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

QUESTION BANK (DESCRIPTIVE)

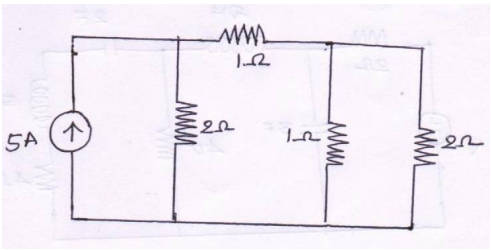
Subject with Code : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

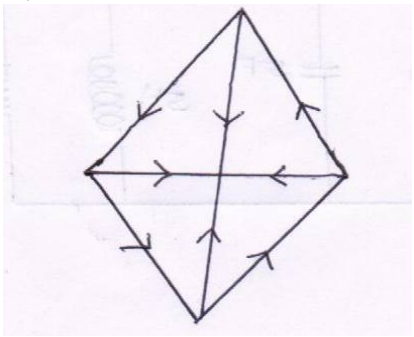
Year & Sem: II-B.Tech & I-Sem **Regulation:** R15

UNIT –I

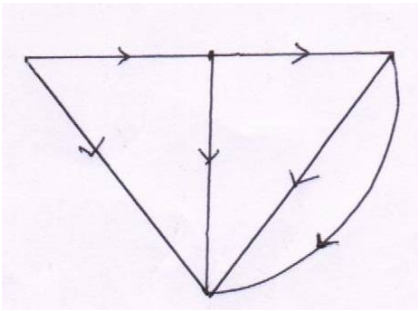
NETWORK TOPOLOGY

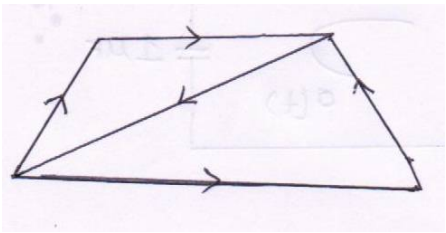
1. Find the cutset matrix for the followings?
   a) [5M] b) [5M]



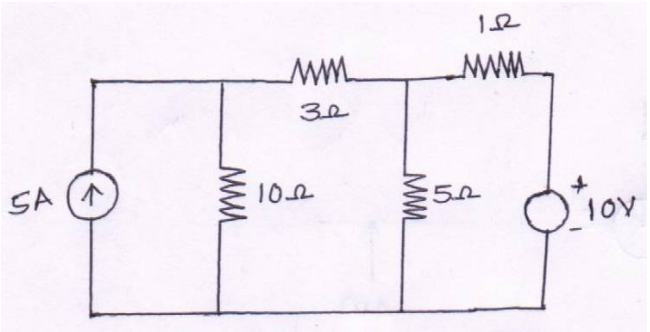


2. Find the tieset matrix for the followings?
   a) [5M] b) [5M]

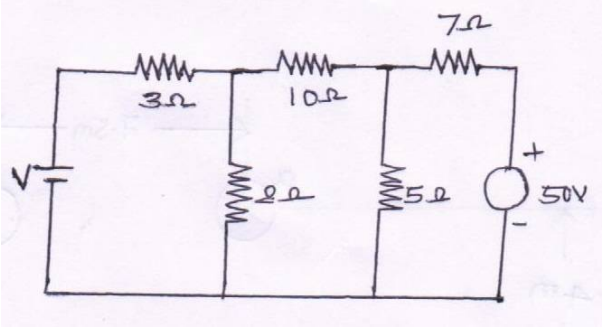




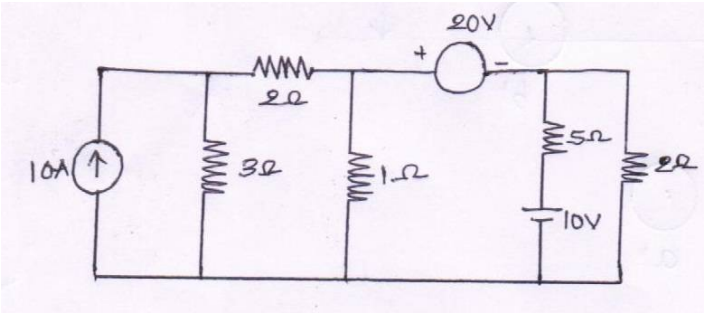
3. Determine current in 10Ω resistor for the following network by using nodal analysis. [10M]



