C14-EC-**403**

4436

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH / APRIL - 2019

DECE - IV SEMESTER EXAMINATION

NETWORK ANALYSIS

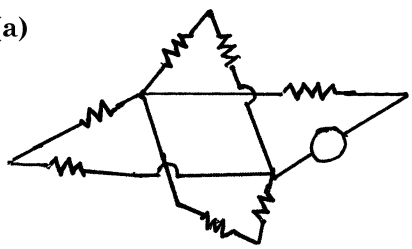
Time : **3** Hours] [Total Marks : **80**

PART - A **3×10=30**

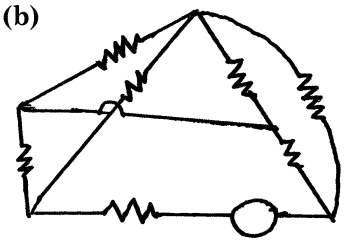
Instructions : *(1) Answer **ALL** questions.*
*(2) Each question carries **THREE** marks.*
(3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1 State Kirchhoff's current law.
2 List any three applications of tuned circuits.
3 State reciprocity theorem.
4 List the limitations of Norton's theorem.
5 Define the following (a) tree (b) co-tree (c) links.
6 Determine the number of nodal equations for the given network.

(a)



(b)



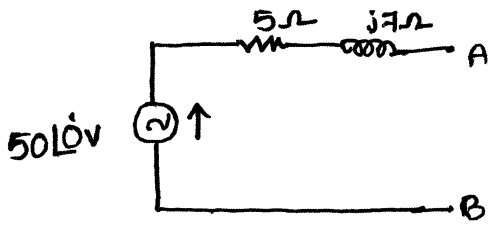
7 Define the terms steady state and transient.
8 Give the conditions for symmetry in terms of Z, h and ABCD parameters for a two port network.
9 Give the expression for cutoff frequency for constant K-low pass filter and high pass filter.
10 Draw the circuits of series and shunt equalizer.

PART - B 10×5=50

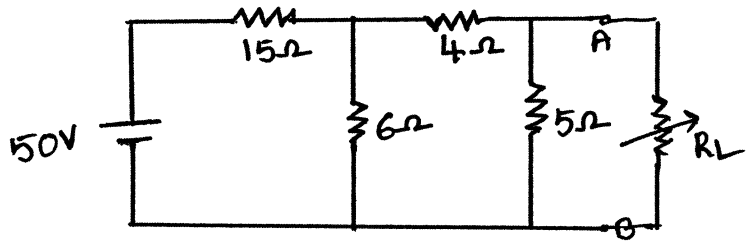
Instructions : *(1) Answer any **FIVE** questions.*
*(2) Each question carries **TEN** marks.*
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11 (a) Explain the dot rule for coupled circuits. **6**

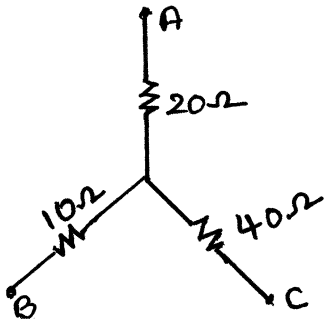
(b) Convert the following voltage source into an equivalent current source. **4**



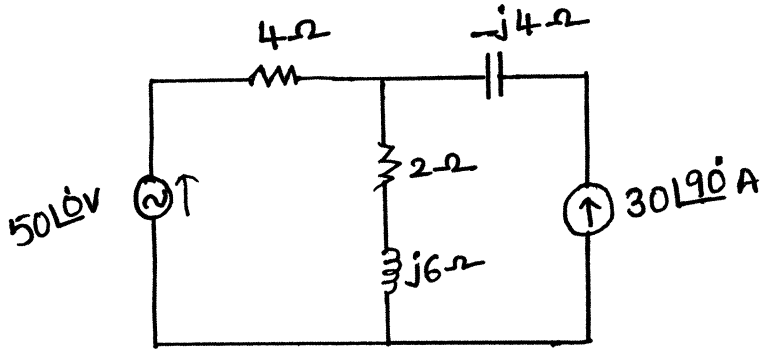
12 Determine the maximum power delivered to the load in the circuit shown below. **6+2+2**



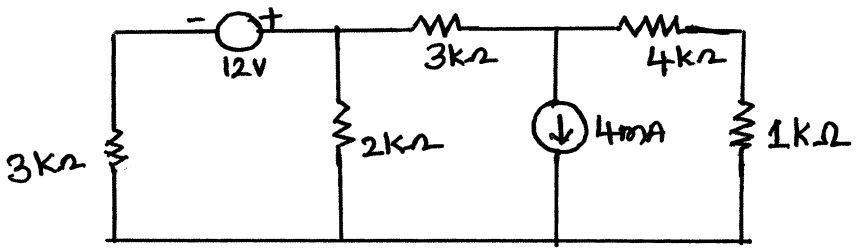
13 (a) Find the delta equivalent circuit for given star connected circuit. **5**



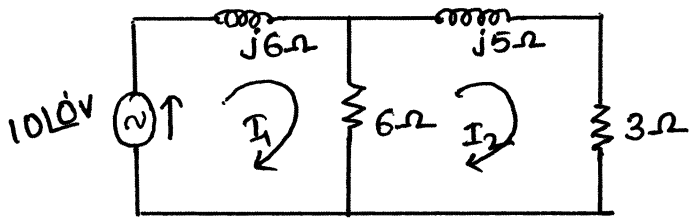
(b) For the circuit shown below, determine the current in $(2+j6)\Omega$ by using superposition theorem. **2+2+1**



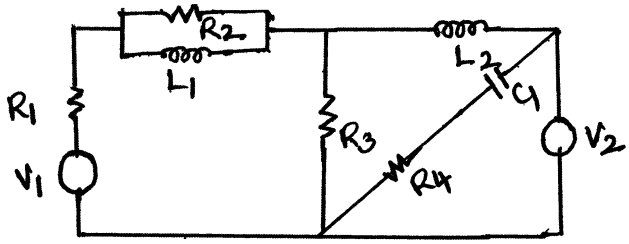
14 Find the voltage drop across the $2k\Omega$ resistor by using node analysis technique. **10**



15 (a) Write the mesh current equations in the circuit and determine the currents I_1, I_2 **7**



(b) Find the number of mesh equations required to solve the given network. **3**

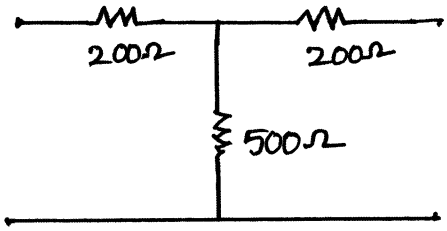


16 (a) Derive the expression for $i(t)$ and voltage across capacitance $Vc(t)$ for series RC circuit for DC voltage. **7**

(b) Draw the output waveforms of a RC integrator circuit for a square wave input. **1+1+1**

17 (a) Explain the short circuit admittance (Y) parameters with an equivalent circuit. **6**

(b) Find the Z parameters for given T-network. **4**



18 (a) Derive the expression for characteristic impedance for δ-network. **6**

(b) Design a δ-type attenuator for given attenuation of 20dB and characteristic impedance of 100Ω. **4**