

Code No: S9505

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, May - 2018

NETWORK THEORY

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions  
All questions carry equal marks

---

- 1.a) Explain the three phase balanced delta connected system with necessary equations and circuit diagram.
- b) Each phase of a balanced three phase delta connected load absorbs a complex power of  $(3-j2)$  kVA when connected from a three phase star connected balanced supply of  $420\angle 45^\circ$  V. Calculate the phase impedance and line current. [7+8]
- 2.a) Using Laplace transform method, derive the expression for the current in inductor in series RL circuit excited by DC supply.
- b) For the circuit shown in the figure 1 below, find the voltage across the  $3\Omega$  resistor at  $t = 1$  sec. [7+8]

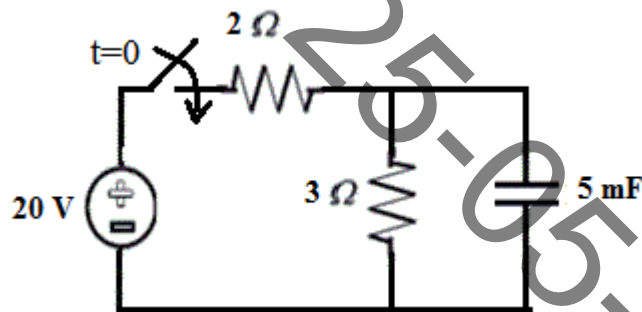


Figure 1

- 3.a) What is transient response? Explain the transient response of series RLC circuit with sinusoidal excitation.
- b) A series RL circuit with  $R = 50 \Omega$  and  $L = 100$  mH has a sinusoidal voltage  $v = 150 \sin(100t + 0.5) V$  Applied at  $t = 0$ . Find current in the circuit for  $t > 0$ . [7+8]
- 4.a) What is complex frequency? Explain the physical interpretation of complex frequency.
- b) What is transfer function? Explain the properties of transfer function. [7+8]
- 5.a) Derive the relationship between transmission and hybrid parameters.
- b) For the circuit diagram below figure 2, determine hybrid parameters. [7+8]

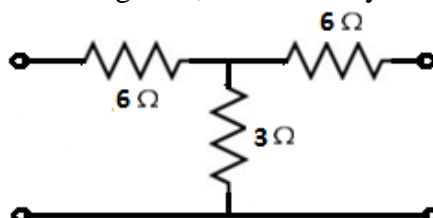


Figure 2

- 6.a) What is meant by cascading? How two port networks are cascaded?  
 b) Two networks A and B shown in the figure 3 are connected in cascade. Determine the transmission parameters of the resultant network. [7+8]

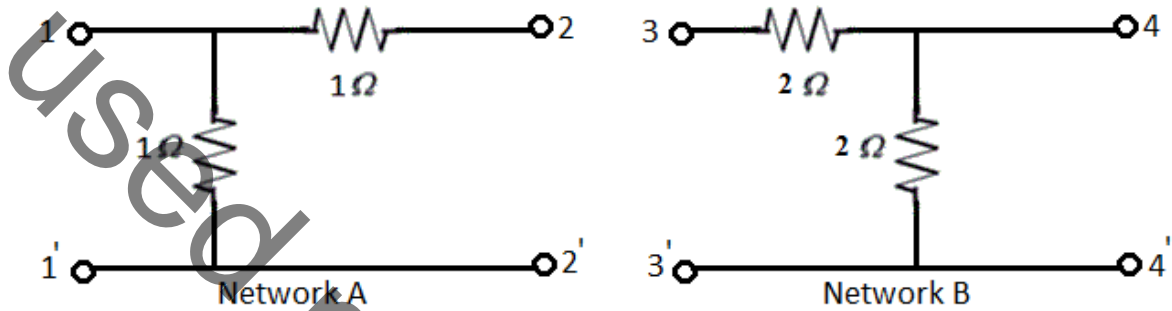


Figure 3

- 7.a) What is a low pass filter? Explain in detail.  
 b) Explain in detail about the design procedure of band pass filter. [7+8]
- 8.a) What is line spectra and phase angle spectra? Explain in detail.  
 b) Explain the properties of Fourier transforms. [7+8]

---ooOoo---

25-05-2018