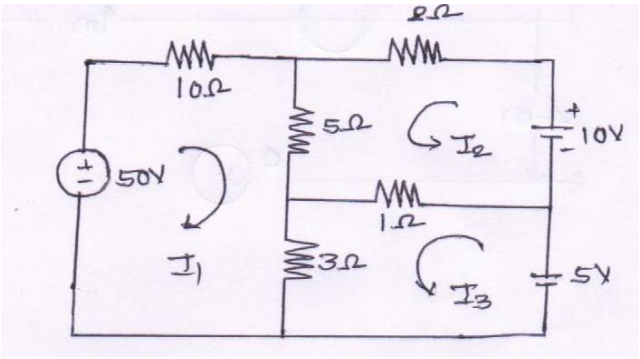
4. Find voltage V for the circuit shown in fig which makes the current in the 10Ω resistor is zero by using nodal analysis? [10M]



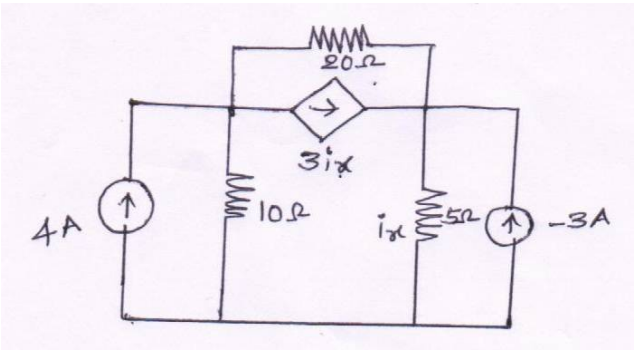
5. Determine current in 5Ω resistor for the circuit shown in figure. [10M]



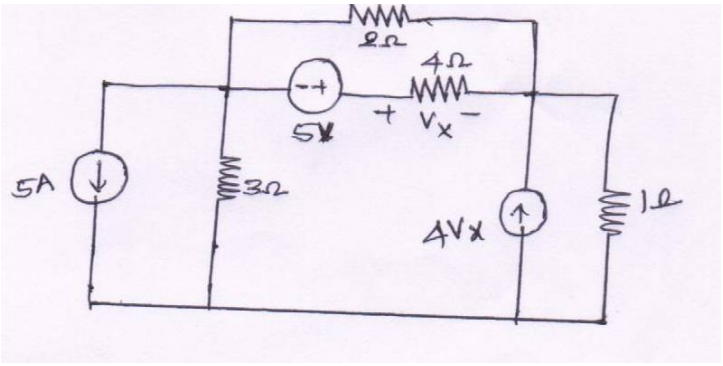
6. Determine mesh currents for the following network. [10M]



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

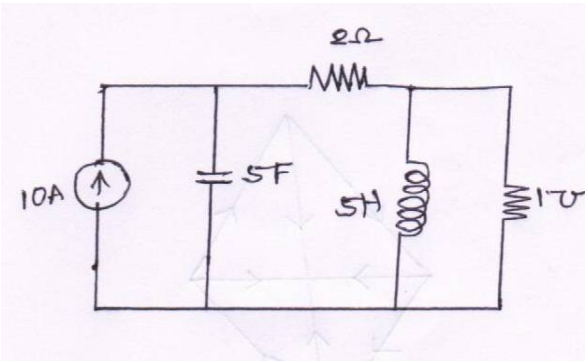


8. For the circuit shown in figure. Find the voltage across 4Ω resistor using nodal analysis. [10M]

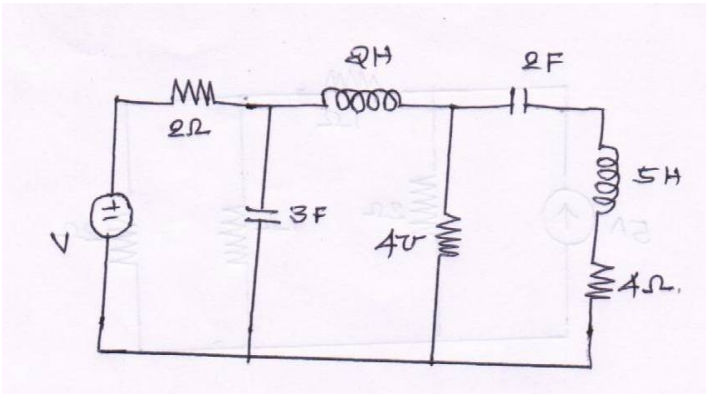


9. Write the procedure to draw the dual network and find dual network for the followings. [10M]

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 : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

