

Choose the correct answer for the following questions:

- RMS value or effective value for the  $V(t)$  signal is given by:
 

(A)  $\sqrt{\frac{1}{T} \int_0^T V(t) dt}$  (B)  $\sqrt{\frac{1}{T} \int_0^T V(t)^2 dt}$  (C)  $\frac{1}{T} \int_0^T V(t) dt$  (D) none
- Average value for the  $V(t)$  signal is given by:
 

(A)  $\sqrt{\frac{1}{T} \int_0^T V(t) dt}$  (B)  $\sqrt{\frac{1}{T} \int_0^T V(t)^2 dt}$  (C)  $\frac{1}{T} \int_0^T V(t) dt$  (D) none
- Form factor is given by:
 

(A)  $\frac{\text{Average value}}{\text{RMS value}}$  (B)  $\frac{\text{Peak value}}{\text{RMS value}}$  (C)  $\frac{\text{RMS value}}{\text{Average value}}$  (D)  $\frac{\text{Average value}}{\text{Peak value}}$
- Peak factor is given by:
 

(A)  $\frac{\text{Average value}}{\text{RMS value}}$  (B)  $\frac{\text{Peak value}}{\text{RMS value}}$  (C)  $\frac{\text{RMS value}}{\text{Average value}}$  (D)  $\frac{\text{Average value}}{\text{Peak value}}$
- What is the value of Time period, Frequency, angular frequency for the following waveform1?
 

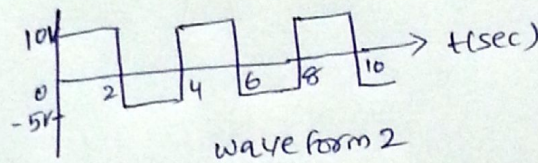
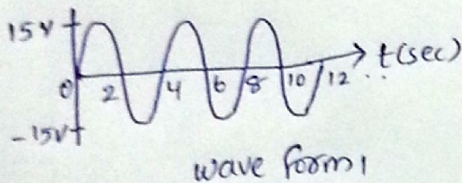
(A) 2 sec, 0.5Hz,  $\pi \text{ rad/sec}$  (B) 0.5 sec, 2Hz,  $\pi \text{ rad/sec}$  (C) 4 sec, 0.25Hz,  $\frac{\pi}{2} \text{ rad/sec}$  (D) None
- What is the value of Amplitude, peak to peak amplitude for the waveform1?
 

(A) 30 V, 60 V (B) 15 V, -15 V (C) -15 V, 15 V (D) 15 V, 30 V
- What is the mathematical representation of the waveform1?
 

(A)  $15\sin(\frac{\pi}{2}t)$  (B)  $15\sin(\frac{\pi}{2}t - 30)$  (C)  $15\sin(\frac{\pi}{2}t + 30)$  (D) None
- What is the average and RMS values for the waveform1?
 

(A) 0 V,  $\frac{15}{\sqrt{2}}$  V (B)  $\frac{15}{\sqrt{2}}$  V, 0 V (C)  $15\sqrt{2}$  V, 0V (D) 0 V,  $\frac{30}{\sqrt{2}}$  V
- What is the average and RMS values for the waveform2?
 

(A) 2.5 V, 7.90 V (B) 7.90 V, 2.5 V (C) 5 V, 7.90 V (D) 7.90 V, 9.7 V



- What is the peak value, RMS value and Average value for the following voltage signal  $V(t) = 100\sin(500t + 30)$ ?
 

(A) 100 V, 141.42 V, 70.71 V (B) 141.42 V, 100 V, 0 V (C) 100 V, 0 V, 70.71 V (D) 100 V, 70.71 V, 0 V
- What is angular frequency, frequency and time period for the following voltage signal  $V(t) = 100\sin(500t + 30)$ ?
 

(A) 500 rad/sec, 0.012 sec (B) 500 rad/sec, 79.57 sec (C) Both a and b (D) None
- $V(t) = 100\sin(500t + 30) + 50\sin(500t + 60) = \dots$  (Hint: Use calculator. polar to rec and rec to polar conversion)
 

(A)  $100\cos(500t + 39.89)$  (B)  $145.46\cos(500t - 39.89)$  (C)  $145.46\cos(500t + 39.89)$  (D)  $145.46\sin(500t + 39.89)$
- $V(t) = 100\sin(500t + 30) - 150\cos(500t + 60) = \dots$ 

