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)

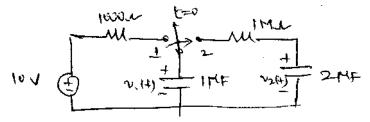
- 1. A series RL circuit is excited by a unit step excitation. Then find the circuit response i(f) in the circuit. (3)
- 2. Define final value theorem. (3)
- 3. Mention any three necessary conditions that must be satisfied by driving point admittance functions. (3)
- 4. Find f(0) and $f(\infty)$ for the below function. (4)

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

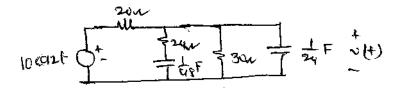
- 5. Define 'odd function symmetry'. (3)
- 6. Find the Fourier transform of $f(t) = e^{jw_0t}$ (2)
- 7. Determine whether the function $F(s) = s^6 + 5s^5 + 12s^4 + 16s^3 + 12s^2 + 4s$ is Hurwitz. (3)
- 8. Synthesize the first Foster term of $z(s) = \frac{(s^2 + 2)(s^2 + 4)}{s(s^3 + 3)}$ (4)

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)

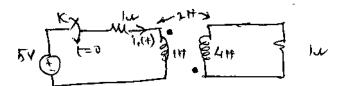


10. Find v(t) for the circuit shown below, using the Laplace transforms method of analysis. (10)

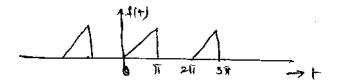


(6)

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.

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

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