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

UNIT-2

THREE PHASE AC 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. The phase current is 12 A. 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. The phase current is 12 A. 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 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

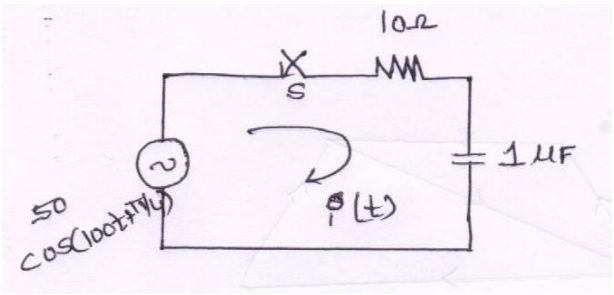
QUESTION BANK (DESCRIPTIVE)

Subject with Code : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

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

UNIT-III
TRANSIENT RESPONSE

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 Ac excitation. [10M]
5. Derive the transient response of an RLC circuit with AC 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

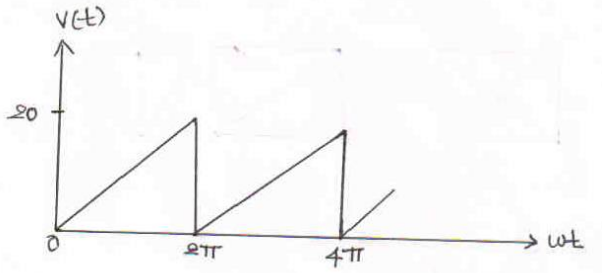
QUESTION BANK (DESCRIPTIVE)

Subject with Code : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

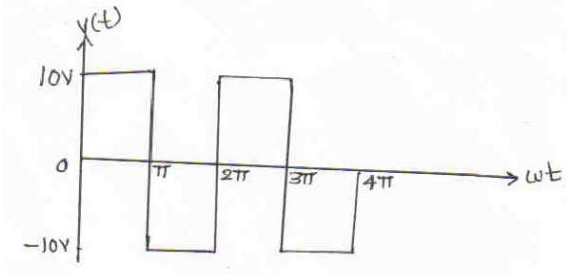
Year & Sem: II-B.Tech & I-Sem **Regulation:** R15

UNIT-IV
FOURIER TRANSFORMS

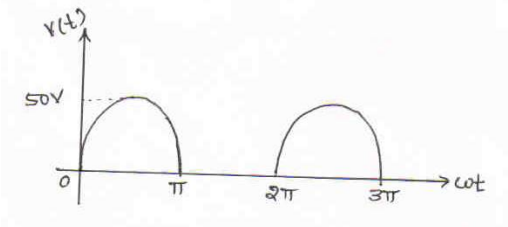
1. Derive the trigonometric form of Fourier series. [10M]
2. Derive the exponential form of Fourier series. [10M]
3. Find Fourier series for the following waveform shown in fig. [10M]



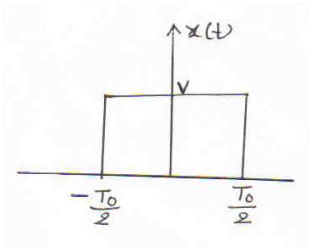
4. Find Fourier series for the following waveform shown in fig. [10M]



5. Find Fourier series for the following waveform shown in fig. and plot the spectrum. [10M]

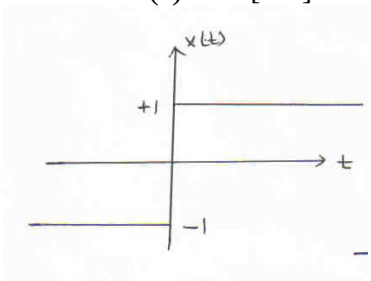


6. Write and prove the properties of Fourier transforms? [10M]
7. Determine Fourier transform of the following waveform shown in fig. [10M]

