

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

I B.TECH I SEMESTER MR15 Regulations

For EEE AND ECE Branches

ELECTRICAL CIRCUITS-II Mid Question Bank

Module -III

1. Basic source of magnetism _____. []
(a) Charged particles alone (b) Movement of charged particles
(c) Magnetic dipoles (d) Magnetic domains
2. Units for magnetic flux density []
(a) Wb / m² (b) Wb / A.m (c) A / m (d) Tesla / m
3. Magnetic permeability has units as []
(a) Wb / m² (b) Wb / A.m (c) A / m (d) Tesla / m
4. Magnetic permeability has units as []
(a) Tesla (b) Henry (c) Tesla / m (d) Henry / m
5. Magnetic field strength's units are []
(a) Wb / m² (b) Wb / A.m (c) A / m (d) Tesla / m
6. Example for dia-magnetic materials []
(a) super conductors (b) alkali metals (c) transition metals (d) Ferrites
7. Example for para-magnetic materials []
(a) super conductors (b) alkali metals (c) transition metals (d) Ferrites
8. Example for ferro-magnetic materials []
(a) super conductors (b) alkali metals (c) transition metals (d) Ferrites
9. Example for anti-ferro-magnetic materials []
(a) salts of transition elements (b) rare earth elements (c) transition metals (d) Ferrites
10. Example for ferri-magnetic materials []
(a) salts of transition elements (b) rare earth elements (c) transition metals (d) Ferrite
11. Which of following circuit element stores energy in electromagnetic field? []
(a) inductor (b) condenser (c) variable resistor (d) capacitor
12. Emf induced in a coil rotating in a uniform magnetic field will be maximum when the []
(a) flux linking with the coil is maximum (b) rate of change of flux linkage is minimum.
(c) rate of change of flux linkage is maximum. (d) rate of cutting flux by coil sides is minimum.
13. The emf induced in a conductor rotating in bipolar field is []
(a) dc (b) ac (c) dc and ac both (d) none of these
14. The direction of induced emf can be found by []
(a) kirchoffs law (b) lenz law (c) Flemings right hand rule (d) laplace law

15. A coil with negligible resistance has 50 V across it with 10 mA. The inductive reactance is
 (a) 50 ohms (b) 500 ohms (c) 1000 ohms (d) 5000 ohms []
16. A copper disc is rotated rapidly below a freely suspended magnetic needle. The magnetic needle starts rotating with velocity []
 (a) equal to that of disc and in the same direction. (b) equal to that of disc and in the opposite direction.
 (c) less than that of disc and in the same direction. (d) less than that of disc but in opposite direction.
17. The working principle of transformer depends on []
 (a) Coulomb's law. (b) Faraday's law of electromagnetic induction.
 (c) Ampere's law. (d) Newton's law
18. 1 Maxwell is the same as []
 (a) 10^{-8} weber (b) 10^8 weber. (c) 10^4 weber. (d) 10^{-4} weber.
19. When a magnet is in motion relative to a coil the induced emf does not depend upon []
 (a) pole strength of the magnet (b) motion of the magnet.
 (c) resistance of the coil. (d) number of turns of the coil
20. Self inductance of magnetic coil is proportional to []
 (a) N (b) $1/N$ (c) N^2 . (d) $1/N^2$.
21. A coil is wound on iron core which carries current I. The self-induced voltage in the coil is not affected by
 (a) variation in coil current. (b) variation in voltage to the coil.
 (c) change the number of turns of coil. (d) the resistance of magnetic path.
22. Both the number of turns and the core length of an inductive coil are doubled. Its self-inductance will be []
 (a) unaffected. (b) doubled. (c) halved. (d) quadrupled
23. The magnitude of the induced emf in a conductor depends upon on the []
 (a) flux density of the magnetic field. (b) amount of flux cut.
 (c) amount of flux linkage. (d) rate of change of flux linkage.
24. The property of the coil by which a counter emf is induced in it when the current through the coil changes is known as []
 (a) self inductance. (b) mutual inductance. (c) series aiding inductance. (d) capacitance.
25. In case of all flux from the current in coil 1 links with coil 2, the coefficient of coupling will be
 (a) 2.0 (b) 1.0 (c) 0.5 (d) zero []

Module-3 Answers:

- 1. B 2. A 3. B 4. D 5. C 6. A 7. B 8. C 9. A 10. D 11. A 12. C 13. B 14. C 15. D 16. C 17. B 18. A 19. C 20. C 21. C 22. B 23. D 24. A 25. B**