(A)  $217.94\sin(500t - 6.58)$  (B)  $21.94\sin(500t - 6.58)$  (C)  $217.94\cos(500t - 6.58)$  (D)  $217.94\sin(500t + 6.58)$
- $V(t) = \frac{100\sin(500t + 30)}{50\sin(500t + 60)} = \dots$ 

(A)  $2\sin(500t - 30)$  (B)  $2\sin(500t - 60)$  (C)  $20\sin(500t + 30)$  (D)  $2\cos(500t + 30)$
- $V(t) = 100\sin(500t + 30) * 50\cos(500t + 60) = \dots$ 

(A)  $5000\sin(500t + 180)$  (B)  $5000\sin(500t - 180)$  (C)  $500\cos(500t + 180)$  (D) None
- Impedance is given by the vector sum of
 

(A) conductance and suceptance (B) resistance and conductance (C) Resistance and reactance (D) Suceptance and resistance
- Admittance is given by the vector sum of
 

(A) conductance and suceptance (B) resistance and conductance (C) Resistance and reactance (D) Suceptance and resistance
- How much voltage is required for 86 mA to flow through a 100 mH inductor at 50Hz?
 

(A) 7.2 V (B) 2.7 V (C) 20.7 V (D) 70.2 V
- How much voltage is necessary to cause 10 mA to flow through a 2  $\mu$  Farad capacitor at 400Hz?
 

