SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT-I

THREE PHASE CIRCUITS

1. Derive the relationship of voltage and current in star connected load. [10M]
2. Derive the relationship of voltage and current in delta connected load. [10M]
3. A three phase balance delta connected load of (4+j8) Ω is connected across a 400V,3¢ balanced supply. Determine the phase currents and line currents. And also power drawn by the load. Assume RYB phase sequence. [10M]
4. A balanced star connected load having an impedance (15+j20) Ω per phase is connected to a three phase 440 V,50Hz supply. Find line currents and phase voltages. Assume RYB phase sequence and also calculate power drawn by the load. [10M]
5. A balanced star connected load of (4+j3) Ω per phase is connected to a balanced 3¢ 400V supply. Find a) active power b) reactive power c)Apparent power. [10M]
6. A balanced delta connected load of (4+j3) Ω per phase is connected to a balanced 3¢ 440V supply. Find a) active power b) reactive power c) Apparent power. [10M]
7. Three impedances $Z_1=20\angle 30$, $Z_2=40\angle 60$,$Z_3=10\angle -90$ are delta connected to a 400V,3¢ System. Determine i) phase currents ii) line currents iii) total power consumed by the load. [10M]
8. An unbalanced 4 wire star connected load has a balanced voltage of 400V. The load are Z_1=(4+j8) Ω ,Z_2=(5+j4)Ω ,Z_3=(15+j20)Ω .Calculate line currents , current in neutral wire, total power. [10M]
9. A 400V,3¢ supply feeds an unbalanced 3 wire star connected load. The branch impedances of the load are Z_R=(4+j8)Ω ,Z_Y=(3+j4)Ω ,Z_B=(5+j20)Ω. Find the line currents and voltages across phase impedance. Assume RYB phase sequence. [10M]
10. a) Write the voltage and current relationship in star connected system? [2M]
    b) Write the voltage and current relationship in star connected system? [2M]
    c) What are the different methods are used to solve the unbalanced systems? [2M]
    d) Draw the star connected load. [2M]
    e) Draw the delta connected load. [2M]

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

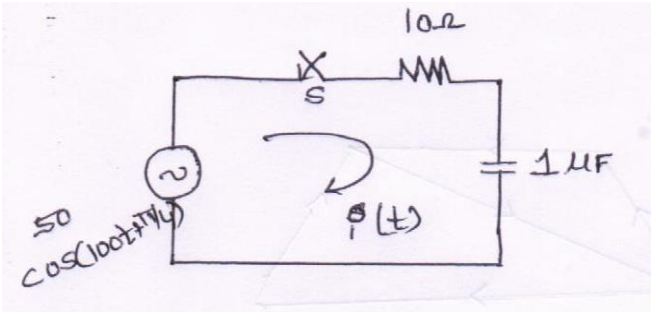
QUESTION BANK (DESCRIPTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT-II
TRANSIENT ANALYSIS

1. Derive the transient response of an RL circuit with DC excitation. [10M]
2. Derive the transient response of an RC circuit with DC excitation. [10M]
3. Derive the transient response of an RLC circuit with DC excitation. [10M]
4. Derive the transient response of an RL circuit with sinusoidal excitation. [10M]
5. Derive the transient response of an RLC circuit with sinusoidal excitation. [10M]
6. Derive the transient response of an RC circuit with AC excitation. [10M]
7. A series RL circuit with R=30Ω and L=15H has a constant voltage V=60V applied at t=0. Determine the current I, the voltage across the resistor and across the inductor. [10M]
8. A series RC circuit consists of resistor of 10Ω and capacitor of 0.1F has a constant voltage of 20V is applied to the circuit at t=0. Obtain the current equation. Determine the voltage across the resistor and the capacitor. [10M]
9. In the circuit shown in fig. Determine the complete solution for the current when switch is closed at t=0,applied voltage is $V(t)=50\cos(10^2t+\pi/4)$,resistance R=10Ωand capacitance c=1μF. [10M]



10.a) Define steady state. [2M]
b) Define transient state. [2M]
c) Find the Laplace transform of the function $f(t) = 4t^3+t^2-6t+7$? [2M]
d) Find L{ $\cos^2 t$}? [2M]
e) What is the transient response of RL series circuit with DC excitation? [2M]

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

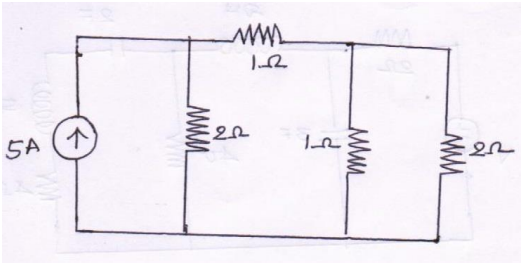
Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

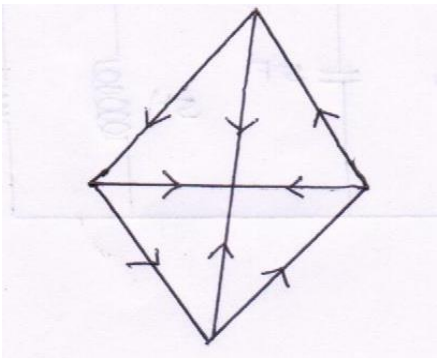
Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT –III

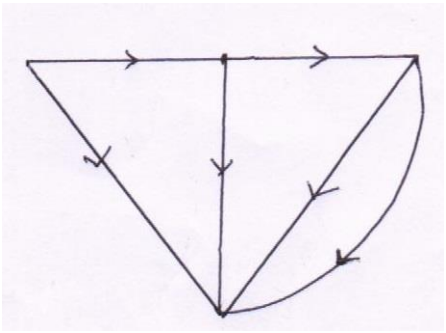
NETWORK TOPOLOGY

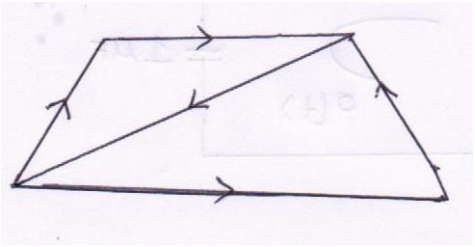
1. Find the cutset matrix for the followings?
   a) [5M] b) [5M]



