

D 10155

(Pages : 4)

Name.....

Reg. No.....

**FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021**

(CUCBCSS—UG)

Electronics

ELE 5B 09—NETWORK THEORY

Time : Three Hours

Maximum : 80 Marks

**Part A***Answer all questions.**Each question carries 1 mark.*

1. What is the inductance of a coil having  $10 \Omega$  reactance at 50 Hz
2. Draw the frequency characteristic of Band stop filter.
3. Superposition theorem can be applied to \_\_\_\_\_ networks.
4. The time constant of a series RL circuit is :
5. State Millman's theorem.
6. In case of purely capacitive circuit, average power = \_\_\_\_\_ and  $\theta =$  \_\_\_\_\_.
7. The cutoff frequency of an LPF with RC configuration is 500 Hz. Assuming  $R = 500 \text{ ohm}$  .Find the value of C.
8. In a certain parallel resonant band pass filter, the resonant frequency is 14 KHz and band width is 4 KHz and the lower frequency is \_\_\_\_\_.
9. What is power factor ?
10. In a series circuit having resistance and inductance, the quality factor is ?

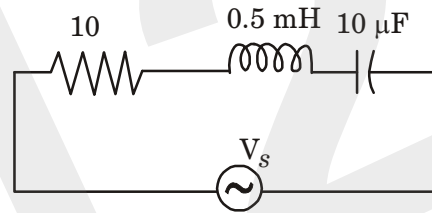
(10 × 1 = 10 marks)

**Part B***Answer any five question.**Each question carries 2 marks.*

11. What is band pass filter and draw its frequency characteristics ?

**Turn over**

12. Determine the resonant frequency (kHz) for the circuit shown below :



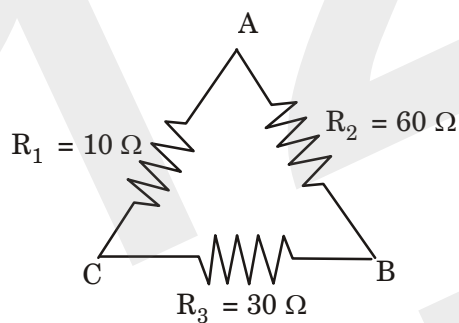
13. State reciprocity theorem and write it's limitation.  
 14. Draw a constant K T section and  $\pi$  Section low pass filter.  
 15. A 30 F capacitor is connected to a 240 V, 60 Hz circuit. What is the current flow in this circuit ?  
 16. Differentiate steady state and transient response.  
 17. Distinguish between Mesh and Loop.

(5 × 2 = 10 marks)

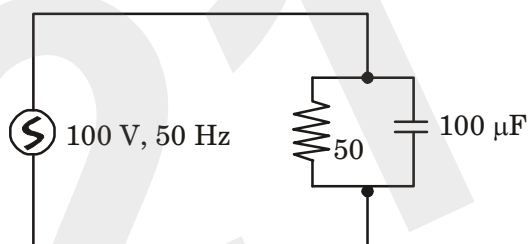
### Part C

Answer any **six** questions.  
 Each question carries 5 marks.

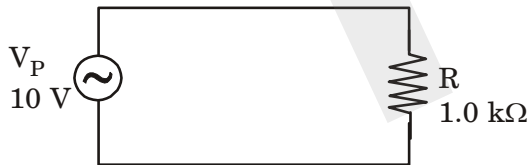
18. Calculate the resistances of delta network, which are equivalent to that of star network :



19. Find the impedance in the circuit shown below :



20. State and Explain Kirchoff's voltage and current law :
21. A sinusoidal voltage is applied to the resistive circuit. Determine the following :
- (a)  $I_{\text{rms}}$ . (b)  $I_{\text{AVG}}$ .
- (c)  $I_{\text{P}}$ . (d)  $I_{\text{P-P}}$ .
- (e)  $i$  at the positive peak.



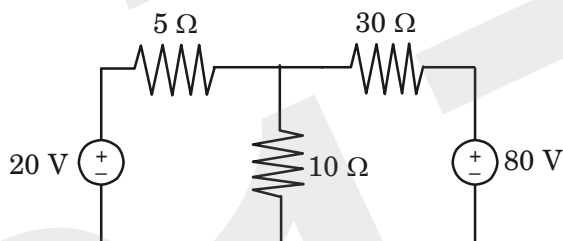
22. What is Norton's theorem how do you find Norton's current and resistance in a circuit.
23. Draw and explain the impedance diagram of series RL circuit.
24. Derive a relation between voltage and current in an AC circuit containing capacitor.
25. Draw the circuit and characteristics of T and  $\pi$  configuration Low Pass Filter.

(6 × 5 = 30 marks)

### Part D

Answer any **two** questions.  
Each question carries 15 marks.

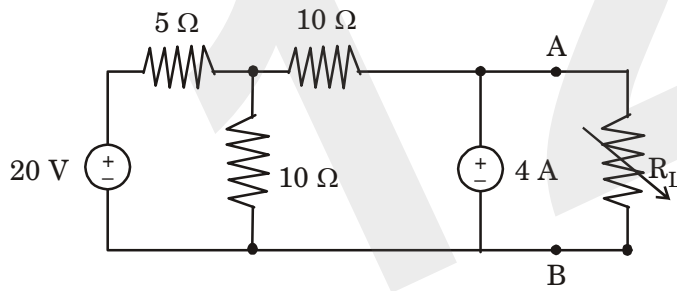
26. Find the voltage across 30  $\Omega$  resistor using Mesh analysis.



27. Draw and Explain the T and  $\pi$  configuration of Band pass filter and draw its characteristics.
28. Discuss the D.C. transient analysis of RL circuit.

Turn over

29. (a) State and prove maximum power transfer theorem.  
(b) Find the maximum power that can be delivered to the load resistor  $R_L$  of the circuit :



(2 × 15 = 30 marks)