Module-IV

1. Even though an ac waveform can take any shape the _____ is the most preferable. []
A. Square wave B. Sine wave C. Triangular wave D. Rectified wave
2. The period of a wave is _____ []
A. The same as frequency B. Time required to complete one cycle
C. Express in amperes D. None of the above
3. The form factor is the ratio of _____ []
A. Peak value to the rms value B. RMS value to average value
C. Average value to rms value D. None of the above
4. The period of a sine wave is 1/50seconds. Its frequency is _____. []
A. 20 Hz B. 30 Hz C. 40 Hz D. 50 Hz
5. Power factor of the following circuit will be unity []
A. Inductive B. Capacitive C. Resistive D. Both A and B
6. The maximum value of an ac quantity is called as its _____ []
A. Amplitude B. Peak to peak value C. RMS value D. None of above
7. The capacitive reactance is defined as X_C _____. []
A. $2\pi fc$ B. $1/2\pi fc$ C. Wc D. $2\pi fl$
8. If voltage across pure resistance is $V = V_m \sin(\omega t + \pi/6)$ then current flowing through it will be $I =$ _____. []
A. $I_M \sin(\omega t)$ B. $I_M \sin(\omega t + \pi/6)$ C. $I_M \sin(\omega t - \pi/6)$ D. $I_M \sin(\omega t + \pi/2)$
9. Average power in purely resistive ac circuit is equal to $P =$ _____. []
A. $V I \sin \Phi$ B. $V I \cos \Phi$ C. $V I$ D. $V M I M$
10. The _____ can never store energy. []
A. Resistor B. Inductor C. Capacitor D. Energy source
11. For a purely inductive ac circuit the _____ leads _____ by 90° []
A. Current, voltage B. Voltage, current C. Power, current D. Voltage, power
12. The _____ is directly proportional to frequency. []
A. Capacitive reactance B. Hysteresis loss C. Inductive reactance D. Eddy current loss
13. For RL series circuit the current _____ the applied voltage by _____. []
A. Leads, 0 to 90° B. Lags, 0 to 90° C. Leads, 90° D. Lags, 90°
14. The impedance of RC series circuit is given by $Z =$ _____. []
A. $R + jX_C$ B. $R - jX_C$ C. $R \times jX_C$ D. None of above
15. The average power consumed by a pure capacitor is _____. []
A. $V I \sin \Phi$ B. $V I$ C. $V I \cos \Phi$ D. 0

16. The RLC series circuit is _____ if $X_L = X_C$. []
 A. Inductive B. Capacitive C. Resistive D. None of above
17. The Q-factor can be defined as $Q = \frac{V_L}{V}$ at $f = f_r$. []
 A. $X_L \times R$ B. $X_C \times R$ C. X_L/R D. $X_L + R$
18. If $R = 3\Omega$ is in series with $X_L = 4\Omega$. Then the admittance of this circuit is $Y = \frac{1}{Z}$ s. []
 A. 5 B. 25 C. 0.2 D. 0.04
19. The reactive power is also called as _____ power and it expressed in _____. []
 A. True, VAR B. Imaginary, VAR C. Imaginary, VA D. Real , VA
20. All the home appliances operates on _____ Voltage. []
 A. AC B. DC C. AC or DC D. None of the above
21. In the equation $V(t) = V_m \times \sin(\omega t)$, $V(t)$ indicates the _____ Value. []
 A. RMS B. Peak C. Instantaneous D. Average
22. The instantaneous value of voltage at $t = t_1$ is given by, []
 A. $V(t = t_1)$ B. $V(t_1)$ C. V/t_1 D. None of these
23. 1 Cycle = _____ []
 A. π radian B. 2π radian C. 4π radian D. 180°
24. The frequency of the AC mains is _____ []
 A. 50 Hz B. 25 Hz C. 100 Hz D. 50 sec.
25. The frequency of the AC quantity is measured in _____. []
 A. units/sec B. cycles-sec C. cycles/sec D. Sec/cycles
26. The _____ value is also called Amplitude. []
 A. RMS B. Peak C. Average D. Instantaneous
27. The _____ value of the sine wave is $0.707V_m$. []
 A. Average B. Peak C. RMS D. Instantaneous
28. The average value of the sinusoidal voltage waveform is _____. []
 A $0.637 I_{rms}$ B. $0.707 I_{rms}$ C. $0.637 I_{max}$ D. $0.707 I_{max}$
29. The AC voltmeter or ammeter measures the _____ value. []
 A. Average B. RMS C. Peak D. Instantaneous
30. The average value of a symmetrical AC waveform is determined from the — of the waveform. []
 A. Full cycle B. Half Cycle C. Full or Half Cycle D. None of these
31. The value of the form factor for the sinusoidal waveform is _____. []
 A. 0.909 B. 0.637 C. 0.707 D. 1.11
32. The value of peak factor for a sinusoidal waveform is _____. []
 A. 1 B. 0.707 C. 1.414 D. 0.637
33. The correct expression for the form factor is $K_p = \frac{V_m}{V_{avg}}$ []