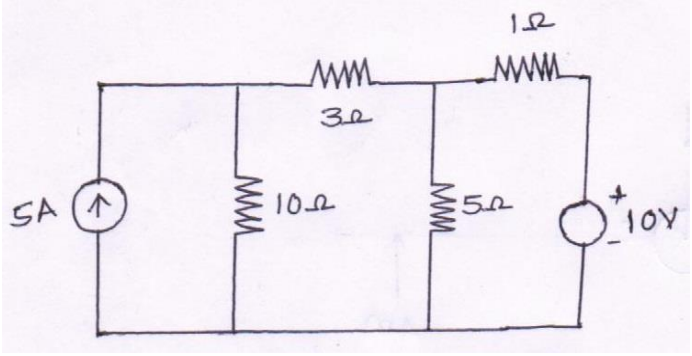


2. Find the tieset matrix for the following?
   a) [5M] b) [5M]

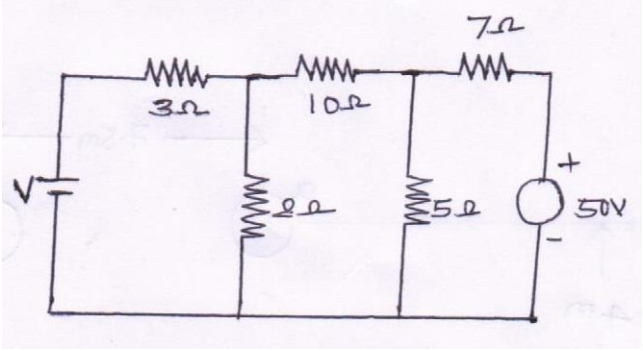




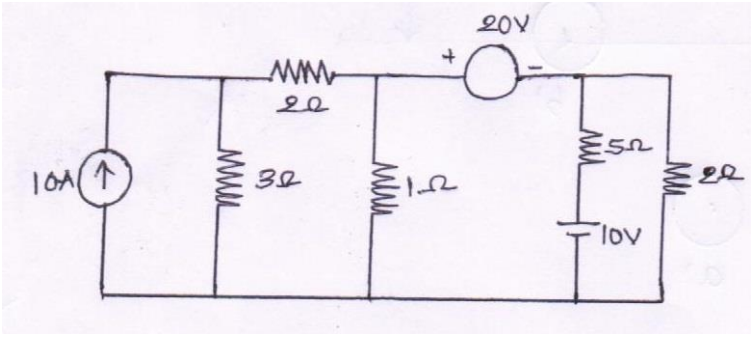
3. Determine current in 10Ω resistor for the following network by using nodal analysis with network topology. [10M]



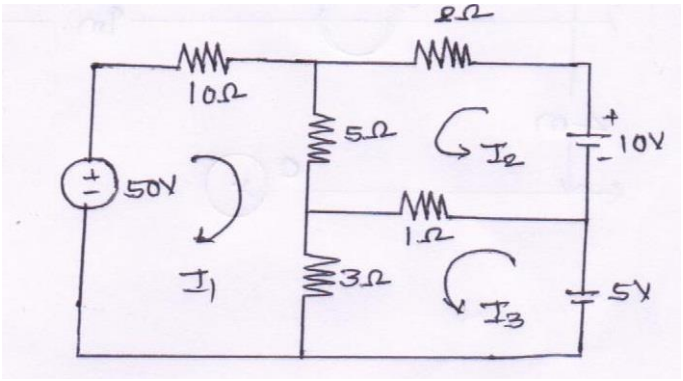
4. Find voltage V for the circuit shown in fig which makes the current in the 10Ω resistor is zero by using nodal analysis with network topology? [10M]



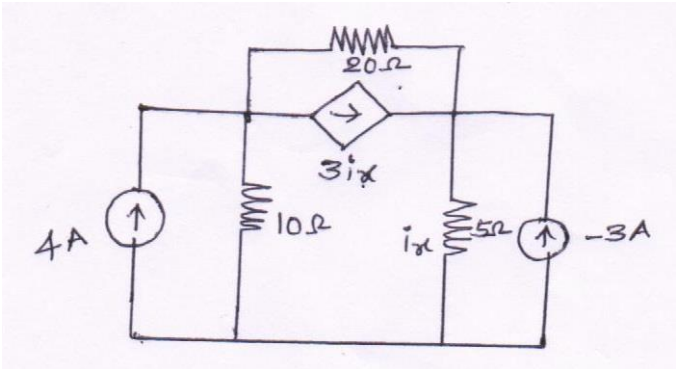
5. Determine current in 5Ω resistor for the circuit shown in figure with network topology. [10M]



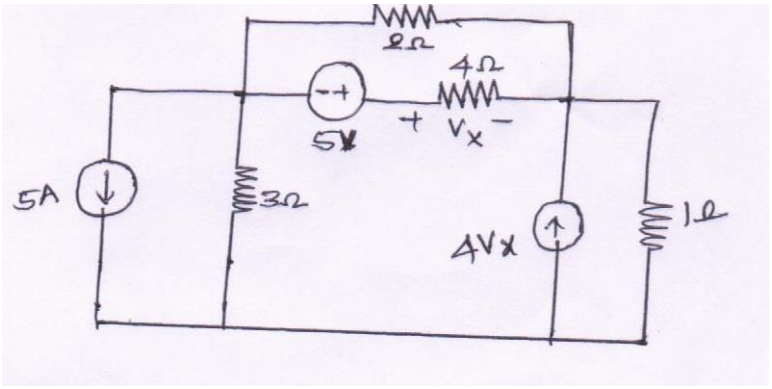
6. Determine mesh currents for the following network using netwok topology. [10M]



7. Determine i_x for the following network using network topology. [10M]

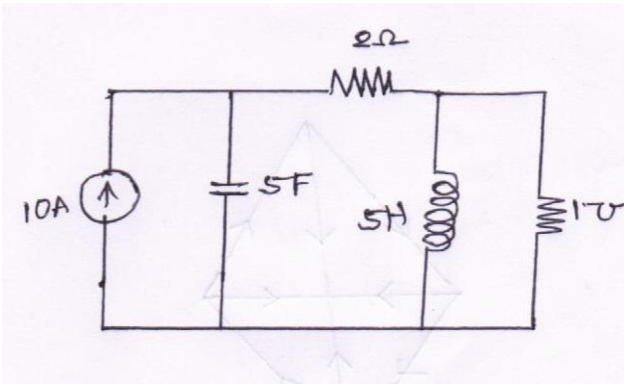


8. For the circuit shown in figure. Find the voltage across 4Ω resistor using nodal analysis with network topology. [10M]