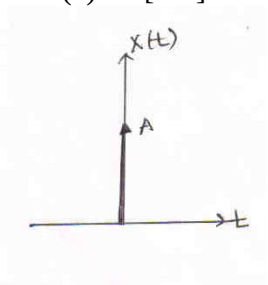


8. Determine Fourier transform of the following waveforms shown in fig.

(a) [5M]

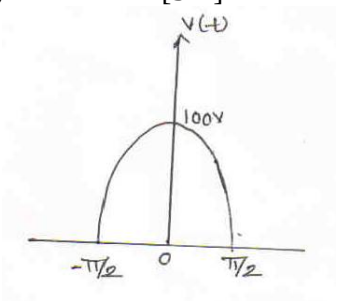


(b) [5M]

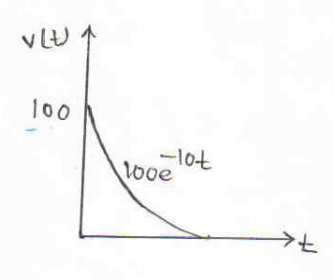


9. Determine Fourier transform of the following waveforms shown in fig.

a) [5M]



b) [5M]



10. a) Write exponential form of Fourier series? [2M]
    b) Define Fourier series. [2M]
    c) Define Fourier transform. [2M]
    d) Write trigonometric form of Fourier series? [2M]
    e) Write any two properties of Fourier transform? [2M]

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

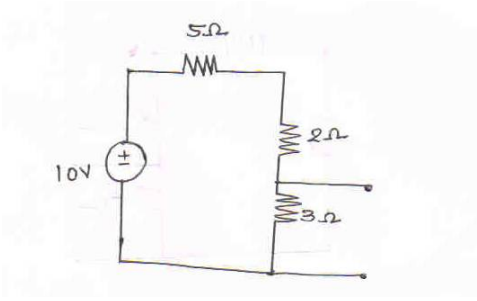
QUESTION BANK (DESCRIPTIVE)

Subject with Code : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

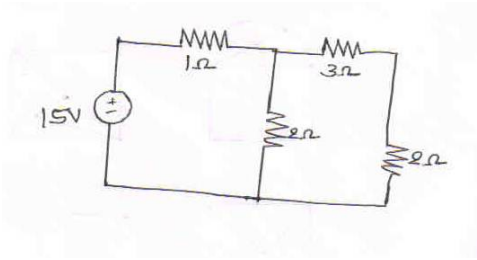
Year & Sem: II-B.Tech & I-Sem **Regulation:** R15

UNIT-V
FILTERS AND CIRCUIT SIMULATION

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. Write the PS-PICE program for the circuit shown in fig. to determine voltage across the 3Ω resistor? [10M]



9. Write the PS-PICE program for the circuit shown in fig. to determine voltage across the all nodes? [10M]



10. a) Define filter. [2M]
    b) Draw the RC filter. [2M]
    c) Draw the RL filter. [2M]
    d) What is the purpose of using .TRAN statement using in PSPICE program? [2M]
    e) Define PSPICE. [2M]

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

QUESTION BANK (OBJECTIVE)

Subject with Code : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

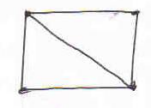
Year & Sem: II-B.Tech & I-Sem **Regulation:** R15

UNIT – I

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 : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

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

UNIT – II

THREE PHASE AC 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,n 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 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 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)Star
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. The phase current is 12A. 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. The phase current is 12A. what is total active power [ ]

A) 6.6 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 90 VRMS, 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 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 : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

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

UNIT – III

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 A& B

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 inductor L 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 inductor L 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) 0.2 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) 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 inductor L at t=0.1ms is [ ]

A) Infinity

B) zero

C) V/R

D) V/WC

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) V/WC

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) $\frac{4}{s^2+16}$

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 $e^{-3t}\sin 50t$ 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 : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

