Vidyalankar Institute of Technology
Sem 1 (All courses) IA-2 – Basic Electrical Engineering Question Bank

1. In a series circuit if $V = 100\angle -30^0\ volt$ and $I = 10\angle -10^0\ A$. What is the nature of circuit?
   i) Resistive
   ii) Capacitive
   iii) Inductive
   iv) Resonating

2. In a series RLC circuit what is the angle between voltage across L and voltage across C in a phasor diagram?
   i) 0^0
   ii) 180^0
   iii) 90^0
   iv) 45^0

3. Which of the following is ***not*** a condition for series resonance?
   i) Z=R
   ii) cos Φ=0
   iii) $X_L=X_C$
   iv) $\Phi=0^0$

4. Which of the following is incorrect for balanced three phase star load?
   i) $I_{ph} = I_L$
   ii) $V_{ph} < V_L$
   iii) $Z_{ph} = V_{ph}/I_{ph}$
   iv) $V_{ph} > V_L$

5. Which of the following is ***not*** the formula for the average power in a single phase resistive AC circuit?
   i) $V_m I_m \cos \emptyset$
   ii) $I_{rms}^2 R$
   iii) $0.5 V_m I_m$
   iv) $V_{rms} I_{rms}$

6. Which of the following is incorrect for balanced three phase delta load?
   i) $I_{ph} = I_L$
   ii) $V_{ph} = V_L$
   iii) $Z_{ph} = V_{ph}/I_{ph}$
   iv) $I_L > I_{ph}$

7. What is the instantaneous value of $v(t)=10 \sin (314t+30^0)$, for t = 1sec?
   i) 0
   ii) 3.56V
   iii) 5V
   iv) -2.7V

8. Which of the following is incorrect phase sequence?
   (i) R – Y – B
   (ii) B – R – Y
   (iii) Y – B – R
   (iv) B – Y – R

9. $v(t) = 10 \sin (314t+10^0)$ and $i(t) = 5 \sin (314t-45^0)$. The power factor is
   (i) 0.2588
   (ii) 0.866
   (iii) 0.707
   (iv) 0.5736

10. Which of the following is incorrect statement?
    (i) $Z_{ph} = V_{ph}/I_{ph}$ for star or delta load
    (ii) $Z_{ph} = V_L/I_{ph}$ for delta load
    (iii) $Z_{ph} = V_{ph}/I_L$ for delta load
    (iv) $Z_{ph} = V_{ph}/I_L$ for star load

11. Three phase 440V, 50Hz is supplied to balanced delta load consisting of phase impedance Z = 6+j8 Ω. The phase current will be _____.
    (i) 44A
    (ii) 22A
    (iii) 11A
    (iv) 44/√3A

12. Which of the following is a ***correct*** statement, in case of sinusoidal waveform ?
    (i) Form Factor = 0.707
    (ii) Form Factor = 0.637
    (iii) Form Factor = 1.414
    (iv) Form Factor = 1.11

13. Which one of the following is ***not*** correct?
    (i) $V_{ph} = V_L$ for delta
    (ii) $V_{ph} = V_L/\sqrt{3}$ for star
    (iii) $I_{ph} = V_{ph}/Z_{ph}$
    (iv) $I_L = I_{ph}$ for delta

14. Three phase 440V, 50Hz is supplied to balanced star load consisting of phase impedance Z = 6+j8 Ω. The phase current will be _____.
    (i) 44A
    (ii) 22A
    (iii) 11A
    (iv) 44/√3A

15. Which one of the following is ***not*** quality factor formula for series resonance?
    (i) $\frac{1}{R}\sqrt{\frac{L}{C}}$
    (ii) $\frac{\text{Voltage across Capacitor}}{\text{Supply Voltage}}$
    (iii) $\frac{\text{Voltage across Inductor}}{\text{Supply Voltage}}$
    (iv) $\frac{\text{Voltage across Resistor}}{\text{Supply Voltage}}$

16. In case of parallel resonance the current flowing through the circuit is
    (i) Minimum
    (ii) Zero
    (iii) Maximum
    (iv) Infinite

17. Three phase 440V, 50Hz is supplied to balanced delta load consisting of phase impedance Z = 6+j8 Ω. The line current will be _____.
    (i) 44A
    (ii) 22A
    (iii) 44√3A
    (iv) 44/√3A

18. Three phase 440V, 50Hz is supplied to balanced star load consisting of phase impedance Z = 6+j8 Ω. The line current will be _____.
    (i) 44A
    (ii) 22A
    (iii) 11A
    (iv) 44/√3A

19. Current leads voltage by 90^0 for which type of element?
    (i) purely resistive
    (ii) purely inductive
    (iii) purely capacitive
    (iv) series R-L