(A) 1.98 V (B) 19.8 V (C) 198 V (D) 0.198 V

20. How much voltage is necessary to cause 10 mA to flow through 100  $\Omega$  resistor in series with 15 mH choke at 400Hz?  
 (A) 1 V (B) 1.3769 V (C) 0.3769 V (D) 1.06 V
21. What is the capacitive reactance of a 1  $\mu$  Farad capacitance at 60Hz?  
 (A) 2.652  $\Omega$  (B) 2652  $\Omega$  (C) 2652 F (D) 2.652 kF
22. A 100 $\mu$  Farad capacitor has 12 Volts applied across it at 60Hz. How much current is flowing through it?  
 (A) 0.452 A (B) 0.252 A (C) 0.652 A (D) 0.752 A
23. What is the Reactance of a 100 mH choke in series with a 470  $\Omega$  resistor with 12 Volts and 60 Hz applied across them?  
 (A) 471.50  $\Omega$  (B) 21 $\pi$   $\Omega$  (C) 12 $\pi$   $\Omega$  (D) 507.69  $\Omega$
24. What is the Impedance of a 100 mH choke in series with a 470  $\Omega$  resistor with 12 Volts and 60 Hz applied across them?  
 (A) 471.50  $\Omega$  (B) 21 $\pi$   $\Omega$  (C) 12 $\pi$   $\Omega$  (D) 507.69  $\Omega$
25. In a series RL circuit, 12 V rms is measured across the resistor, and 14 V rms is measured across the inductor. The peak value of the source voltage is  
 (A) 18.4 V (B) 26.07 V (C) 2 V (D) 20 V
26. A 470 $\Omega$  resistor and a coil with 125 $\Omega$  inductive reactance are in parallel. Both components are across a 15 V ac voltage source. Current through the inductor is  
 (A) 12 mA (B) 124 mA (C) 120 mA (D) 151 mA
27. A 1.2 k $\Omega$  resistor is in series with a 15 mH coil across a 10 kHz ac source. The magnitude of the total impedance is  
 (A) 152.6  $\Omega$  (B) 942  $\Omega$  (C) 1526  $\Omega$  (D) 1200  $\Omega$
28. In a series or parallel RLC circuit, Resonance occurs at following frequency.  
 (A) LC (B)  $\frac{1}{\sqrt{LC}}$  (C)  $\frac{1}{2\pi\sqrt{LC}}$  (D) RC
29. A series RLC circuit has  $R = 20\Omega$ ,  $X_L = 30\Omega$  and  $X_C = 40\Omega$ . What is the value of impedance?  
 (A) 20+70i (B) 20+10i (C) 20-10i (D) 20+30i
30. A series RLC circuit has  $R = 20\Omega$ ,  $X_L = 30\Omega$  and  $X_C = 40\Omega$ . What is the magnitude of impedance?  
 (A) 72.8  $\Omega$  (B) 22.36  $\Omega$  (C) -72.8  $\Omega$  (D) -22.36  $\Omega$
31. A series RLC circuit has  $R = 20\Omega$ ,  $X_L = 30\Omega$  and  $X_C = 40\Omega$ . What is the value of Admittance?  
 (A) 0.04+0.02i (B) 0.04-0.02i (C) -0.04+0.02i (D) -0.04-0.02i
32. A series RLC circuit has  $R = 20\Omega$ ,  $X_L = 30\Omega$  and  $X_C = 40\Omega$ . What is the Magnitude of Admittance?  
 (A) 0.44 Simens (B) 0.044 Simens (C) 4.4 Simens (D) 0.044 Simens
33. A series RLC circuit having  $R = 30\Omega$ ,  $X_L = 90\Omega$  and  $X_C = 50\Omega$  are connected in series with 100 V ac source. What are the value of power across Resistor, Inductance and capacitor?  
 (A) 120 W, 360 VAR, 200 VAR (B) 120 W, 360 W, 200 W (C) 120 W, 360 VAR, 200 VA (D) 120 W, 360 VAR, 100 VA
34. A series RLC circuit having  $R = 30\Omega$ ,  $X_L = 90\Omega$  and  $X_C = 50\Omega$  are connected in series with 100 V ac source. What is the Real power in the circuit?  
 (A) 120 W (B) 160 W (C) 200 VA (D) 200 W
35. A series RLC circuit having  $R = 30\Omega$ ,  $X_L = 90\Omega$  and  $X_C = 50\Omega$  are connected in series with 100 V ac source. What is the Reactive power in the circuit?  
 (A) 560 W (B) 160 VAR (C) 140 VAR (D) 200 VA
36. A series RLC circuit having  $R = 30\Omega$ ,  $X_L = 90\Omega$  and  $X_C = 50\Omega$  are connected in series with 100 V ac source. What is the Apparent power in the circuit?  
 (A) 200 W (B) 200 VA (C) 80 VAR (D) 80 VA
37. A resistance of  $R = 3\Omega$ , Inductance of reactance  $X_L = 4\Omega$ , Capacitance of reactance  $X_C = 5\Omega$  and 60 V ac source are connected in parallel. What are the value of power across Resistor, Inductance and capacitor?  
 (A) 1200 W, 900 VA, 720 VA (B) (C) 1200 VA, 900 VAR, 720 VAR (D) None
38. A resistance of  $R = 3\Omega$ , Inductance of reactance  $X_L = 4\Omega$ , Capacitance of reactance  $X_C = 5\Omega$  and 60 V ac source are connected in parallel. What is the Real power in the circuit?  
 (A) 1200 W (B) 1213.42 VA (C) 900 VAR (D) 180 VAR
39. A resistance of  $R = 3\Omega$ , Inductance of reactance  $X_L = 4\Omega$ , Capacitance of reactance  $X_C = 5\Omega$  and 60 V ac source are connected in parallel. What is the Reactive power in the circuit?  
 (A) 1200 W (B) 1213.42 VA (C) 900 VAR (D) 180 VAR
40. A resistance of  $R = 3\Omega$ , Inductance of reactance  $X_L = 4\Omega$ , Capacitance of reactance  $X_C = 5\Omega$  and 60 V ac source are connected in parallel. What is the Apparent power in the circuit?  
 (A) 1200 W (B) 1213.42 VA (C) 900 VAR (D) 180 VAR
41. A resistance of  $R = 3\Omega$ , Inductance of reactance  $X_L = 4\Omega$ , Capacitance of reactance  $X_C = 5\Omega$  and 60 V ac source are connected in parallel. What is the value of current passing through the voltage source?  
 (A)  $\sqrt{419}$  A (B)  $\sqrt{409}$  A (C)  $\sqrt{494}$  A (D)  $\sqrt{490}$  A
42. Capacitive suceptance is positive and Inductive suceptance is negative. Is it true or false?  
 (A) True (B) False (C) Neutral (D) None
43. Power factor in series RLC is given by  
 (A)  $\cos(\text{angle between V and I})$  (B) Realpower/Apparent power (C) R/Z (D) All the above