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

UNIT – IV

FOURIER TRANSFORMS

1. Fourier series for the signal e^{-at} does not exist if [ ]

   A) a>0 B) a=0

   C) a=1 D) a<0

2. The Fourier transform [ ]

   A) satisfies linearity B) does not satisfies linearity

   B) both A& B D) none

3. Fourier transform of the unit impulse δ(t) is [ ]

A) 0 B) π

C) 1 D) $\delta(w)$

4. What is the spectrum of a dc signal [ ]

A) 0 B) π

C) 2π D) $2\pi\delta(w)$

5. The Fourier transform exist ,if the following condition is satisfied [ ]

A) $\int_{-\infty}^{\infty}|f(t)dt| > K$ B) $\int_{-\infty}^{\infty}|f(t)dt| < \infty$

C) $\int_{-\infty}^{\infty}|f(t)dt| = 0$ D) none

6. Inverse Fourier transform of $\delta(w-w_0)$ [ ]

A) $\frac{1}{2\pi}e^{-jw_0t}$ B) $\frac{1}{2\pi}$

C) e^{-jw_0t} D) e^{jw_0t}

7. The Fourier transform of signal x(t) is [ ]

A) –x(w) B) x(-w)

C) -x(-w) D) x(w)

8. The Fourier transform of sin(t) function is [ ]

A) $\frac{2}{jw}$ B) $\frac{2}{jw}$

C) jw D) 2jw

9. Time convolution property states that [ ]

A) $F_1(t)* F_2(t)$ B) $F_1(t)F_2(t)$

C) $F_1(w)* F_2(w)$ D) $F_1(w)/ F_2(w)$

10. The frequency convolution property states that [ ]

A) $F_1(t)* F_2(t)$ B) $F_1(t)F_2(t)$

C) $F_1(w)* F_2^*(w)$ D) $F_1(w)/ F_2(w)$

11. In a periodic signal, The period T_0 is doubled, the fundamental frequency w_0 in the spectrum becomes [ ]

A) Doubled B) halved

C) Increased 4 times D) no change

12. Any periodic function can be expressed by a Fourier series when the function having[ ]

A) Infinite number of finite discontinuities in a period

B) finite number of finite discontinuities in a period

C) finite number of infinite discontinuities in a period

D) Infinite number of infinite discontinuities in a period

13. A function is said to be even, if x(t) is [ ]

A) x(-t) B)-x(t)

C) x(2t) D) x(t)

14. A function is said to be even, if x(t) is [ ]

A) x(-t) B) -x(t)

C) x(2t) D) x(t)

15. If x(-t)=x(t) then the function is called [ ]

A) Odd function B) even function

C) Both A & B D) none

16. If x(-t)=-x(t) then the function is called [ ]\

A) Odd function B) even function

C) Both A & B D) none

17. Identify the even function [ ]

A) Cosine B) sine

C) Both A&B D) none

18. Identify the odd function [ ]

A) Cosine B) sine

C) Both A&B D) none

19. A periodic function x(t) is said to have half wave symmetry if x(t) is [ ]

A)-x(t+$\frac{T}{2}$) B) x(t+$\frac{T}{2}$)

C) -x(t-$\frac{T}{2}$) D) -x(t-$\frac{T}{2}$)

20. The Fourier transform of a conjugate symmetric function is always [ ]

A) imaginary B) conjugate anti-symmetric

C) real D) conjugate symmetric

21. The Fourier transform may be applied to [ ]

A) Non-periodic B)Periodic

C) Both periodic &non-periodic D) Neither periodic or non-periodic

22. The Fourier transform of u(t) is [ ]

A) $\frac{1}{j\omega}$ B) $j\omega$

C) $\frac{1}{1+j\omega}$ D) $\pi\delta(\omega)+\frac{1}{j\omega}$

23. The Fourier transform of $e^{-at}u(t)$ is [ ]

A) $\frac{1}{a-j\omega}$ B) $\frac{1}{a+j\omega}$

C) $\frac{1}{a^2+\omega^2}$ D) $\frac{1}{a^2-\omega^2}$

24. The Fourier transform of tx(t) is [ ]

A) $\frac{dX(j\omega)}{d\omega}$ B) j $\frac{dX(j\omega)}{d\omega}$

C) $\frac{X(j\omega)}{\omega}$ D) $\frac{jdX(j\omega)}{d\omega}$

25. The Fourier transform of $e^{j\omega_0 t}x(t)$ is [ ]

A) X($\omega + \omega_0$) B) X(ω_0)

