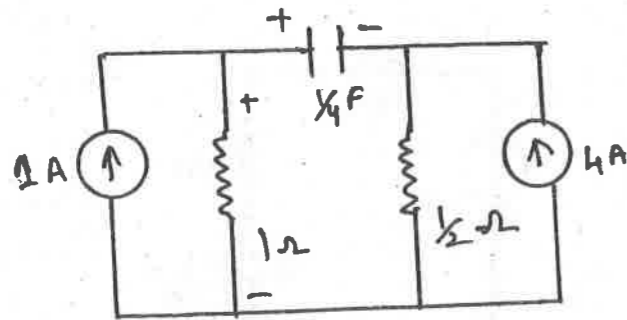
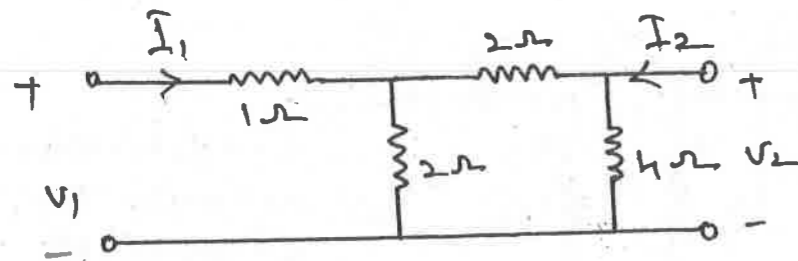


17. Using Laplace transform, determine the voltage  $V$ .



Or

18. Explain the use of step function and impulse function in circuit Analysis.  
 19. Find  $h$  parameters of the network :



Or

20. Explain cascade and parallel connections of two 2 port networks with diagram. (5 × 12 = 60 marks)

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2017**

**Third Semester**

Branch : Applied Electronics and Instrumentation Engineering/Electronics and Communication Engineering/Instrumentation and Control Engineering/Electronics and Instrumentation Engineering

AI 010 303/EC 010 303/EI 010 303/IC 010 303—NETWORK THEORY [AI, EC, EI, IC]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

Assume missing data, if any required, stating the same.

**Part A**

Answer all questions.  
 Each question carries 3 marks.

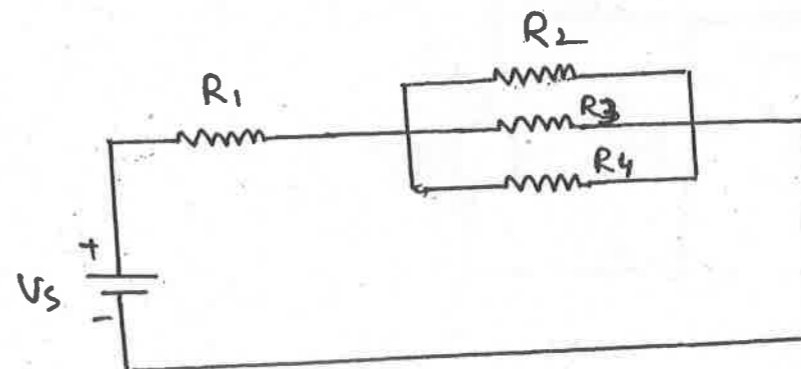
1. What are current dependent and independent sources ?
2. What is an inductor ?
3. What is source transformation.
4. What are poles and zeros ?
5. Draw the magnitude and phase response of a high pass filter.

(5 × 3 = 15 marks)

**Part B**

Answer all questions.  
 Each question carries 5 marks.

