Code No. 3022

FACULTY OF ENGINEERING

B.E. 2/4 (ECE) I – Semester (New) (Main) Examination, December 2016

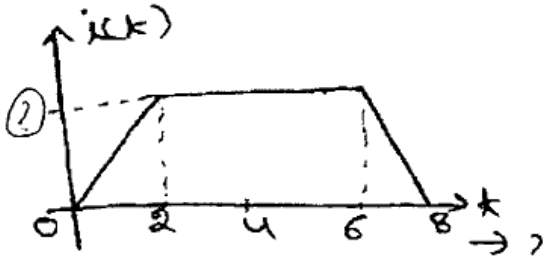
Subject: Basic Circuit Analysis

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

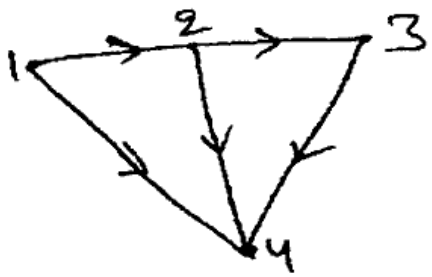
PART – A (25 Marks)

1 A current waveform is applied to a 2H inductor. Draw voltage waveform for the given figure. 5

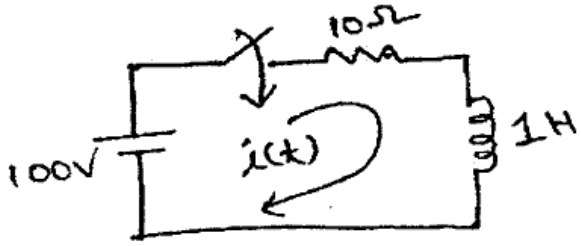


2 Find Y-parameters of a π – network. 5

3 The given figure shows a graph of the network. Show all the trees of this graph. 4



4 In the given network switch is closed at t=0 with zero initial current in the inductor, find $i(t) = \frac{di(t)}{dt}$ at $t=0^+$. 3



5 A series circuit consumes 2000 W at 0.5 leading power factor, when connected to 230 V, 50 Hz a.c supply. Calculate: 4
a) Current
b) Apparent power
c) Reactive power

6 A series RLC circuit has the following parameter values R=10 Ω, L=0.01H, C=100 μF. Compute resonant frequency, bandwidth, lower and upper frequency of the bandwidth. 4

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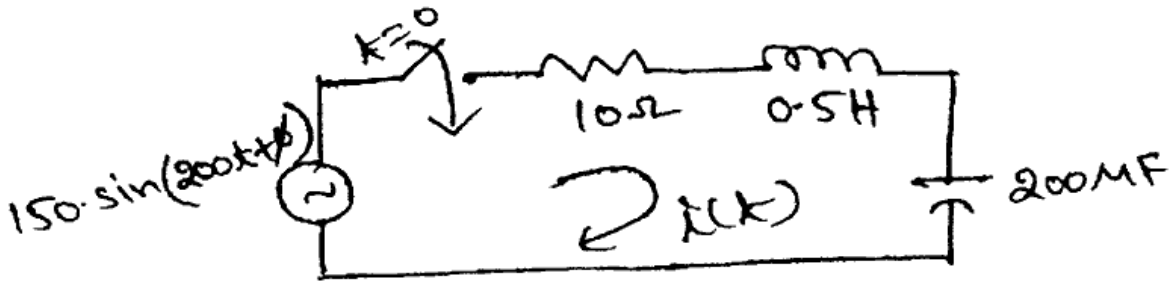
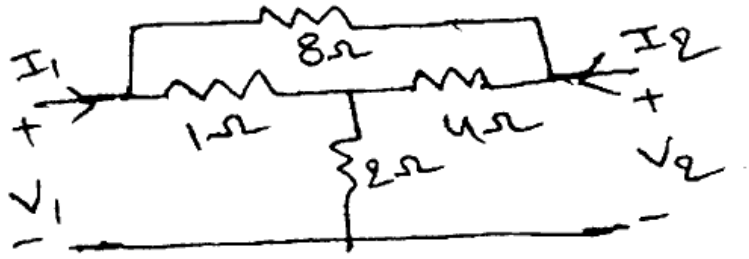
10 For the given network a sinusoidal voltage V = 150 sin(200t + ϕ) is applied at ϕ = 30° determine current i(t). 1(



11 Find the equivalent T-network for the network shown below. 10



12 A coil having a resistance of 20Ω and inductance of 200μH is connected in parallel with a variable capacitor. This parallel combination is connected in series with a resistance of 8000Ω. A voltage of 230 V, 10^6 Hz is applied across the circuit find 10

a) The value of capacitance at resonance
b) Q factor of the circuit
c) Dynamic impedance of the circuit
d) Total circuit current.

13 Explain the following:

a) Kirchhoff's laws 3

b) Magnetically coupled circuits 3

c) Impedance and admittance functions 4

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