44. In a series RL circuit,  $V_L$  ———  $V_R$  by 90 degrees.  
 (A) lags (B) leads (C) equals (D) none
45. At resonance, In series RLC circuit, the current passing through the resistor is.....  
 (A) Maximum (B) Minimum (C) Meadium (D) 1
46. At resonance, In parallel RLC circuit, the current passing through the resistor is.....  
 (A) Maximum (B) Minimum (C) Meadium (D) 1
47. At resonance, Impedance for the parallel RLC circuit is.....  
 (A) Maximum (B) Minimum (C) Meadium (D) 1
48. At resonance, Impedance for the series RLC circuit is.....  
 (A) Maximum (B) Minimum (C) Meadium (D) 1
49. Power in an AC circuit is given by  
 (A)  $VI\cos\phi$  W (B)  $VI\sin\phi$  VAR (C) Real power in the circuit (D) Both a and c
50. Reactive power in a circuit is given by.....  
 (A)  $VI\cos\phi$  (B)  $VI\sin\phi$  (C) VI (D) None
51. The phase angle of series RLC circuit is lagging if  
 (A)  $X_L > X_C$  (B)  $X_L < X_C$  (C)  $X_L = X_C$  (D) None
52. Power factor of an RC circuit is  
 (A) Lies between 0 and 1 (B) Negative value (C) zero (D) Unity
53. At half power points of resonance curve, the current is ———times the maximum current.  
 (A)  $\frac{1}{2}$  (B)  $\frac{1}{\sqrt{2}}$  (C)  $\sqrt{2}$  (D) 2
54. what is the power factor of a RLC circuit having voltage  $V(t) = 20\sin(10t + 150)$  and current  $I(t) = 10\sin(10t + 120)$ ?  
 (A) 0.866(lag) (B) 0.866(lead) (C) 0.5(lag) (D) 0.5(lead)
55. At resonance frequency, Power factor in series or parallel RLC is.....  
 (A) Lies between 0 and 1 (B) Negative value (C) zero (D) Unity
56. The frequency at which Inductive reactance  $X_L$  is equal to Capacitive reactance  $X_C$  is known as.....  
 (A) Indian star frequency (B) PK Frequency (C) Resonant frequency (D) Power star frequency
57. Quality factor(Q) is defined as.....  
 (A)  $2\pi \frac{\text{maximum stored energy}}{\text{energy dissipated per cycle}}$  (B)  $\frac{\text{Reactance}}{\text{Resistance}}$  (C)  $\frac{1}{\text{Power factor}}$  (D) All the above
58. Quality factor for series RLC circuit is given by:  
 (A)  $\frac{1}{R}\sqrt{\frac{C}{L}}$  (B)  $\frac{1}{R}\sqrt{\frac{L}{C}}$  (C)  $R\sqrt{\frac{C}{L}}$  (D)  $R\sqrt{\frac{L}{C}}$
59. Quality factor for parallel RLC circuit is given by:  
 (A)  $\frac{1}{R}\sqrt{\frac{C}{L}}$  (B)  $\frac{1}{R}\sqrt{\frac{L}{C}}$  (C)  $R\sqrt{\frac{C}{L}}$  (D)  $R\sqrt{\frac{L}{C}}$
60. what is the relation between bandwidth, resonance frequency and quality factor  
 (A)  $Quality\ factor = \frac{\text{resonance frequency}}{\text{Bandwidth}}$  (B)  $Quality\ factor = \frac{\text{resonance frequency}}{\text{Bandwidth}}$   
 (C)  $Quality\ factor = \frac{\text{resonance frequency}}{\text{Bandwidth}}$  (D)  $Quality\ factor = \frac{\text{resonance frequency}}{\text{Bandwidth}}$

**UNIT-2:**

1	<b>B</b>	11	<b>A</b>	21	<b>B</b>	31	<b>A</b>	41	<b>B</b>	51	<b>B</b>
2	<b>C</b>	12	<b>D</b>	22	<b>A</b>	32	<b>B</b>	42	<b>A</b>	52	<b>A</b>
3	<b>C</b>	13	<b>A</b>	23	<b>C</b>	33	<b>A</b>	43	<b>D</b>	53	<b>B</b>
4	<b>B</b>	14	<b>A</b>	24	<b>A</b>	34	<b>A</b>	44	<b>B</b>	54	<b>A</b>
5	<b>C</b>	15	<b>A</b>	25	<b>B</b>	35	<b>B</b>	45	<b>A</b>	55	<b>D</b>
6	<b>D</b>	16	<b>C</b>	26	<b>C</b>	36	<b>B</b>	46	<b>B</b>	56	<b>C</b>
7	<b>A</b>	17	<b>A</b>	27	<b>C</b>	37	<b>C</b>	47	<b>A</b>	57	<b>D</b>
8	<b>A</b>	18	<b>B</b>	28	<b>C</b>	38	<b>A</b>	48	<b>B</b>	58	<b>B</b>
9	<b>A</b>	19	<b>A</b>	29	<b>C</b>	39	<b>D</b>	49	<b>D</b>	59	<b>C</b>
10	<b>D</b>	20	<b>B</b>	30	<b>B</b>	40	<b>B</b>	50	<b>B</b>	60	<b>ABCD</b>