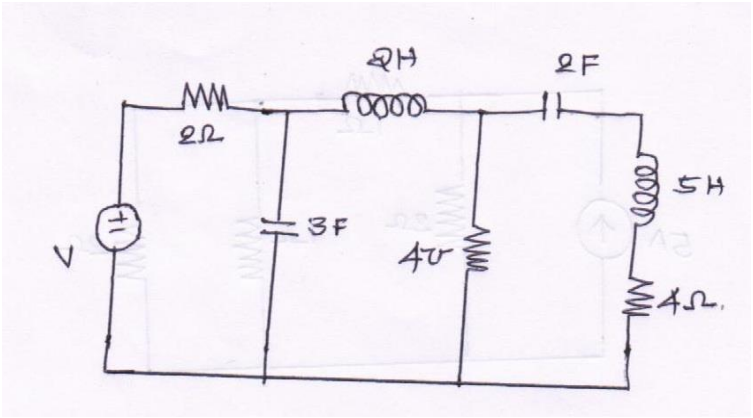


9. Write the procedure to draw the dual network and find dual network for the followings. [10M]

a) [5M]



b) [5M]



10. a) Define graph. [2M]
    b) Define planar and non-planar graph. [2M]
    c) Define duality. [2M]
    d) Define cutest. [2M]
    e) Define tieset. [2M]

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

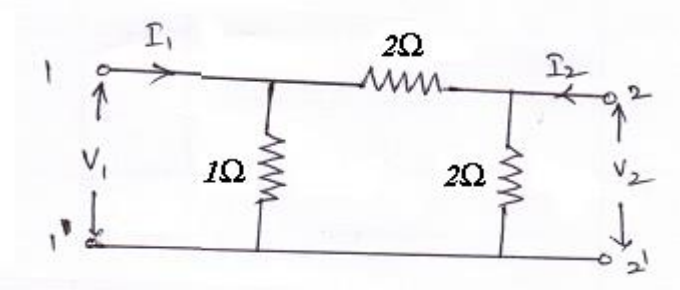
Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

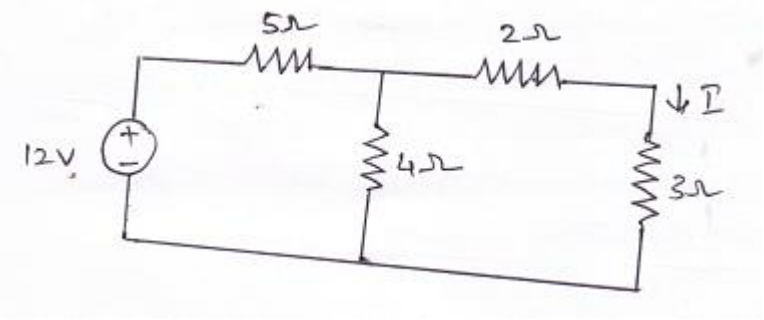
UNIT-IV

TWO PORT NETWORKS

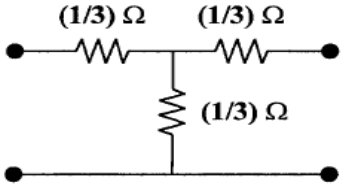
1. Derive the expressions for Z-parameters in terms of ABCD parameters. [L3] [10M]
2. Find the Z - parameters for the resistance network shown in figure (B) [L1] [10M]



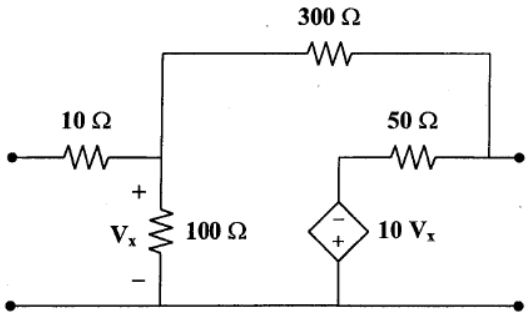
3. Verify Reciprocity Theorem for the network shown in figure (b) [L3] [10M]



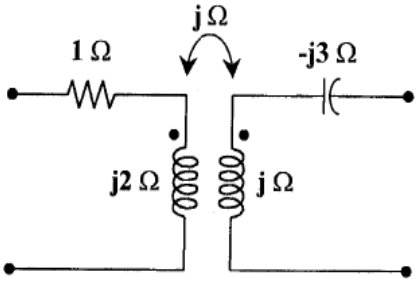
4. Derive the expressions for Y-parameters in terms of ABCD parameters? [L3] [10M]
5. Derive the expressions for h-parameters of a two port network? [L3] [10M]
6. Determine Y parameters of the following network



7. Obtain h and g parameters of following two port network.



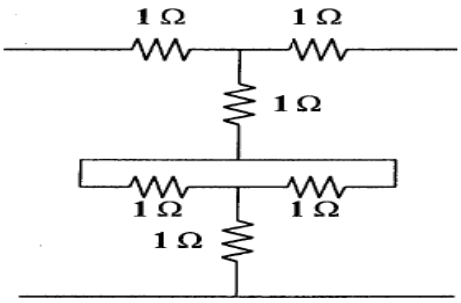
8. Obtain the T parameters of the following two port network



9. Prove the g parameters can be obtained from the z parameters as

$$g_{11} = \frac{1}{z_{11}} \qquad g_{12} = \frac{-z_{12}}{z_{11}} \qquad g_{21} = \frac{z_{21}}{z_{11}} \qquad g_{22} = \frac{\Delta_z}{z_{11}}$$

10. Determine the Z parameters of the following two port network.



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R15

UNIT-V
FILTERS & SYMMETRICAL ATTENUATORS

1. Explain about different types of filters. [10M]
2. Explain about constant K low pass filter. [10M]
3. Explain about constant K high pass filter. [10M]
4. Design a high pass filter having cut of frequency of 1KHz with load resistance of 600ohms. [10M]
5. Design a low pass filter having cut of frequency of 2KHz with load resistance of 500ohms. [10M]
6. Design a low pass filter having cut of frequency of 5KHz with load resistance of 800ohms. [10M]
7. Design K-type band pass filter having cut of frequency of 2KHz &10KHz and with load resistance of 500ohms. [10M]
8. Design a T- pad attenuator to give an attenuation of 60dB and to work in line of 500 ohms impedance.
9. Design a symmetrical bridged T- attenuator with an attenuation of 30 dB and terminated into a load of 500 Ohms.
10. Design a π-type attenuator to give 10 dB attenuation and to have a characteristic impedance of 200 Ohms

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (OBJECTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT – I

