Hall Ticket Number:

Code No. : 21311

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (E.C.E.) II Year I-Semester (Main & Backlog) Examinations, Nov./Dec.-2016

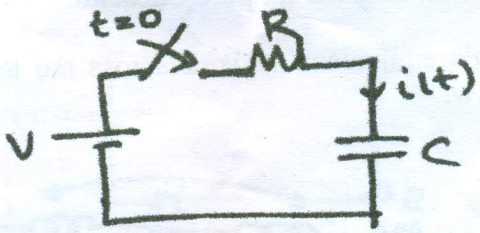
Basic Circuit Analysis

Time: **3** hours Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

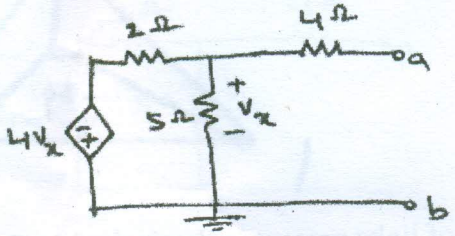
1. What are the expressions for the energy stored by inductor and capacitor?
2. Distinguish between Super node and Super mesh.
3. State and explain Max. Power transfer theorem, when a circuit is excited by a.c source.
4. Find the expression for current i(t) in the circuit shown below for t > 0.



5. "The Voltage through a capacitor cannot change instantaneously". Explain and justify the statement.
6. A coil with 1800 turns surrounds a magnetic circuit which has a reluctance of 8×10^{-6} AT/wb. Calculate the inductance of the coil.
7. Summarize the properties of series resonance circuit.
8. Define coefficient of coupling.
9. Define a pole and zero.
10. State properties of Cutset analysis.

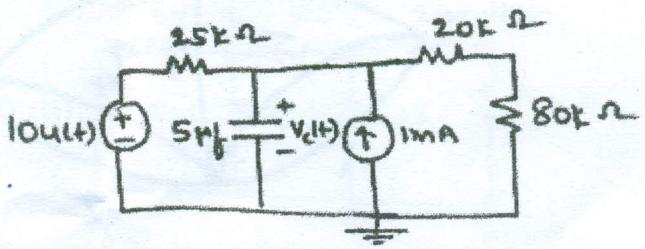
Part-B (5 × 10 = 50 Marks)

11. a) Obtain Norton's equivalent network for the network shown below. [6]



b) State and prove Tellegen's Theorem using a simple network. [4]

12. a) For the circuit shown below find $V_c(t)$ at t = 0.08s. [8]



b) Define Transient response and Steady state response. [2]

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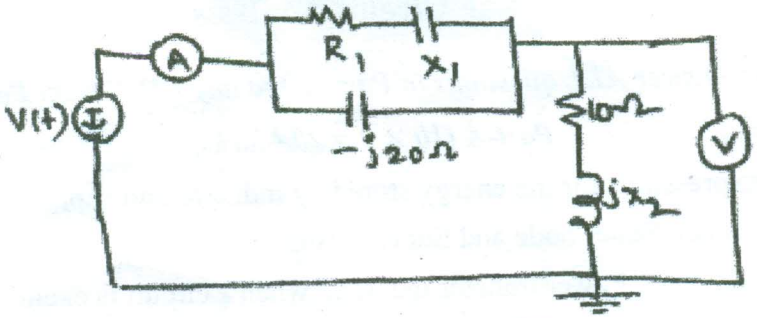
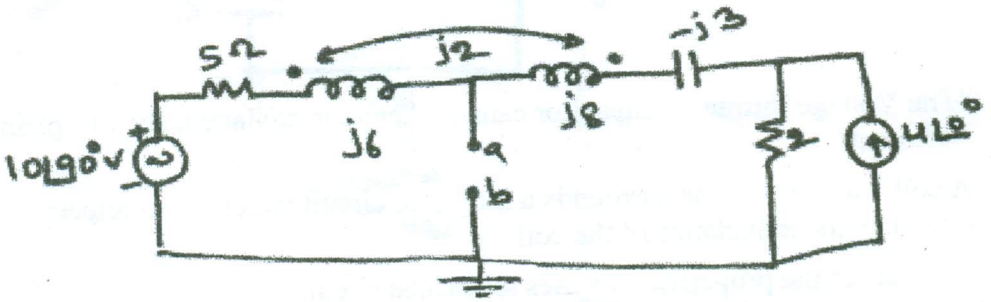
13. a) A voltage V(t) = 1.414 Sin(wt) is applied to the circuit shown below. The circuit dissipates 450 W at lagging P.F, when voltmeter and ammeter readings are 100 V and 6 A respectively. Calculate the circuit constants. [8]



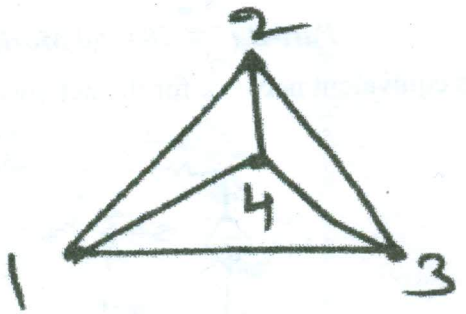
b) Construct the phasor diagram for pure Capacitor [2]

14. a) Obtain Thevenin's equivalent network across the terminals 'a' and 'b' for the network shown below: [7]

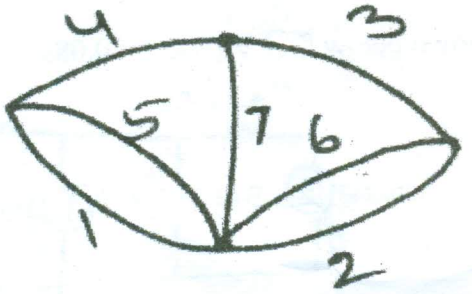


b) Derive an expression for Quality factor of a parallel resonant circuit [3]

15. a) For the graph shown below, find and draw the minimum number of possible trees. [5]



b) Find the number of links present in the dual of the graph shown below. [5]



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