FACULTY OF ENGINEERING

B.E. 2/4 (E & EE) II Semester (New) (Main) Examination, May/June 2012
ELECTRICAL CIRCUITS – II

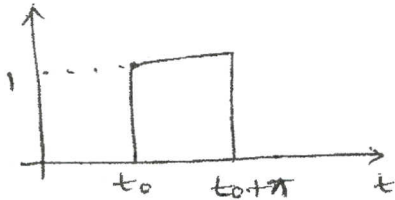Time : 3 Hours]   [Max. Marks : 75

Note : *Answer **all** questions of Part – **A**.*
*Answer **five** questions from Part – **B**.*

	PART – A	25 Marks

1. Explain about various types of energy sources for networks.   **3**

2. Draw the transform networks for inductance and capacitance.   **2**

3. What is the L.T. of $f(t - T)\ u(t - T)$ and $tf(t)$?   **2**

4. Determine the L.T. of the waveform shown.   **3**

5. Explain the time shifting property of L.T.   **3**

6. State the differentiation theorem of Fourier transform.   **3**

7. Find the Fourier transform of $\sin \omega_0 t$ and $\cos \omega_0 t$.   **2**

8. Find $L^{-1} \dfrac{2s}{(s+1)\ (s^2 + 2s + 2)}$.   **3**

9. What is a positive real function ? Write down the properties of PR functions.   **2**

10. Check whether the function $F(s) = \dfrac{s^2 - 1}{-s + 8}$ is a PR function or not.   **2**
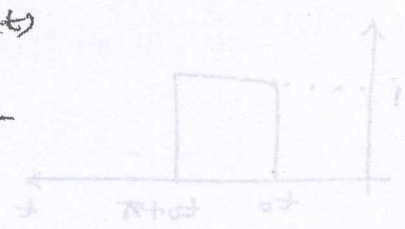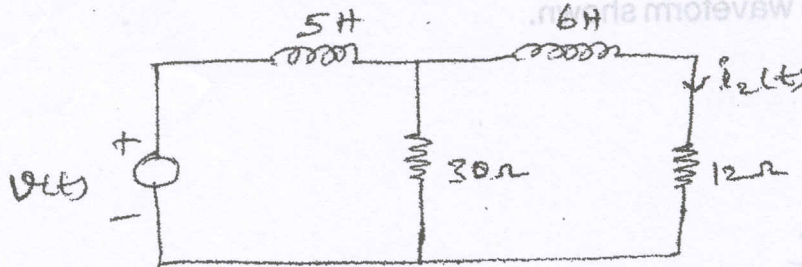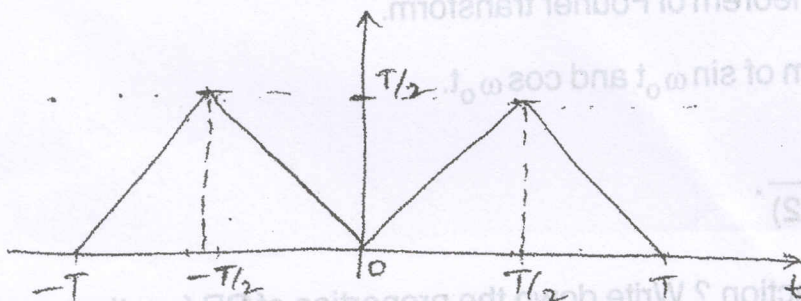
PART – B

50 Marks

11. Find i(t) for t > 0 in the figure shown below. The initial conditions of inductor and capacitor are as shown. **10**
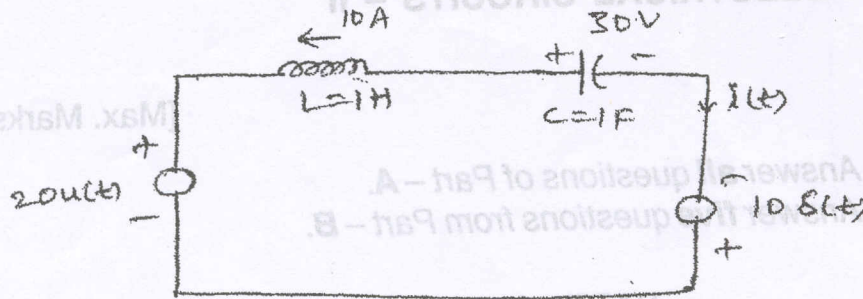
12. Explain clearly the method of waveform synthesis using Laplace transforms. **10**

13. Find the transfer function $H(s) = I_2(s)/v(s)$ for the following circuit. Also find the impulse response h(t). **10**
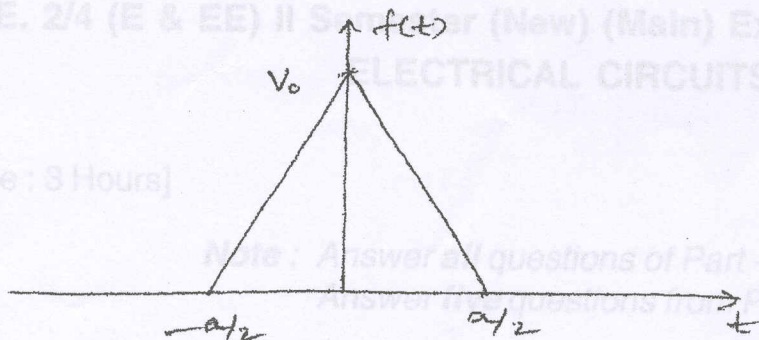

14. Determine the Fourier series of the function given. **10**

15. Determine the Fourier transform of the triangular waveform shown. 10

16. a) Explain briefly test procedure for positive real function. 5

   b) Is the following polynomial Hurwitz ? 5

   $p(s) = s^6 + 4s^5 + 8s^4 + 20s^3 + 19s^2 + 16s + 12$

17. Synthesis the driving point impedance function using foster first form of realization. 10

   $z(s) = \dfrac{(s+1)\,(s+3)\,(s+5)}{s(s+2)\,(s+4)\,(s+6)}$