THREE PHASE CIRCUITS

1. The voltage between any line and the Neutral point is called _____ [ ]
   A) phase voltage B) line voltage
   C) Both A&B D) None
2. Phase voltage is _____ [ ]
   A) The voltage between any line and the neutral point
   B) The voltage between R line and the neutral point
   C) The voltage between Y line and the neutral point
   D) The voltage between B line and the neutral point
3. The voltage between any two lines is called _____ [ ]
   A)Phase voltage B) line voltage
   C) Both A&B D) None
4. The line voltage is _____ [ ]
   A) The voltage between any two lines B)The voltage between R and Y lines
   C) The voltage between Y and B lines D) The voltage between B and R lines
5. The voltages generated by the 3 phase alternator are [ ]
   A) Same magnitude and different frequency B)different magnitude and same frequency
   C) different magnitude and different frequency D) same magnitude and same frequency
6. In a three-phase system, the voltages are separated by [ ]
   A) 45^0 B) 90^0
   C) 120^0 D)180^0
7. In a three-phase system, when the loads are perfectly balanced, the neutral current is [ ]
   A) Zero B) one-third of maximum
   C) two-thirds of maximum D) at maximum
8. In a certain three-wire Y-connected generator, the phase voltages are 2 kV. The magnitudes of the line voltages are [ ]
   A) 2,000 V B) 6,000 V
   C) 666 V D) 3,464 V
9. In a Δconnected source driving a Δconnected load, the [ ]
   A) load voltage and line voltage are one-third the source voltage for a given phase
   B) load voltage and line voltage are two-thirds the source voltage for a given phase
   C) load voltage and line voltage cancel for a given phase

D) load voltage, line voltage, and source phase voltage are all equal for a given phase

10. In a Δconnected source feeding a Y-connected load, [ ]
    A) each phase voltage equals the difference of the corresponding load voltages
    B) each phase voltage equals the corresponding load voltage
    C) each phase voltage is one-third the corresponding load voltage
    D) each phase voltage is 60° out of phase with the corresponding load voltage
11. In a Y-Y source/load configuration, the [ ]
    A) phase current, the line current, and the load current are all equal in each phase
    B) phase current, the line current, and the load current are 120° out of phase
    C) phase current and the line current are in phase, and both are 120° out of phase with the load current
    D) line current and the load current are in phase, and both are out of phase with the phase current
12. In a Y-connected circuit, the magnitude of each line current is [ ]
    A) one-third the phase current B)three times the corresponding phase current
    C) equal to the corresponding phase current D) zero
13. Polyphase generators produce simultaneous multiple sinusoidal voltages that are separated[ ]
    A) certain constant phase angles B) certain constant frequencies
    C) certain constant voltages D) certain constant currents
14. Which of the following is unit of current [ ]
    A) ampere B) volts
    C) watts D) All
15. Which of the following is unit of voltage [ ]
    A) Ampere B) volts
    C) watts D) All
16. Which of the following is unit of power [ ]
    A) Ampere B) volts
    C) watts D) all
17. Which of the following is unit of energy [ ]
    A) Ampere B) volts
    C) watts D) joules
18. What is the units for Active power _____ [ ]
    A) KVA B) KW
    C) KVAR D)none
19. What is the units for Reactive power _____ [ ]
    A) KVA B) KW
    C) KVAR D)none
20. What is the units for Apparent power _____ [ ]
    A) KVA B) KW
    C) KVAR D)none
21. Units of frequency is [ ]
    A) KVA B) KW
    C) Hz D) none

22. The power in the balanced Delta connected system is [ ]
A)3 $V_{ph}I_{ph}\cos\emptyset$ B)$\sqrt{3}V_{ph}I_{ph}\cos\emptyset$
C) Both A&B D) None

23. The power in the balanced Star connected system is [ ]
A)3 $V_{ph}I_{ph}\cos\emptyset$ B)$\sqrt{3}V_{ph}I_{ph}\cos\emptyset$
C)Both A&B D)None

24. Which of the following statement is correct for star connected load system [ ]
A) $V_{ph}= V_L$ B) $I_{ph}= I_L$
C) $V_{ph}= \sqrt{3}\ V_L$ D) $I_L = \sqrt{3}I_{ph}$

25. Which of the following statement is correct for delta connected load system [ ]
A) $V_{ph}= V_L$ B)$I_{ph}= I_L$
C) $V_{ph}= \sqrt{3}\ V_L$ D)$I_L = \sqrt{3}I_{ph}$

26. In which of the following system, the phase is equal to line voltage [ ]
A) star B) delta
C) star-delta D) delta-star

27. In which of the following system, the line voltage is equal to the phase voltage [ ]
A) Star B) delta
C) star-delta D)delta-star

28. In which of the following system, the line voltage is equal to the $\sqrt{3}$ times of the phase voltage [ ]
A) Star B)delta
C) star-delta D)delta-star

29. In which of the following system, the line current is equal to the $\sqrt{3}$ times of the phase current [ ]
A) Star B) Delta
C) star-delta D)delta-star

30. A balance star connected load of (4+j3)Ω per phase is connected to a balanced 3 phase 400V supply. what is P.F. of the system [ ]
A) 0.8 Lag B)0.6 Lag
C) 0.7 Lag D) 0.4 Lag

31. A balance star connected load of (4+j3)Ω per phase is connected to a balanced 3 phase 400V supply. what is total active power [ ]
A) 25.6 kW B) 9.5 kW
C) 10 Kw D) 12 Kw

32. If in a Y-connected ac generator, each phase voltage has a magnitude of 90V RMS, what is the magnitude of each line voltage? [ ]
A) 0V B) 90V
C) 156 V D)180V

33. In a balanced three-phase load, each phase has [ ]
A) an equal amount of power B) one-third of total power
C) two-thirds of total power D) a power consumption equal to IL

34. In a Y-connected circuit, between each line voltage and the nearest phase voltage, there is a phase angle difference of [ ]

A) 0^0 B) 30^0
C) 60^0 D) 90^0

35. In a certain Y-Y system, the source phase currents each have a magnitude of 9 A. The magnitude of each load current for a balanced load condition is [ ]
A) 3A B) 6A
C) 9A D)27A

36. In a Y-connected circuit, each line voltage are shifted with ____angle of that of phase voltages [ ]
A) 30^0 lead B) 30^0 lag
C) 60^0 lead D) 60^0 lag

37. In a Δ-connected circuit, each line currents are shifted with ____angle of that of phase currents [ ]
A) 30^0 lead B)30^0 lag
C) 60^0 lead D) 60^0 lag

38. Two wattmeter method of power measurement can be used to measure power in [ ]
A) Balance circuits B) Un-balanced circuits
C) Both A & B D) none

39. Three wattmeter method of power measurement can be used to measure power in [ ]
A) Balance circuits B) Un-balanced circuits
C) Both A & B D) none

40. Which of the following methods are used to solve the unbalance 3 wire star connected load [ ]
A) Star to delta transformation B) millimen's theorem
C) Loop method D) ALL

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (OBJECTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT – II