C) X($\omega - \omega_0$) D)$X(\frac{\omega}{\omega_0})$

26. The Fourier transform of $x^*(t)$ is [ ]

A) $X^*(\omega)$ B) $X^*(-\omega)$

C) $-X^*(\omega)$ D) $-X^*(-\omega)$

27. The Fourier transform of $\frac{dx(t)}{dt}$ is [ ]

A) $\frac{d\omega}{\omega}X(\omega)$ B) $\frac{1}{\omega}X(\omega)$

C) $j\omega X(\omega)$ D) $\frac{j\omega}{X(\omega)}$

28. The Fourier transform of x(at)= [ ]

A) $\frac{1}{|a|}X\left(\frac{\omega}{a}\right)$ B)$\frac{1}{|a|}X(a\omega)$

C) $\frac{1}{|a|}X\left(\frac{a}{\omega}\right)$ D)$\frac{1}{|\omega|}X\left(\frac{\omega}{a}\right)$

29. The Fourier series may be applied to [ ]

A) Non-periodic B)Periodic

C) Both periodic &non-periodic D) Neither periodic or non-period

30. Periodic signal are analyzed by using [ ]

A) Fourier series B) Fourier transforms

C) Both A&B D) none

31. Non-Periodic signal are analyzed by using [ ]

A) Fourier series B) Fourier transforms

C) Both A&B D) none

32. If the signals can be represented by sum of the sinusoids whose frequencies are integral multiple of fundamental frequency is called [ ]

A) Non-periodic B) Periodic

C) Both periodic &non-periodic D) Neither periodic or non-period

33. If the signals can be represented by sum of the sinusoids whose frequencies are not integral multiple of fundamental frequency is called [ ]

A) Non-periodic B) Periodic

C) Both periodic &non-periodic D) Neither periodic or non-period

34. Fourier series can be represented as [ ]

A) Trigonometric form B) exponential form

C) Both A & B D) none

35. Series coefficient a_0 in Fourier series can be calculated using [ ]

A) $\frac{1}{2\pi}\int_0^{\pi} x(t)d(wt)$ B) $\frac{1}{2\pi}\int_0^{2\pi} x(t)d(wt)$

C) $\frac{1}{2\pi}\int_{\pi}^{2\pi} x(t)d(wt)$ D) $\frac{1}{2\pi}\int_{-\pi}^{\pi} x(t)d(wt)$

36. Series coefficient a_n in Fourier series can be calculated using [ ]

A) $\frac{1}{\pi}\int_0^{\pi} x(t)d(wt)$ B) $\frac{1}{\pi}\int_0^{2\pi} x(t)cosnwt\ d(wt)$

C) $\frac{1}{\pi}\int_0^{2\pi} x(t)sinnwt\ d(wt)$ D) $\frac{1}{\pi}\int_{\pi}^{2\pi} x(t)cosnwt\ d(wt)$

37. Series coefficient b_n in Fourier series can be calculated using [ ]

A) $\frac{1}{\pi}\int_0^{\pi} x(t)d(wt)$ B) $\frac{1}{\pi}\int_0^{2\pi} x(t)cosnwt\ d(wt)$

C) $\frac{1}{\pi}\int_0^{2\pi} x(t)sinnwt\ d(wt)$ D) $\frac{1}{\pi}\int_{\pi}^{2\pi} x(t)cosnwt\ d(wt)$

38. Which of the following is a periodic signal [ ]

A) x(t) B) x(t+T)

C) x(2t) D) x(w)

39. Parseval's identity states that $\int_{\infty}^{\infty}|f(t)|^2dt =$ [ ]

A) $\int_{\infty}^{\infty} X_1(\omega)X_2^*(\omega)d\omega$ B) $\frac{1}{2\pi}\int_{\infty}^{\infty} X_1(\omega)X_2^*(\omega)d\omega$

C) $\frac{1}{2\pi}\int_{\infty}^{\infty} X_1^{\circ}(\omega)X_2^{\circ}(\omega)d\omega$ D) $2\pi\int_{\infty}^{\infty} X_1(\omega)X_2^{\circ}(\omega)d\omega$

