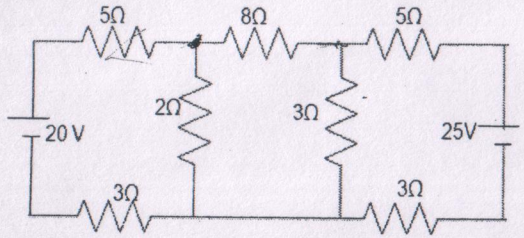
The figures in the margin indicate full marks.

Attempt all the questions.

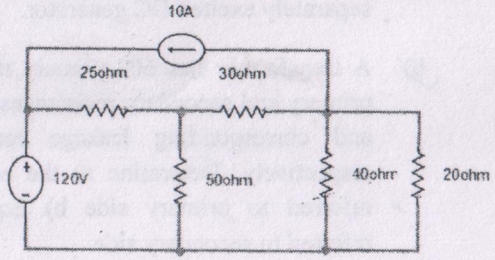
1. a) Explain present Energy scenario and role of electricity in context of Nepal. 7
   b) Obtain the equivalent resistance and use it to find source current for the circuit shown below. 8



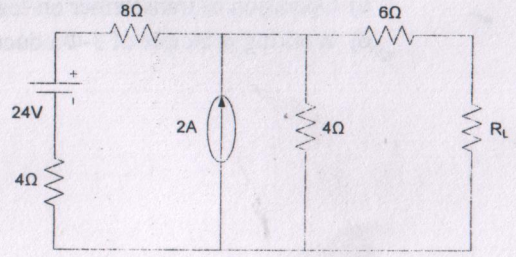
2. a) Explain KCL and KVL. Find the node voltage at each nodes using nodal analysis for the given circuit. 7



b) Compare Thevenin's theorem with Norton's Theorem. Also find the current across 25Ω resistance by using Norton's theorem. 8



3. a) Calculate the value of R_L& power dissipated such that maximum poweris delivered across load resistor. 8



b) What is a phasor? Determine the current-voltage relationship for passive elements in phasor domain as well as time domain. 7

4. a) Two impedances (20+j5) Ω and (30+j8) Ω are connected in series across a 400V, 60Hz supply. Find current, active power, reactive power, apparent power and power factor of the whole circuit. 7
   b) Explain resonance in parallel RLC circuit. 8

5. a) Explain how the three phase voltage is generated. Write the advantages of three phase system over single phase. 8
   b) Three similar coils, each having a resistance of 100Ω and an inductance of 20mH are connected in i) star ii) delta to a 3-Φ, 50 Hz, with 400V between lines. Calculate: 7
      i) Line current and phase current
      ii) Active, reactive and apparent power

6. a) What are generators? Explain the types of excitation systems in separately excited DC generator. 7

b) A transformer has 600 primary turns and 150 secondary turns. The primary and secondary resistances are 0.25 Ω and 0.01 Ω respectively and corresponding leakage reactance are 1.0Ω and 0.04 Ω respectively. Determine a) the equivalent resistance and reactance referred to primary side b) Equivalent resistance and reactance referred to secondary side. 8

7. Write short notes on: **(Any two)** 2×5

a) Star/Delta transformation

b) Operation of transformer on-load

c) Working principle of 3-Φinduction motor