TRANSIENT ANALYSIS

1. Transient behaviour occurs in any circuit when [ ]
   A) There are sudden changes of applied voltages B)the voltage source is shorted
   C) The circuit is connected or disconnected from the supply D) ALL
2. The transient response occurs [ ]
   A) Only in resistance circuit B) only I inductive circuits
   C) Only in capacitive circuits D) both B& C
3. In steady state current and voltages ___ [ ]
   A) Changes w.r.t to time B) doesn't changes w.r.t time
   C) both A& B D) none
4. In transient state current and voltages ___ [ ]
   A) Changes w.r.t to time B) doesn't changes w.r.t time
   C) both A& B D) none
5. Inductor doesn't allows sudden changes in [ ]
   A) Currents B) voltages
   C) Both A & B D) none
6. Capacitor doesn't allows sudden changes in [ ]
   A) Currents B) voltages
   C) Both A & B D) none
7. Inductor allows sudden changes in [ ]
   A) Currents B) voltages
   C) Both A & B D) none
8. Capacitor allows sudden changes [ ]
   A) Currents B) voltages
   C) Both A & B D) none
9. The time constant of series RL circuit is [ ]
   A) LR B) L/R
   C) R/L D) ALL
10. The time constant of series RC circuit is [ ]
    A) 1/RC B) R/C
    C) RC D) ALL

11. L/R is time constant of which of the following circuit [ ]
    A) Parallel RC circuit B) series RC circuit
    C) Series RL circuit D) parallel RL circuit
12. RC is time constant of which of the following circuit [ ]
    A) Parallel RC circuit B) series RC circuit
    C) Series RL circuit D) parallel RL circuit
13. When series RL circuit is connected to a voltage source V at t=0, the current passing through the inductor L at $t=0^+$ is [ ]
    A) V/R B) infinity
    C) Zero D) V/L
14. When series RL circuit is connected to a voltage source V at t=0, the current passing through the inductor L at $t=\infty$ is [ ]
    A) V/R B) Infinity
    B) Zero D) V/L
15. When series RC circuit is connected to a voltage source V at t=0, the current passing through the capacitor C at $t=0^+$ is [ ]
    A) Infinity B) zero
    C) V/R D) V/WC
16. When series RC circuit is connected to a voltage source V at t=0, the current passing through the capacitor C at $t=\infty$ is [ ]
    A) Infinity B) zero
    C) V/R D) V/WC
17. When series RC (R=10Ω,C=2μF) circuit is connected to a voltage source V at t=0, what is the time constant of the network [ ]
    A) 2 ms B) 2 μs
    C) 0.02 ms D) 0.2μs
18. When series RL (R=10Ω,L=5mH) circuit is connected to a voltage source V at t=0, what is the time constant of the network [ ]
    A) 50 ms B) 50 μs
    C) 0.5 ms D) 5 μs
19. When series RC (R=10Ω,C=10μF) circuit is connected to a voltage source V at t=0, the current passing through the capacitor C at t=0.1ms is [ ]
    A) Infinity B) zero
    C) V/R D) 0.63V/R
20. When series RL (R=10Ω,L=10mH) circuit is connected to a voltage source V at t=0, the current passing through the inductor L at t=0.1s is [ ]
    A) Infinity B) zero
    C) V/R D) 0.63V/R
21. The transient current in an RLC circuit is over damped when [ ]
    A) $(\frac{R}{2L})^2 > \frac{1}{LC}$ B) $(\frac{R}{2L})^2 = \frac{1}{LC}$
    C) $(\frac{R}{2L})^2 < \frac{1}{LC}$ D) None
22. The transient current in an RLC circuit is under damped when [ ]
    A) $(\frac{R}{2L})^2 > \frac{1}{LC}$ B)$(\frac{R}{2L})^2 = \frac{1}{LC}$

C) $(\frac{R}{2L})^2 < \frac{1}{LC}$ D) None

23. The transient current in an RLC circuit is critically damped when [ ]
A) $(\frac{R}{2L})^2 > \frac{1}{LC}$ B) $(\frac{R}{2L})^2 = \frac{1}{LC}$
C) $(\frac{R}{2L})^2 < \frac{1}{LC}$ D) None

24. If $(\frac{R}{2L})^2 > \frac{1}{LC}$ condition gives_____ response in RLC series circuit [ ]
A) over damped B) under damped
C) critically damped D) none

25. If $(\frac{R}{2L})^2 = \frac{1}{LC}$ condition gives_____ response in RLC series circuit [ ]
A) over damped B) under damped
C) critically damped D) none

26. If $(\frac{R}{2L})^2 < \frac{1}{LC}$ condition gives_____ response in RLC series circuit [ ]
A) over damped B) under damped
C) critically damped D) none

27. The Laplace transform analysis gives [ ]
A) The time domain response only B) frequency response only
B) Both A& B D) NONE

28. The laplace transform o a unit step function is [ ]
A) 1/S B) 1
B) $1/S^2$ D) $\frac{1}{S+A}$

29. The laplace transform o a unit ramp function is [ ]
A) 1/S B) 1
C) $1/S^2$ D) $\frac{1}{S+A}$

30. The laplace transform of the first derivative of a function f(t) is [ ]
A) F(S)/S B) SF(S)-F(0)
C) SF(S)-F(0) D)F(0)

31. The laplace transform of the integral of a function f(t) is [ ]
A) F(S)/S B)SF(S)-F(0)
C) SF(S)-F(0) D) $F^{'}(0)$

32. Laplace transform of the function e^{-20t} is [ ]
A) $\frac{1}{s-20}$ B) s+20
C) $s - 20$ D) $\frac{1}{s+20}$

33. Laplace transform of cos2t [ ]
A) $\frac{1}{S^2+4}$ B)) $\frac{1}{S^2-4}$
C) $\frac{S}{S^2+4}$ D)$\frac{S}{S^2-4}$

34. Laplace transform of sin4t [ ]
A) $\frac{1}{S^2+16}$ B) $\frac{1}{S^2-16}$
C) $\frac{4}{S^2+16}$ D) $\frac{2}{S^2+16}$

35. The laplace transform of $e^{5t}f(t)$ is [ ]

A) F(s) B) F(S-1)
C) F(S/5) D) F(S-5)

36. The inverse transform of $\frac{6}{s^4}$ is [ ]
A) 3 B) t^3
C) t^2 D) 3t

37. The inverse laplace of $\frac{2}{s+3}$ is [ ]
A) 2(t+3) B) $2e^{-3t}$
C) e^{-3t} D) $2e^{-t}$

38. Laplace transform of damped sinewave e^{-3t} sin50t is [ ]
A) $\frac{1}{(S+3)^2+50^2}$ B) $\frac{S}{(S+3)^2+50^2}$
C) $\frac{50}{(S+3)^2+50^2}$ D) $\frac{50^2}{(S+3)^2+50^2}$