6. Determine the total current in the circuit :



$R_1 = 5\Omega, R_2 = 4\Omega,$   
 $R_3 = 2\Omega, R_4 = 4\Omega$   
 $V_S = 30V.$

Turn over

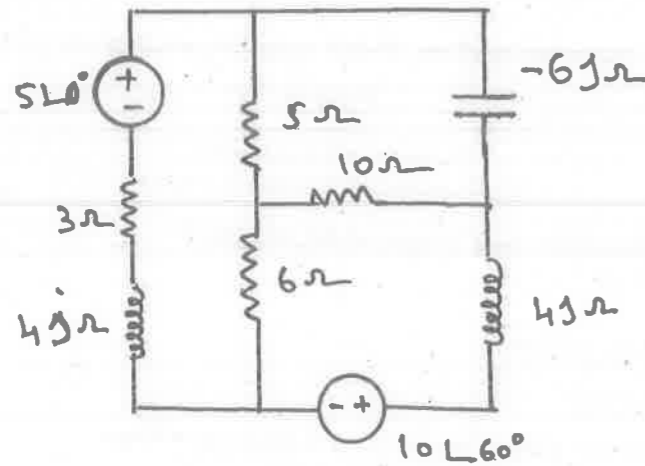
7. Obtain the impulse response of a RC circuit.
8. Find the total current to the parallel circuit with an applied voltage of  $v = 200 \sin 5000t$  V.
9. State and prove final value theorem.
10. Write hybrid parameters and draw its equivalent model.

(5 × 5 = 25 marks)

**Part C**

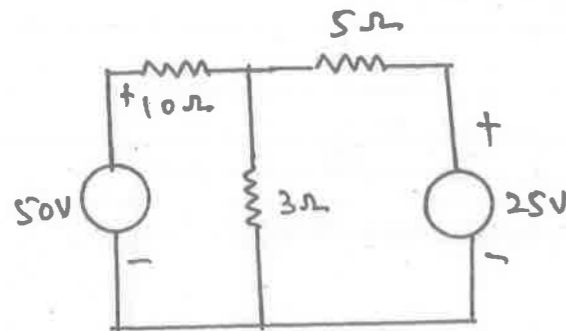
Answer all questions.  
Each full question carries 12 marks.

11. Write the mesh equations of the network shown in figure and find the voltage across the capacitor :

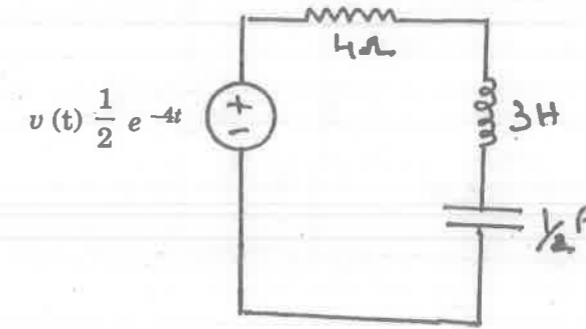


Or

12. Using superposition theorem, find the current in each resistor :

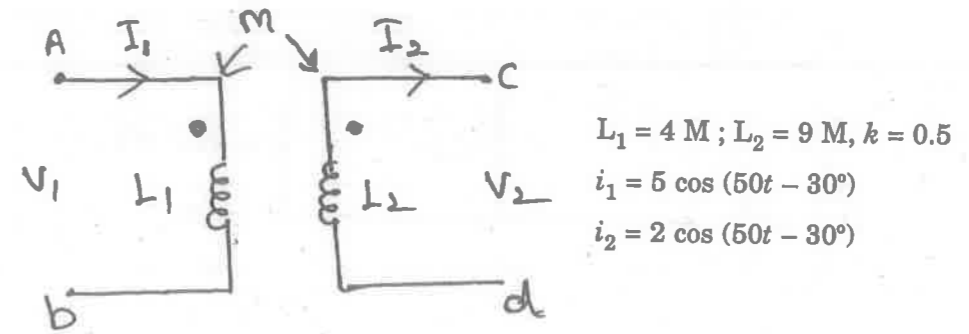


13. Determine the current  $i(t)$  for  $t \geq 0$ . If the initial voltage across the capacitor and initial current through inductor are both zero.



Or

14. In the circuit, find the value of  $V_1$ ,  $V_2$  and the total energy stored at  $t = 0$ .



15. Derive the complete solution for the current of series RL circuit with sinusoidal input  $V(f) = 100 \cos(10^3 t + \pi/2)$ ,  $R = 20 \Omega$ ,  $L = 0.1$  H.

Or

16. Explain in detail about the phasor analysis of magnetically coupled circuits.