COLLEGE OF ENGINEERING & TECHNOLOGY

Department	: Electrical & Computer Control Engineering		
Lecturer	: Dr. M. Abdel-Rahim		
Course	: Network Analysis		
Course Code	: EE 332	Marks :	40
Date	: 12 / 1 / 2016	Time	: 2 hours

Final Exam

Answer the following questions:-

1- Let $i_g(t) = 5\,e^{-4t}\cos(3t + 60^o)$ A in the circuit shown in fig.(1), and using the concept of the complex frequency.

(i) Find the phasor value V_{in}.

(ii) Find $v_{in}(t)$.

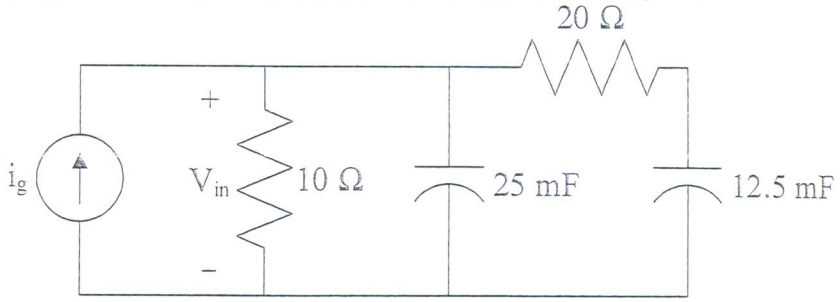

fig.(1)

b) For the circuit shown in fig.(2), let $H(s) = \frac{V_x(s)}{I_g(s)}$

(i) Find $|H(\sigma)|$ as a ration of polynomials of σ.

(ii) Determine all the critical frequencies of H(σ).

(iii) Sketch $|H(\sigma)|$ versus σ.

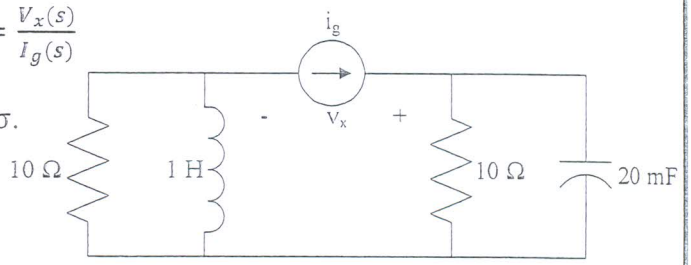

fig.(2)

(10 marks) (*AI*)

2- Draw the Bode amplitude and phase plots for the following transfer function

$$H(s) = \frac{5x10^5\ (S+10)}{S(S+25)(S+100)^2}$$

(6 marks) (*AI*)

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3- The switch in the circuit shown in fig.(3) has been in position a for a long time.

At t = 0, the switch is moved to position b.

(i) Construct the s-domain equivalent circuit for t > 0.

(ii) Find $V_o(s)$,$I_o(s)$.

(iii) Find $v_o(t)$, $i_o(t)$ for $t \geq 0$.

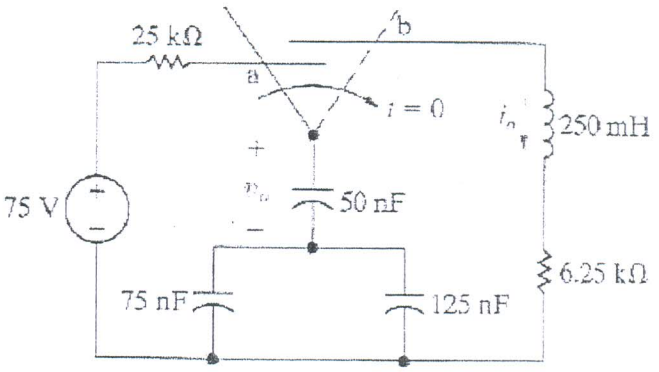

fig.(3)

(8 marks) (*B2*)

4- Let $V_s = 100 \angle 0^o$ V rms and $\omega = 100$ rad/s in the circuit shown in fig.(4). Find the average power supplied to the 3-Ω resistor.

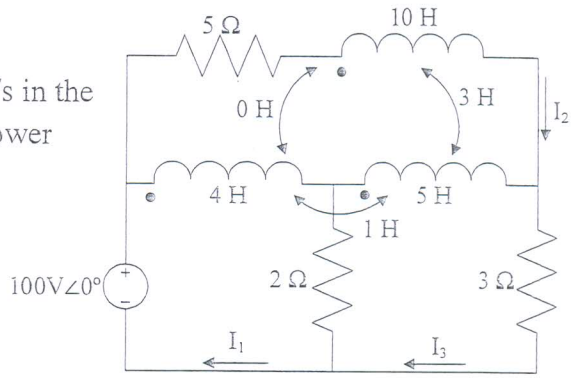

fig.(4)

(8 marks) (*A25*)

5 – The y-parameters of the network shown in fig.(5) is given as

$y_{11} = 2$ mS ; $y_{12} = -2\ \mu$S

$y_{21} = 100$ mS ; $y_{22} = -50\ \mu$S

(a) Find the value of Z_L for maximum average power transfer to Z_L.

(b) Find the maximum average power delivered to Z_L,

If $v_g = 80\sqrt{2}\cos 4000t$ mV, $Z_g = 2500 + j\,0\ \Omega$.

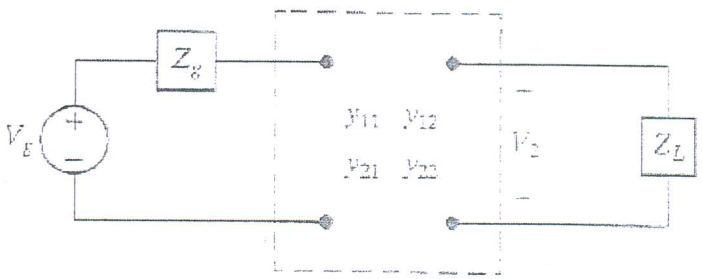

fig.(5)

(8 marks) (*A25*)

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