39. The initial value of $\frac{2s+1}{s^4+8s^3+16s^2+s}$ is [ ]
A) 2 B) infinity
C) zero D) 1

40. The initial value of $20-10t-e^{-25t}$ is [ ]
A) 20 B) 19
C) 10 D) 25

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (OBJECTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

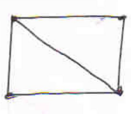
Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT – III

NETWORK TOPOLOGY

1. A tree has [ ]
   A) A closed path B) no closed path
   C) Path D) none
2. The no. of branches in tree is _____ than the no. of branches in a graph. [ ]
   A) More B) Less than
   C) Equal D) None
3. The no. of nodes in tree is _____ than the no. of nodes in a graph. [ ]
   A) More B) Less than
   C) Equal D) None
4. In a plane surface, if there is no two branches cross each other in graph, then the graph is called _____ [ ]
   A) Planar B) Non-planar
   C) Both A&B D) None
5. Which of the following is a non-planar graph? [ ]

A) 

B) 

C) 

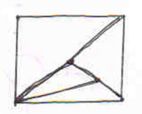
D) 

6. Which of the following is a planar graph? [ ]

A) 

B) 

C)



D)

7. In a plane surface, if two branches are cross each other in graph, then the graph is called _____ [ ]

A) Planar B) Non-planar
C) Both A&B D) None

8. Planar graph has [ ]

A) Cross over branches B) no cross over branches
C) Both A&B D) none

9. Non-Planar graph has [ ]

A) Cross over branches B) no cross over branches
C) Both A&B D) none

10. Which of the following statement is correct _____ [ ]

A) b=e-1 B) b=n-1
C) b=n+2 D) b=l+2

11. Which of the following statement is correct _____ [ ]

A) l=e-1 B) l=b-1
C) l=n+2 D) l=e-b

12. The incidence of elements to nodes in a connected graph is shown by _____matrix.[ ]

A) Cutset B) Tieset
C) Incidence matrix D) None

13. Incidence matrix contains_____ [ ]

A) nodes, branches B) nodes, links
C) links, nodes D) None

14. The value in the matrix A is positive 1 if [ ]

A) The element is incident to the node B) The element is far away to the node
C) The element is not connected to the node D) none

15. The value in the matrix A is negative 1 if [ ]

A) The element is incident to the node B) The element is far away to the node
C) The element is not connected to the node D) none

16. The value in the matrix A is 0 if [ ]

A) The element is incident to the node B) The element is far away to the node
C) The element is not connected to the node D) none

17. The dimension of incidence matrix is _____ [ ]

A) n x e B) n x b
C) n x l D) n x (b-1)

18. The dimension of incidence matrix is _____ [ ]

A) n x e B) (n -1) x e
C) n x (e -1) D) (n -1) x (e-1)

19. The branches of a tree is called [ ]
A) Cord B) twing
C) Both A& B D)none

20. The links of a tree is called [ ]
A) Cord B) twing
C) Both A& B D)none

21. Which of the following is the property of incidence matrix_____ [ ]
A) The sum of values in column matrix is zero B) The sum of the values in row matrix is zero
C) Both A&B D) None

22. The tieset schedule gives relation between [ ]
A) Branch currents and link currents B) branch voltages and link currents
C) Branch currents and link voltages D) None

23. The cutset schedule gives relation between [ ]
A) Branch currents and link currents B) branch voltages and link voltages
C) Branch voltages and link currents D) None

24. The no. of possible combinations of trees can be calculated using the formulae. [ ]
A) det[BA] B) det[AA^T]
C) det[A^TA] D) det[BA^T]

25. The fundamental loop of a tree is called _____ [ ]
A) Cutset B) Tieset
C) Both A&B D) None

26. No. of cutsets are equal to the no. of _____ of the tree [ ]
A) Branch B) loop
C) link D) None

27. No. of tiesets of a tree is equal to the no. of _____ of the tree. [ ]
A) Branch B) loop
C) link D) None

28. The direction of cutset is in the direction of _____ of the tree. [ ]
A) Branch B) loop
C) link D) None

29. The direction of tieset is in the direction of _____ of the tree. [ ]
A) Branch B) loop
C) link D) None

30. The dimension of tieset matrix is _____ [ ]
A) l x e B) b x e
C) l x n D) n x l

31. The dimension of cutset matrix is _____ [ ]
A) l x e B) b x e
C) l x n D) n x l

32. The no. of cutsets of the below graph is _____ [ ]
A) 1 B) 2

C) 3 D) 4

33. The no. of tiesets of the above graph is _____ [ ]
A) 1 B) 2
C) 3 D) 4

34. The no. of links of above graph is _____ [ ]
A) 1 B) 2
C) 3 D) 4

35. The no. of twings of above Graph is _____ [ ]
A) 1 B) 2
C) 3 D) 4

36. The no. of branches of tree of above graph is____ [ ]
A) 1 B) 2
C) 3 D) 4

37. The no. of branches of tree of above graph is____ [ ]
A) 1 B) 2
C) 3 D) 4

38. The no. of cords of tree of above graph is____ [ ]
A) 1 B) 2
C) 3 D) 4

39. Mesh analysis based on [ ]
A) KCL B) KVL
C) Both D) none

40. Mesh analysis based on [ ]
A) KCL B) KVL
C) Both D) none

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (OBJECTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

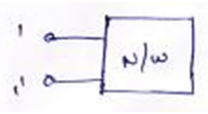
Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT – IV

TWO PORT NETWORKS

1. Which parameters are widely used in transmission line theory [ ]
   A) Z parameters B) Y parameters C) ABCD parameters D) h parameters
2. For a two port network to be reciprocal [ ]
   A) $Z_{11} = Z_{22}$ B) $h_{21} = -h_{12}$ C) $Y_{21} = Y_{22}$ D) AD-BC = 0
3. The h parameters h_{11} and $h_{12}$are obtained [ ]
   A) by shorting the output terminals B) by opening input terminals
   C) by shorting input terminals D) by opening output terminals
4. Two ports containing sources in their branches are called [ ]
   A) passive ports B)two ports C) active ports D)none

5. In Z parameter V_1, V_2 are [ ]
   A) Independent variables B) dependent variables C) both A and B D) none
6. Which of the parameters widely used in transmission line theory [ ]
   A) Z parameters B) ABCD parameters C) Y parameters D) H parameters
7. Which of the following is two port network [ ]