- A. I_{\max}/I_{avg} B. $I_{\text{rms}}/I_{\text{avg}}$ C. I_{\max}/I_{avg} D. $I_{\text{p-p}}/I_{\text{rms}}$
34. The length of the phasor represents the _____ of the sinusoidal quantity. []
 A. Amplitude B. Average value C. RMS value D. Instantaneous value
35. Form factor is always _____. []
 A. Greater than 1 B. Less than 1 C. Equal to 1 D. zero
36. Complete the following formula, 1 rad = _____ degree. []
 A. $\pi/180$ B. $180/\pi$ C. $\pi/360$ D. $360/\pi$
37. The phasor rotates in _____ direction. []
 A. Clockwise B. Anti Clockwise C. Random D. None of these
38. The projection of phasor on Y axis is _____ value. []
 A. Peak B. Instantaneous C. Average D. RMS
39. The phase angles can take any value between _____ and _____. []
 A. 0, 2π B. 0, π C. 0, 1800 D. π , 2π
40. For the expression $V(t)=100\sin(100\omega t+\pi/4)$, the phase difference is, []
 A. $\pi/4$ lagging B. $\pi/4$ leading C. 100π leading D. 100π lagging
41. A sinusoidal current has peak factor 1.4 and form factor 1. If average value of current is 20A, then RMS value of current is _____ A and peak value is _____. []
 A. 22, 30.8 B. 30.8, 22 C. 18.18, 25.7 D. 18, 25
42. The _____ between two phasors represents the phase difference between two quantities. []
 A. Length difference B. Speed difference C. Angle Difference D. None of these
43. The phasor represented in rectangular form as $i=(20-j34.64)\text{A}$ in its equivalent polar form as, []
 A. $40\angle -600\text{A}$ B. $40\angle 600\text{A}$ C. $54.54\angle 600\text{A}$ D. None of these
44. An alternating current is given by $I = 14.14\sin(377t)$. What is the RMS value? []
 A. 14.14A B. 10 A C. 377 A D. 9 A
45. An alternating current is given by $I = 14.14 \sin (377t)$, its time period is _____. []
 A. 20 msec B. 16.67 msec C. 2.65 msec D. 5.3 msec
46. The AC voltage generator is called as _____. []
 A. Alternators B. Induction Generators C. Alternating Generator D. None of these
47. The _____ value of AC quantity is defined as the value of that quantity at a particular instant of time. []
 A. DC B. AC C. Instantaneous D. RMS
48. An AC quantity (Voltage, Current or Power) is defined as the one which changes its _____ as well as _____ with respect to time. []
 A. Value, direction B. Phase, polarity C. Value, phase D. None of these

49. The repetition consisting of one positive and one identical negative part is called as the ___ of the waveform. []

A. Time period B. One cycle C. Frequency D. None of these

50. Peak to peak values are most often used when measuring the magnitude on the ___ []

A. Voltmeter B. Cathode ray oscilloscope C. Digital multimeter D. None of these

Module-4 ANSWERS

1) B 2) B 3) B 4) D 5) C 6) B 7) B 8) B 9) C 10) D 11) B 12) C 13) B 14) A 15) D 16) C 17) C 18) D 19) B 20) A 21) C 22) A 23) B 24) A 25) C 26) B 27) B 28) C 29) B 30) B 31) D 32) C 33) B 34) A 35) A 36) A 37) B 38) B 39) A 40) B 41) A 42) D 43) A 44) B 45) B 46) A 47) C 48) A 49) B 50) B

