FACULTY OF ENGINEERING
B.E. 2/4 (ECE) I - Semester (Suppl.) Examination, July 2014

Subject: Basic Circuits Analysis

Time: 3 Hours
Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part - B.

PART – A (25 Marks)

1. State and explain source transformation theorem.
2. What is network duality?
3. Define transient response and steady state response.
4. Write integro-differential equation for the circuit shown.
5. Define average power, apparent power and power factor.
6. Find $L_{eq}$ of the circuit shown between terminals 'a' and 'b'.
7. Draw the equivalent network of g-parameters.
8. What are the conditions of reciprocity in networks in terms of L-parameters, Y-parameters?
9. Define Selectivity and bandwidth. How are they related?
10. How to find natural response from pole-zero plot?

PART – B (50 Marks)

11. (a) Find power supplied by independent sources in the circuit shown using nodal analysis

(b) Find Thevenin's equivalent of the network shown below.

12. Find $V_c(t)$ for $t \geq 0$ in the circuit shown.
13 Find $i_1(t)$, $i_2(t)$ and $i_3(t)$ in the network shown below.

14 (a) Find transmission parameters for the network shown below.

(b) Explain $T - \pi$ transformation.

15 (a) Derive expression for resonant frequency of the circuit shown.

(b) Draw Dual of the network shown below.

16 Find cut-set schedule for the network shown below. Solve for branch currents and branch voltages.

17 Write short notes on:
   (a) Maximum power transfer
   (b) Power triangle
   (c) Practical and ideal transformers