40. The Fourier transform of $x_1(n)*x_2(n)$ is [ ]

A) $X1(\omega)\ X(\omega)$ B) $X1(\omega)X2(\omega)$

C) $X1(\omega) * X2(\omega)$ D) Does not exits

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

QUESTION BANK (OBJECTIVE)

Subject with Code : EC-II(15A02301) **Course & Branch**: B.Tech - EEE

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

UNIT – V

FILTERS AND CIRCUITS SIMULATION

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

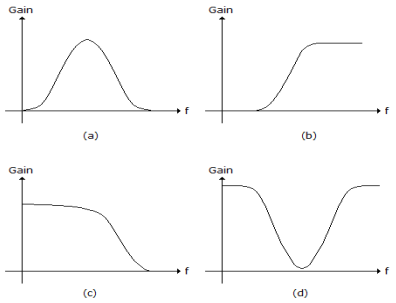
C) band pass D)band stop

22. A network designed to pass signals with frequencies between two specified cut-off frequencies is called a [ ]

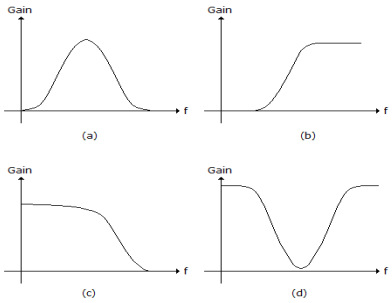
A) low-pass B)high pass

C) band pass D)band stop

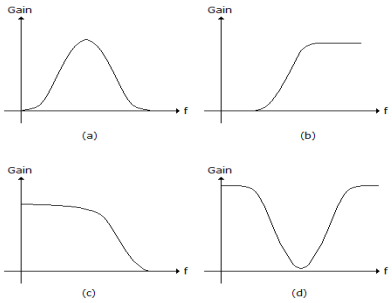
23. Identify the frequency response curve for a band-pass filter. [ ]



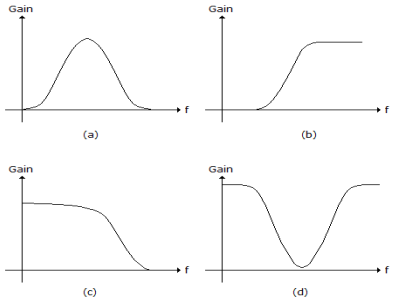
24. Identify the frequency response curve for a low-pass filter [ ]



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



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



27. A point in network or diagram at which paths or line intersects is called___ [ ]
A) Branch B) node
C) element D) ALL

28. The interconnection of nodes is called [ ]
A) Branch B) node
C) element D)ALL

29. The element which delivers power is called [ ]
A) Load B) source
C) Both D) none

30. The element which consumes power is called [ ]
A) Load B)source
C) Both D)none

31. Which of the following is passive element [ ]
A) Current source B) voltage source
C) Power D) resistor

32. Which of the following is active element [ ]
A) Power B) resistor
C) Voltage source D) diode

33. The maximum output voltage of a certain low-pass filter is 15 V. The output voltage at the critical frequency is [ ]
A) 0 V B) 15 V
C) 10.60 V D) 21.21 V

34. A practical voltage source consists of [ ]
A) an ideal voltage source in series with an internal resistance
B) an ideal voltage source in parallel with an internal resistance
C) both (A) and (B) are correct
D) none of the above

35. A practical current source consists of [ ]
A) an ideal current source in series with an internal resistance
B) an ideal current source in parallel with an internal resistance
C) both (A) and (B) are correct
D) none of the above

36. Which of the following is dependent is not a dependent source [ ]
A) CCVS B) VCCS
C) VCCS D) VCDS

37. Which of the following statement is used to calculate all node voltages and reference node voltage [ ]

A) .TRAN B) .OP

C) .END D) .PRINT

38. Which of the following statement is used to provide graphical capacity of PSpice [ ]

A) .TRAN B) .OP

C) .PROB D) .PRINT

39. Which of the following statement is used for outputs of PSpice [ ]

A).TRAN B) .OP

C) .END D) .PRINT

40. Which of the following statement is used to specifies the time interval over which transient analysis takes place of PSpice [ ]

A) .TRAN B) .OP

C) .END D) .PRINT

Prepared by **B.JAYANTHI**