Module – V

1. What is the phase angle of a series RLC circuit at Resonance []

a) INFINITY b) zero c) 45 deg d) 90 deg lag

2. What is the total reactance of a series RLC circuit at Resonance []

a) Zero b) equal to XL c) equal to Xc d) R

3. The magnitude & phase of current vector is depend on the values of []

a) R d) L c) C and f d) all of the above

4. If the Band width is low the selectivity will be []

a) High b) Low c) zero d) none

5. Resonance is defined as []

a) in a circuit angle between voltage and current is \emptyset

b) in a circuit angle between voltage and current is zero

c) in a circuit angle between voltage and current is unity

d) none

6. At resonance, in RLC series circuit, the circuit behaves as []

a) Inductive circuit b) capacitive circuit c) resistive circuit d) none

7. At frequency less than resonance frequency in RLC series circuit, the circuit behaves as []

a) Inductive circuit b) capacitive circuit c) resistive circuit d) none

8. At frequency greater than resonance frequency in RLC series circuit, the circuit behaves as

[]

a) Inductive circuit b) capacitive circuit c) resistive circuit d) none

9. Resonance frequency equation []

a) $1/LC$ b) $1/(LC)^{1/2}$ c) $1/C$ d) None

10. At Resonance in RLC series circuit, Current in circuit is []
 a) Minimum b) Maximum c) can't say d) none
11. At Resonance in RLC series circuit, Impedance is []
 a) Minimum b) Maximum c) can't say d) none
12. At Resonance in RLC series circuit, Admittance is []
 a) Minimum b) Maximum c) can't say d) none
13. At Resonance in RLC parallel circuit, voltage in circuit is []
 a) Minimum b) Maximum c) can't say d) none
14. At Resonance in RLC parallel circuit, impedance in circuit is []
 a) Minimum b) Maximum c) can't say d) none
15. At Resonance in RLC parallel circuit, admittance in circuit is []
 a) Minimum b) Maximum c) can't say d) none
16. Resonance frequency equation in RLC parallel circuit []
 a) $1/2\pi(LC)^{1/2}$ b) $1/2\pi(L)^{1/2}$ c) $1/(LC)^{1/2}$ d) Zero
17. Quality Factor can be defined as []
 a) Maximum stored energy b) energy dissipated per cycle
 c) $2\pi(\text{Maximum stored energy})/(\text{Energy dissipated per cycle})$ d) None
18. In series RLC circuit, at resonance []
 a) $Z=R$ b) $Z=1/R$ c) $R/2$ d) $2/R$
19. Q is equal to []
 a) $\omega_0 L/R$ b) $1/\omega_0 RC$ c) Zero d) both a and b
20. Bandwidth is equal to []
 a) Q_0/f_0 b) f_0/Q_0 c) 0 d) none
21. Energy dissipated per cycle in the circuit in RLC series is []
 a) Product of the average power in the resistor and the time period
 b) Product of voltage and current c) product of voltage and power d) None.
22. In series RLC circuit $R=10$ ohms and $L=5$ mH and $C=12.5$ micro F. calculate angular frequency []
 a) 400 rad/s b) 4000 rad/s c) 40 rad/s d) 40000 rad/s
23. In series RLC circuit $R=10$ ohms and $L=5$ mH and $C=12.5$ micro F. calculate Z_0 is equal to []
 a) 10 ohms b) -10 ohms c) 1/10 ohms d) -1/10 ohms
24. A series circuit $R=5$ ohms and $L=20$ mH and variable capacitance C has an applied voltage with a frequency $f=1000$ Hz. Find C for series resonance. []
 a) 1.27 micro F b) 1.37 micro F c) 0.4 micro F d) None.

25. $w_0 =$ []

- a) W_1 b) W_2 c) $(W_1W_2)^{1/2}$ d) None

26. Bandwidth is defined as the range of frequencies within which the power delivered to R is

- a) equal to half power at resonance
b) less than half the power at resonance
c) greater than half power at resonance
d) None.

