Code No. 6048 / M

FACULTY OF ENGINEERING

B.E. 2/4 (EEE) II - Semester Examination, June 2014

Subject : Electrical Circuits - II

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 Explain the initial conditions in R, L and C in respect of Transient analysis. (3)

2 A 5 μF condenser is connected through a 1000 KΩ resistor to a DC source 10V. After being charged for half minute, the condenser is disconnected and discharged through a resistor R. Determine the energy dissipated in R. (3)

3 State Initial and final value theorems in Laplace transform. (3)

4 Obtain the current response of RC parallel circuit for unit step input using Laplace transformation. (3)

5 Define Transfer function and its Limitations. (3)

6 Find the current response i(t) if I(s) = $\frac{2s^2+3s+2}{s2+2s-3}$. (4)

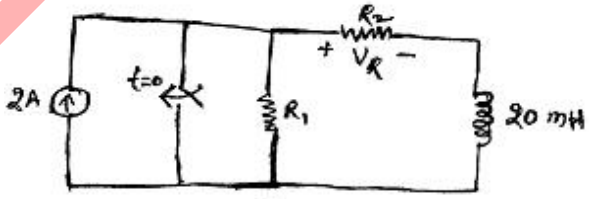
7 Check whether the following polynomial is Hurwitz or not? (3)

$P(s)=2s^6+s^5+13s^4+6s^3+56s^2+25s+25$

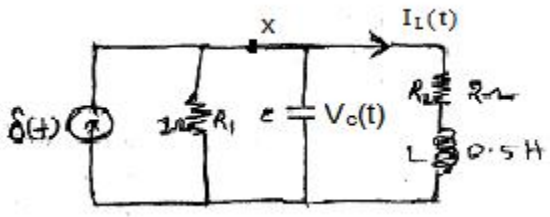
8 Define half-wave symmetry in Fourier series. (3)

PART – B (50 Marks)

9 The switch is open for a long time and is closed at t = 0. Find the values of R_1 and R_2 in the circuit given in figure 1. if $V_R(0^+)$ = 10V and V_R(1,msec) = 5V. (10)



10 Find Vc(t) and I_L(t) in the circuit of figure 2 assuming zero initial conditions. (Use Laplace transformation). (10)



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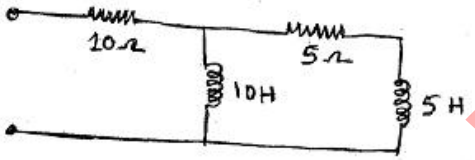
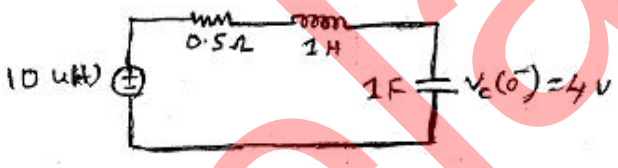
11 Obtain the pole zero plot in the s-plane of the driving point independence function for the network shown in figure 3. (10)



12 Find i(t) using Laplace transform for the circuit shown in figure 4 if the initial voltage on the capacitor is 4v. Assume zero initial condition for the inductor. (10)



13 (a) Write all the properties of positive Real functions. (4)

(b) Check whether the given p(s) is positive Real or not?

$p(s) = s^5 + 7s^4+5s^3+s^2 + 2s + 4.$ (6)

14 (a) Find the Fourier transforms for the following functions

(i) sin(4t+30) (ii) u(t+2) (5)

(b) State and explain complex Translational theorem. (5)

15 Realize $Z(s) = \frac{s(s^2+2)(s^2+4)}{(s^2+1)(s^2+3)(s^2+5)}$ in both Foster and forms. (10)

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