A)  B)  C)  D) None

8. In Z parameters are also called as [ ]
   A) short circuit admittance parameters B)short circuit impedance parameters
   C) open circuit impedance parameters D) open circuit admittance parameters
9. In Y parameter I_1,I_2 are [ ]
   Dependent variables B)Independent variables C)Both A & B D) None
10. In describing the transmission parameters [ ]
    A) The input voltage and current are expressed in terms of output voltage and current
    B) The input voltage and output voltage are expressed in terms of output current and input current
    C) The input voltage and output current expressed in terms of input current and output voltage D) none
11. If the two port network is reciprocal then [ ]
    A) $Y_{11} = Y_{22}$ B) $Y_{12} = Y_{22}$ C) $Y_{12} = Y_{11}$ D) $Y_{12} = Y_{21}$
12. Y parameters are also called as [ ]
    A) Short circuit admittance parameters B) short circuit impedance parameters
    C) Open circuit admittance parameters D) open circuit impedance parameters

13. Which parameters are widely used in transmission line theory [ ]
    A) Z parameters B) Y parameters C) ABCD parameters D) H parameters

14. Y parameters are also called as [ ]
A) Short circuit admittance parameters B) short circuit impedance parameters
C) Open circuit admittance parameters D) open circuit impedance parameters

15. Two ports containing sources in their branches are called [ ]

A) Passive ports B) two ports C) active ports D) none

16. If the two port network is reciprocal then [ ]
A) $Z_{11} = Z_{22}$ B) $Z_{12} = Z_{21}$. C) $Z_{11} = Z_{12}$. D) All

17. If the two port network is reciprocal then [ ]
A) $Y_{11} = Y_{22}$ B) $Y_{12} = Y_{22}$ C) $Y_{12} = Y_{11}$ D) $Y_{12} = Y_{21}$

18. Y parameters are also called as [ ]
A) Short circuit admittance parameters B) short circuit impedance parameters
C) Open circuit admittance parameters D) open circuit impedance parameters

19. Transmission parameters are also called as [ ]
A) Y parameters B) General circuit parameters C) H parameters D) z parameters

20. A Two port network is simply a network inside a black box , and the network has only [ ]
A) Two terminals B) two pair of terminals C) two pair of ports D) two pair of accessible terminals

21. The no. of possible combinations generated by four variable taken two at a time in two-port network is [ ]

A) 6 B) 3 C) 2 D) 5

22. If the two port network is reciprocal then [ ]
A) $Z_{11} = Z_{22}$ B) $Z_{12} = Z_{21}$. C) $Z_{11} = Z_{12}$. D) All

23. In Y parameters I_1, I_2 are [ ]
A) Independent variables B) dependent variables C) both A and B D) none

24. In Y parameters V_1, V_2 are [ ]
A) Independent variables B) dependent variables C) both A and B D) none

25. In ABCD parameters V_1, I_1 are [ ]
A) Independent variables B) dependent variables C) both A and B D) none

26. In ABCD parameters V_2, I_2 are [ ]
A) Independent variables B) dependent variables C) both A and B D) none

27 If z-parameters are $z_{11} = 40$, $z_{22} = 50$ and $z_{12} = z_{21} = 20$, what would be the value of y_{22} in the matrix form of y-parameters given below?

$$\begin{bmatrix} \frac{5}{160} & -\frac{2}{160} \\ -\frac{2}{160} & ? \end{bmatrix}$$

A) 4 / 160 B) 5 / 160 C) 10 / 160 D) 15 / 150

28) If the two ports are connected in cascade configuration, then which arithmetic operation should be performed between the individual transmission parameters in order to determine overall transmission parameters?

A) Addition B) Subtraction C) Multiplication D) Division

29) Which among the following represents the precise condition of reciprocity for transmission parameters?

A) AB - CD = 1 B) AD – BC = 1 C) AC – BD = 1 D) None of the above

30) Which is the correct condition of symmetry observed in z-parameters?

A) $z_{11} = z_{22}$ B) $z_{11} = z_{12}$ C) $z_{12} = z_{22}$ D) $z_{12} = z_{21}$

31) An open circuit reverse voltage gain in h-parameters is a unitless quantity and generally equivalent to _____

A) V_1 / I_1 (keeping $V_2 = 0$) B) I_2 / I_1 (keeping $V_2 = 0$) C) V_1 / V_2 (keeping $I_1 = 0$)
D) I_2 / V_2 (keeping $I_1 = 0$)

32. In the circuit shown below, the network N is described by the following Y matrix: $Y = \begin{bmatrix} 0.1s & -0.01s \\ 0.01s & 0.1s \end{bmatrix}$ The voltage gain $V2/V1$ is

A) 1/90 B) -1/90 C) -1/99 D) -1/11 [GATE 2011: 2 Marks]

33. If the scattering matrix [S] of a two port network is $[S] = \begin{bmatrix} 0.2\angle 0 & 0.9\angle 0 \\ 0.9\angle 0 & 0.1\angle 0 \end{bmatrix}$ Then the network is

A) Lossless and reciprocal B) Lossless but not reciprocal
C) Not lossless but reciprocal D) Neither lossless not reciprocal[GATE 2010: 1 Mark]

34. For a 2-port network to be reciprocal,

A) z11 = z22 B) y21 = y12 C) h21 = -h12 D) AD – BC = 0 [GATE 1992: 2 Marks]

SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (OBJECTIVE)

Subject with Code : NAS (16EE203) **Course & Branch**: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R16

UNIT – V

FILTERS & SYMMETRICAL ATTENUATORS

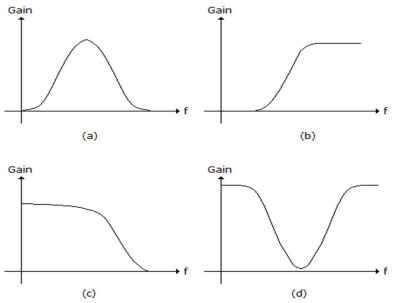
1. A low filter is one which [ ]
   A) Passes all low frequencies B) attenuates all high frequencies
   C) passes all frequencies up to cut-off frequency and attenuates all other frequencies D) none
2. A high pass filter is on which [ ]
   A) Passes all high frequencies
   B) attenuates all low frequencies
   C) Attenuates all frequencies below a designated cut-off frequency, and passes all frequencies above cut off
   D) none
3. A band stop filter is one which [ ]
   A) Attenuates frequencies between two designed cut off frequencies and passes all other freq
   B) Passes frequencies between two designated cut off frequencies and attenuates all other frequencies
   C) Passes all frequencies
   D) None
4. An ideal filter should have [ ]
   A) Zero attenuation in pass band B)infinite attenuation in pass band
   C) Zero attenuation in attenuation band D)infinite attenuation in attenuation band
5. The propagation constant of a symmetrical T-section and π-section are [ ]
   A) Same B) not same
   C) Equal to 1 D) equal to zero
6. A line work as [ ]
   A) attenuator B) LPF
   C) HPF D) neither of the above
7. Attenuation is expressed in [ ]
   A) Decibels B) nepers
   C) Both D)none
8. Attenuation distortion occurs due to [ ]
   A) Non uniform attenuation against frequency B)uniform attenuation against frequency
   C) Non uniform attenuation against time D)uniform attenuation against time

