Code No. 2048

FACULTY OF ENGINEERING

B.E. 2/4 (E&EE.) II – Semester (Main) Examination, April / May 2013

Subject : Electrical Circuits – II

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 series RL circuit is excited by a unit step excitation. Then find the circuit response i(f) in the circuit. (3)

2. Define final value theorem. (3)

3. Mention any three necessary conditions that must be satisfied by driving point admittance functions. (3)

4. Find f(0) and f(∞) for the below function. (4)

$$F(s) = \frac{s+4}{s(s+1)(s+5)}$$

5. Define 'odd function symmetry'. (3)

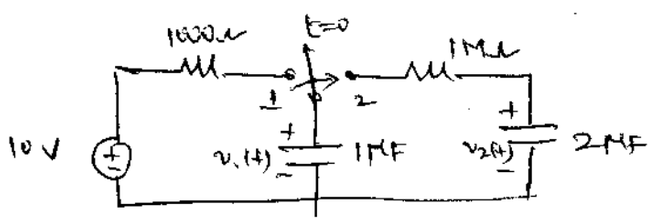
6. Find the Fourier transform of f(t) = $e^{jw_0 t}$ (2)

7. Determine whether the function F(s) = $s^6 + 5s^5 + 12s^4 + 16s^3 + 12s^2 + 4s$ is Hurwitz. (3)

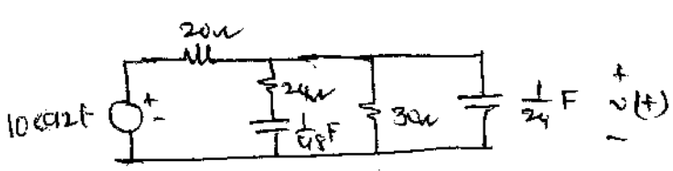
8. Synthesize the first Foster term of $z(s) = \frac{(s^2+2)(s^2+4)}{s(s^3+3)}$ (4)

PART – B (50 Marks)

9. Find $v_1(f)$ and $v_2(f)$ for t > 0 in the network shown below. The switch was in position I for a long time before it is thrown to position 2. (10)



10. Find v(t) for the circuit shown below, using the Laplace transforms method of analysis. (10)



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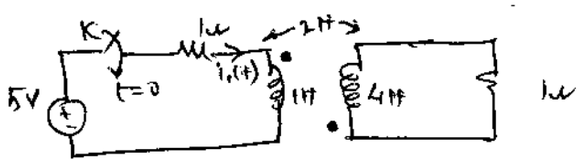
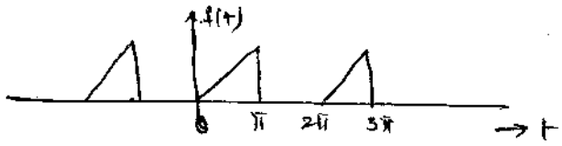
11. Find current $i_1(f)$ for t > 0 if the switch 'k' is closed at t = 0 in the below circuit. (10)



12. Find the Fourier series of the waveform show below. Hence find the Fourier series. (10)



13. Synthesize the two carrer forms for the impedance function $z(s) = \frac{(s+3)(s+8)}{(s+2)(s+1)}$ (10)

14.a) Write the properties of driving point function z(s) of RC network. (5)

b) Synthesis the second Foster forms for the impedance function (5)

$$z(s) = \frac{(s+1)(s+4)}{(s+2)}$$

15.a) Find the Fourier transforms for the following function. (6)

i) $u_0(t - to)$ ii) ca(2t + 45)

b) State and explain complex translation theorem. (4)

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