BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

Question Bank (K - Scheme)

Name of subject: CIRCUITS & NETWORKS **Unit Test :II**

Subject code: 313325 **Course : EJ**

Semester: III

CHAPTER-3(Analysis of two port network) -12 Marks

(2 Marks)

1) Write the equation of open circuit Z parameter.

2) State the significance of two port network.

3) Write the ABCD parameter of two port network

4) Write the equation of open circuit Y parameters.

(4 Marks)

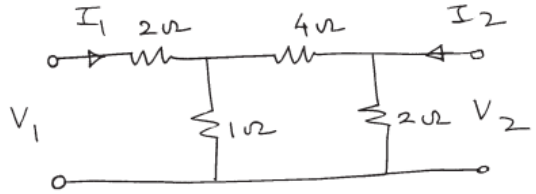
1) Explain 'Π' and 'T' circuit with proper phasor diagram.

2) Explain significance of two-port network .Draw the two port network and determine the indicated parameters for the following configurations: (i) Cascade configurations (ABCD parameter) (ii) Series configurations (iii) Parallel configurations

3) Give comparison between T and π attenuator

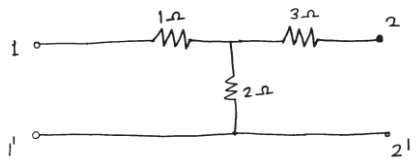
4) Write equation of short circuit Y parameters. Explain Y parameters.

5) Find the Z parameters for the network shown in Fig.

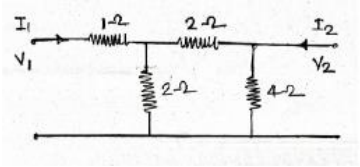


6) Explain 'Z' parameter of two port network

7) Find the short circuit admittance (Y) parameters for the network shown in Fig.



8) Find the Y parameter for the network shown in Fig.



9) Define passive filters. List different types of passive filters

10) Define Band pass filter. State its features

11) Define high pass filter. State its applications.

12) Draw and explain ideal and practical frequency response characteristics High Pass Filter (HPF)

13) Draw and explain ideal and practical frequency response characteristics Band Pass Filter (BPF)

14) State and explain features of Low pass filter and Band stop filter.

15) Give comparison of different types of filters.

16) State the features of T and π attenuator.

17) State the applications of T and π attenuator.

18) Define attenuators. State its types and applications.

19) Draw and explain ideal and practical frequency response characteristics Band Stop Filter (BSF)

CHAPTER-4(Single Phase A.C. Circuit) -14 Marks

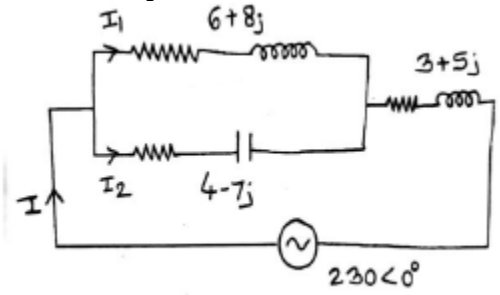
(2-Marks)

1) Define:
   (i) Admittance
   (ii) Conductance
2) Draw phasor diagram for R-L series circuit.
3) Define impedance and reactance related to single phase AC series circuit. Give unit of both.
4) Draw the impedance triangle for R-L series circuit.
5) Write equation of resultant impedance in R-L circuit.
6) Define time period and amplitude related to sinusoidal a.c. waveform
7) Draw the waveform and phasor diagram for a purely capacitive load.
8) Define impedance and reactance related to single phase AC series circuit. Give unit of both.
9) Draw the impedance triangle for R-C series circuit.
10)Define power factor. Write value of power factor purely capacitive circuit.

(4-Marks)

1) Define and state equations for (i) Active Power (ii) Reactive Power (iii) Apparent Power.
2) If Z1 = 3 + j7 and Z2 = 12 – j16 are connected in parallel. Find the equivalent impedance of combination.

3) A coil has resistance of 4 Ω and an inductance of 9.55 mH. Calculate (i) Reactance (ii) The impedance (iii) The current taken from 240 V, 50 Hz supply.
4) Draw the phasor diagrams for a series RL and series RC with AC supply.
5) Compare series and parallel circuits
6) An RC series circuit consists of R = 10Ω and C = 200 μf.it is connected across 250 V, 50Hz,1 φ AC. Calculate the value of power consumed by the circuit.
7) In a series circuit containing pure resistance pure inductance, the current and voltage are expressed as:
I(t) = 5 sin (314t + 2 Π/3) and v(t) = 20 sin (314t + 5 Π/6)
Find:
(i) Impedance of circuit
(ii) Resistance of circuit
(iii) Inductance in circuit
(iv) Average power drawn by circuit.
8) Find I, I1 ,I2 power factor of the circuit in given Fig.