9. Decibel is unit of which of the following [ ]
   A) Attenuation B) transient
   C) Power D) energy
10. Neper is unit of which of the following [ ]
   A) Attenuation B)transient
   C) Power D)energy
11. The natural logarithm of ration of input voltage(or current) to output voltage(or current) is called [ ]
   A) Decibel B) neper
   C) Power D) voltage ratio
12. _____ Is defined as 10 times of the ratio of input voltage((or current) to output voltage(or current) is called [ ]
   A) Decibel B) neper
   C) Power D)voltage ratio
13. ____Is defined as 10 times of the ratio of input power to output power [ ]
   A) Decibel B) neper
   C) Power D)voltage ratio
14. One decibel is equal to _____neper [ ]
   A) 1.115 B) 0.115
   C) 2.113 D) 5.115
15. One neper is equal to _____decibels [ ]
   A) 8.009 B) 8.69
   C) 9.69 D) 10.69
16. The critical frequency is defined as the point at which the response drops___ from the pass band [ ]
   A) –20 dB B) –3 dB
   C) –6 dB D) –40 dB
17. _____ filter passes all frequencies within a band between a lower and an upper critical frequency and rejects all others outside this band. [ ]
   A)low-pass B) high pass
   C) band pass D)band stop
18. A third-order filter will have a roll-off rate of [ ]
   A) -20 dB/decade B) -40 dB/decade
   C) -60 dB/decade D) -80 dB/decade
19. A network designed to pass signals with all frequencies except those between two specified cut-off frequencies is called a [ ]
   A) low-pass B)high pass
   C) band pass D)band stop
20. A network designed to pass signals at frequencies above a specified cut-off frequency is called a [ ]
   A) low-pass B)high pass
   C) band pass D)band stop
21. A network designed to pass signals at frequencies below a specified cut-off frequency is called a [ ]

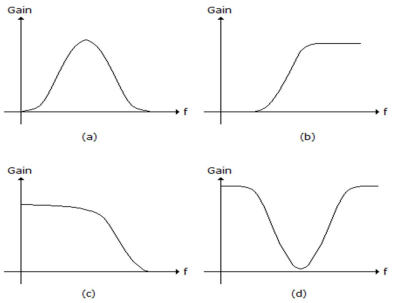
A) low-pass B)high pass
C) band pass D)band stop

22. A network designed to pass signals with frequencies between two specified cut-off frequencies is called a [ ]
A) low-pass B)high pass
C) band pass D)band stop

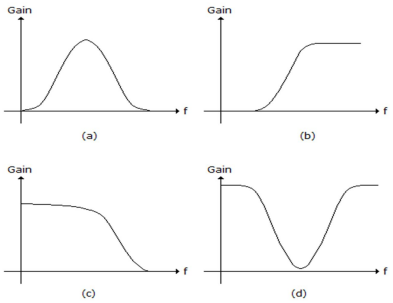
23. Identify the frequency response curve for a band-pass filter. [ ]



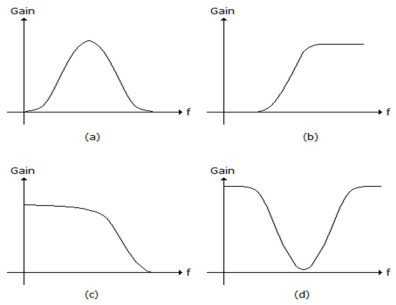
24. Identify the frequency response curve for a low-pass filter [ ]



25. Identify the frequency response curve for a high-pass filter [ ]



26. Identify the frequency response curve for a band-stop filter [ ]



27) Variable attenuators exhibit variable attenuation but constant _____

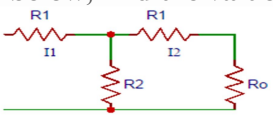
a. Input impedance b. Output impedance c. Both a and b d. None of the above

28) Why are the variable attenuators applicable for radio broadcasting purposes?
a. For speed control b. For volume control c. For time control d. For power control

29) Which type of attenuators provide a fixed amount of attenuation by allowing the user to vary the attenuation in multiple steps?
a. Ladder attenuators b. Variable-value attenuators c. Pad attenuators d. All of the above

30) . The attenuation in dB in terms of input power (P_1) and output power (P_2) is?
a) $\log_{10}(P_1/P_2)$ b)10 $\log_{10}(P_1/P_2)$ c) $\log_{10}(P_2/P_1)$ d) 10 $\log_{10}(P_2/P_1)$

31). In the circuit shown below, find the value of I_1/I_2.



a) $(R_1-R_2+R_0)/R_2$ b) $(R_1+R_2+R_0)/R_2$ c) $(R_1-R_2-R_0)/R_2$ d) $(R_1+R_2-R_0)/R_2$

32) The Characteristic Impedance of a low pass filter in attenuation Band is
(A) Purely imaginary. (B) Zero. (C) Complex quantity. (D) Real value.

33) The purpose of an Attenuator is to:
(A) increase signal strength. (B) provide impedance matching.
(C) decrease reflections. (D) decrease value of signal strength.

34) All pass filter
(A) passes whole of the audio band. (B) passes whole of the radio band.
(C) passes all frequencies with very low attenuation.
(D) passes all frequencies without attenuation but phase is changed.

35) If ' 'α is attenuation in nepers then
(A) attenuation in dB = α / 0.8686. (B) attenuation in dB = 8.686 α.
(C) attenuation in dB = 0.1 α. (D) attenuation in dB = 0.01 α.

36) For a constant K high pass π-filter, characteristic impedance Z for f < 0 c f is
(A) resistive. (B) inductive. (C) capacitive. (D) inductive or capacitive.

37) For an m-derived high pass filter, the cut off frequency is 4KHz and the filter has an infinite attenuation at 3.6 KHz, the value of m is
(A) 0.436 (B) 4.36 (C) 0.34 (D) 0.6

38) In a variable bridged T-attenuator, with , RA = Ro zero dB attenuation can be obtained if bridge arm RB and shunt arm R are set as C
(A) R B = ,0 RC = ∞ (B) 0 RB = ∞,RC = (C) R B = ,R RC = ∞ (D) RB = ,0 RC = R

39) In m-derived terminating half sections, m =
(A) 0.1 (B) 0.3 (C) 0.6 (D) 0.95

40) Bridged T network can be used as:
(A) Attenuator (B) Low pass filter (C) High pass filter (D) Band pass filter