27. When a pure Lc parallel circuit is in resonance, the circuit condition can be represented by

[]

- a) Short circuit b) open circuit c) a normal parallel circuit d) None of these

28. Which of the condition is common to both series and parallel resonance []

- a) Impedance is minimum
b) power factor unity
c) power is low
d) Q factor depends on voltage amplification

29. The Q factor of a circuit is defined as []

- a) reactive power/resistive b) w_0L/R c) both a and b d) None

30. In an RLC series circuit, which of the following are correct when the frequency of the source is varied from zero to infinity []

- a) inductive reactance is less than capacitive reactance
b) capacitive reactance is less than inductive reactance
c) inductive reactance is equal to capacitive reactance
d) all of these

31. In series RLC circuit, resonance occurs when []

- a) $L=C$ b) $R=C$ c) $R=L$ d) inductive reactance is capacitive reactance

32. If $R = 3\Omega$ is in series with $X_L = 4\Omega$. Then the admittance of this circuit is $Y =$ ____ []

- A. 5 B. 25 C. 0.2 D. 0.04

33. The parallel resonant circuit is called as the ____ circuit. []

- A. Selector B. Rejecter C. Voltage amplifier D. None of above

34. The reactive power is also called as ____ power and it expressed in _____. []

- A. True, VAR B. Imaginary, VAR C. Imaginary, VA D. Real, VA

35. All the home appliances operates on _____ Voltage. []

- A. AC B. DC C. AC or DC D. None of the above

36. In the equation $V(t) = V_m \times \sin(\omega t)$, $V(t)$ indicates the _____ Value []

- A. RMS B. Peak C. Instantaneous D. Average

37. The instantaneous value of voltage at $t=t_1$ is given by, []

- A. $V(t=t_1)$ B. $V(t_1)$ C. V/t_1 D. None of these

38. One Cycle is equal to _____ []

- A. π radian B. 2π radian C. 4π radian D. 180°

39. For a purely inductive circuit if the source voltage is $V = V_m \sin(\omega t)$ then the equation of the current is given by, []
 A. $I_m \sin(\omega t)$ B. $I_m \sin(\omega t + \pi/2)$ C. $I_m \sin(\omega t - \pi/2)$ D. $I_m \sin(\omega t - \pi)$
40. The inductive reactance for DC is _____. []
 A. Zero B. Infinite C. In between zero and infinite D. None
41. Impedance of a purely inductive circuit is expressed in polar form as, $Z = \text{_____} \Omega$ []
 A. $X_L < -900$ B. $X_L < -00$ C. $X_L < 900$ D. $X_L < 1800$
42. The capacitive reactance X_C _____ with _____ in frequency. []
 A. Increases, decreases B. Decreases, Decreases C. Increases, increases D. Remains constant.
43. The phase angle for an RL series circuit is given by,
 A. $\sin^{-1}(X_L/R)$ B. $\cos^{-1}(X_L/R)$ C. $\tan^{-1}(X_L/R)$ D. $\tan^{-1}(R/X_L)$
44. The _____ triangle is derived from _____ triangle by dividing each side by []
 A. Voltage, impedance, voltage B. Impedance, voltage, voltage
 C. Impedance, voltage, current D. Voltage, impedance, current
44. The frequency of the AC quantity is measured in _____. []
 A. units/sec B. cycles-sec C. cycles/sec D. Sec/cycles
45. The lamp load is an example of []
 A. Purely resistive B. Purely Inductive C. R-L series
 D. None
46. The dynamic impedance represents the _____ of the parallel resonant circuit. []
 A. Minimum value of impedance B. Maximum value of impedance
 C. RMS value of impedance D. Avg value of impedance
47. The expression for parallel combination of impedance Z_1 and Z_2 is []
 A. $(Z_1+Z_2)/(Z_1Z_2)$ B. $(Z_1+Z_2)/(Z_1-Z_2)$ C. $(Z_1 Z_2)/(Z_1+Z_2)$ D. $(Z_1 Z_2)/(Z_1-Z_2)$
48. A pure inductor is equivalent to a _____ for a direct current and voltage []
 A. Open circuit B. Short circuit C. An open switch D. None of these
49. The reactive power is also called _____ power and it is expressed in ____ []
 A. True, VAR B. Imaginary, VAR C. Imaginary, VA D. Real, VA
50. P.F. is equal to _____ []
 A. S/P B. Q/P C. P/S D. S/Q

Module-5 Answers:

- 1 B 2 A 3 D 4 A 5 B 6 C 7 B 8 A 9 B 10 B 11 A 12 B 13 B 14 B 15 A 16 A 17 C 18 A 19 D 20 B 21 A 22 B 23 A 24 A 25 C 26 C 27 B 28 B 29 D 30 D 31 D 32. D 33 B 34 B 35 A 36 C 37 A 38 B 39 C 40. A 41 .C 42 A 43 C 44 C 45 A 46 B 47 C 48 B 49 B 50 C**