9)Sketch the phasor diagram for the nominal drawn circuit with justification of each phasor drawn.
10) For R-C series circuit draw
(i) Circuit diagram
(ii) Vector diagram
(iii) Waveform of voltage and current
11) Explain the concept of initial and final conditions in switching circuits for elements R and L. 4M
12) A series combination of resistance 100 ohm and capacitance 50μf is connected in series to a 230 V, 50HZ supply. Calculate
(i) Capacitive reactance
(ii) Current
(iii) Power factor
(iv) Power consumed
13) Two impedances given by Z1 = 10 + j5 and Z2 = 8 + j9 are joined in parallel and connected across a voltage of V = 200 + j0. Calculate the circuit current and branch currents. Draw the vector diagram.

CHAPTER-5(Resonance in Series and Parallel circuits) -12 Marks (2-Marks)

1. State Q factor for parallel R.L.C. circuit.

2. Define power factor and quality factor of series resonant circuit.

3. State condition for resonance in R-L-C series circuit.

4. State Q factor for parallel R.L.C. circuit.

(4-Marks)

1. Determine Bandwidth and Quality factor (Q) for the series circuit.

2. Derive the expression for resonance frequency for parallel circuit.

3. Describe the procedure to tune the given electrical circuit using the principles of resonance.

4. List the power factor improves technique and explain any one with advantage and disadvantage

5. Compare series resonance to parallel resonance on the basis of:

(i) Resonant frequency (ii) Impedance (iii) Current and (iv) Magnification.

6. Explain the term bandwidth of a series resonant circuit. Derive its equation.

7. A coil of resistance 20 Ω and 200 μH is in parallel with a variable capacitor. The voltage of the supply is 20 V at a frequency of 106 Hz . Calculate: (i) The value of C to give resonance. (ii) The Q of the coil. (iii) The current in each branch of the circuit at resonance.

8. Compare series and parallel resonance on the basis of

(i)Resonance frequency (ii)Impedance (iii)current (iv)Magnification

9. Derive an expression for resonant frequency of series RLC circuit.

10. An a.c series circuit has resistance of 10ohm, inductance of 0.1H and capacitance of 10μf, voltage applied to circuit is 200V. find (i) Resonant frequency (ii) Current at resonance (iii) Power at resonance

11. A coil of resistance 20 ohm and inductance of 200μH is in parallel with variable capacitor. This combination is in series with a resistance of 8000 ohm. The voltage of the supply is 200 V and at frequency of 106 Hz. Calculate (i) Value of C to give resonance (ii) The Q of the coil (iii) Dynamic resistance of the circuit.

12. Explain the resonance in a parallel circuit and also derive the equation for resonant frequency for the same.

13. Draw the phasor diagram of R-L-C series resonant circuit and write voltage and current equation.

14. A coil of resistance of 50Ω, and inductance of 0.1 H is connected in series with 100 μf capacitor supplied with 230V, 50HZ a.c. supply. Calculate voltage across

each and draw the complete phasor diagram

15. A circuit having a resistance of 5Ω, L=0.4H and a capacitance in series is connected across a 100V, 50Hz.

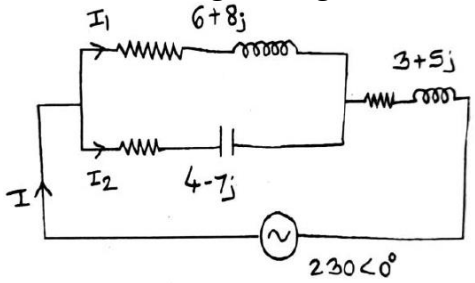
Calculate

1. Value of capacitance to give resonance
2. Impedance of the circuit
3. Circuit current at resonance
4. Voltage across the resistor
5. Voltage across inductance
6. Q factor of resonance.

16. Compare series resonance to parallel resonance on the basis of:

(i) Resonant frequency
(ii) Impedance
(iii) Current and
(iv) Magnification.

17. Find I, I1 ,I2 power factor of the circuit in given Fig.



18. Explain the term bandwidth of a series resonant circuit. Derive its equation.

19. A coil of resistance 20 Ω and 200 μH is in parallel with a variable capacitor. The voltage of the supply is 20 V at a frequency of 10^6 Hz . Calculate :

(i) The value of C to give resonance.
(ii) The Q of the coil.
(iii) The current in each branch of the circuit at resonance.

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