20. What is the phase angle of three phase balanced star connected load impedance if $V_L = 100\angle 90^0$ V and $I_L = 10\angle 20^0$ A?
    (i) 60^0
    (ii) 40^0
    (iii) 30^0
    (iv) 70^0
21. Voltage leads current by 90^0 for which type of element?
    (i) purely resistive
    (ii) purely inductive
    (iii) purely capacitive
    (iv) series R-C
22. What is the value of three phase balanced star connected load impedance if $V_L = 100\angle 90^0$ V and $I_L = 10\angle 20^0$ A?
    i) 10Ω
    ii) 10/√3Ω
    iii) 10√3Ω
    iv) 100Ω
23. What is the phase angle of three phase balanced delta connected load impedance if $V_{ph} = 100\angle 100^0$ V and $I_L = 10\angle 20^0$ A?
    (i) 120^0
    (ii) 80^0
    (iii) 30^0
    (iv) 50^0
24. The dynamic impedance in case of parallel resonance is given by _____.
    (i) RC/L
    (ii) L/RC
    (iii) LR/C
    (iv) LC/R
25. What is the value of three phase balanced delta connected load impedance if $V_L = 100\angle 100^0$ V and $I_L = 10\angle 20^0$ A?
    i) 10Ω
    ii) 10/√3Ω
    iii) 10√3Ω
    iv) 100Ω
26. To represent phasors in the same phasor diagram _____ has to be same.
    i) frequency
    ii) phase
    iii) amplitude
    iv) rms values
27. Which of the following is incorrect statement for power factor in series circuit?
    i) pf = cosφ
    ii) pf = Voltage across R/Supply voltage
    iii) pf = R/Z
    iv) pf = S/P P/S
28. The phase difference between inductor current and capacitor current for parallel resonance circuit is _____.
    (i) 90^0
    (ii) more than 90^0
    (iii) less than 90^0
    (iv) 0^0

29. What is the value of impedance of the series circuit if power loss is 200W with current as 10A. The power factor is 0.8 lagging?
    i) 2Ω
    ii) 2.5Ω
    iii) 5Ω
    iv) 10Ω

30. What is the nature of three phase balanced delta connected load impedance if $V_{ph} = 100\angle -50^0$ V and $I_L = 10\angle -80^0$ A?
    (i) Inductive
    (ii) Resistive
    (iii) Capacitive
    (iv) Purely Inductive

31. In parallel AC circuits the admittances get _____.
    i) added
    ii) multiplied
    iii) subtracted
    iv) remains same

32. The values of conductance and susceptance (in mho) for Z = 8 + j6 Ω respectively are _____.
    i) 0.8, 0.1
    ii) 0.6, 0.8
    iii) 0.8, 0.5
    iv) 0.8, 0.6

33. The quality factor in series resonance is _____.
    i) Current magnification
    ii) Voltage magnification
    iii) always equal to 1
    iv) less than 1

34. If series RLC circuit is inductive in nature ($X_L > X_C$). What is the angle between voltage across capacitor and supply voltage?
    i) 90^0
    ii) $90^0 - \varphi$
    iii) $90^0 + \varphi$
    iv) $30^0 - \varphi$

35. If series RLC circuit is inductive in nature ($X_L > X_C$). What is the angle between voltage across inductor and supply voltage?
    i) 90^0
    ii) $90^0 - \varphi$
    iii) $90^0 + \varphi$
    iv) $30^0 - \varphi$

36. If series RLC circuit is capacitive in nature ($X_L < X_C$). What is the angle between voltage across capacitor and supply voltage?
    i) 90^0
    ii) $90^0 - \varphi$
    iii) $90^0 + \varphi$
    iv) $30^0 - \varphi$

37. If series RLC circuit is capacitive in nature ($X_L < X_C$). What is the angle between voltage across inductor and supply voltage?
    i) 90^0
    ii) $90^0 - \varphi$
    iii) $90^0 + \varphi$
    iv) $30^0 - \varphi$

38. For series RLC circuit $\varphi = 0^0$, the supply voltage is 100V. what is the value of quality factor if voltage across inductor is 500V?
    i) 2
    ii) 1
    iii) 5
    iv) 3

39. The quality factor in parallel resonance is _____.
    i) Current magnification
    ii) Voltage magnification
    iii) always equal to 1
    iv) always less than 1

40. What is the nature of three phase balanced star connected load impedance if $V_{ph} = 100\angle -50^0$ V and $I_L = 10\angle -60^0$ A?
    (i) Inductive
    (ii) Resistive
    (iii) Capacitive
    (iv) Purely Inductive

41. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of impedance?
    i) 60.7266Ω
    ii) 5.905 Ω
    iii) 63.858 Ω
    iv) 60.5204 Ω

42. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of current?
    i) 38.9497
    ii) 3.7875A
    iii) 3.6017A
    iv) 4A

43. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of phase angle?
    i) 32.14
    ii) 45^0
    iii) 85.28^0
    iv) 90^0

44. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of active power?
    i) 100W
    ii) 68.1653W
    iii) 7.5855kW
    iv)71.6817W

45. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of reactive power?
    i) 868.1708VAR
    ii) 4.7658kVAR
    iii) 825.5817VAR
    iv) 100VAR

46. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of apparent power?
    i) 828.391VA
    ii) 871.125VA
    iii) 8.9584kVA
    iv) 1kVA

47. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the value of power factor?
    i) 0.0823 (Lagging)
    ii) 0.823 (Leading)
    iii) 0.0823 (Leading)
    iv) unity

48. A series R-L-C circuit consists of R = 5Ω, L = 10mH and C = 50μF connected to single phase ac 230V,50Hz supply. What is the nature of circuit?
    i) Resistive
    ii) Resonating
    iii) Capacitive
    iv) Inductive

49. A series R-L circuit consists of R = 5Ω, L = 10mH connected to single phase ac 230V,50Hz supply. What is the value of capacitor to be connected in parallel with RL circuit to achieve resonance?
    i) 286.782μF
    ii) 286.782pF
    iii) 286.782mF
    iv) 286.782F

50. A series R-L circuit consists of R = 5Ω, L = 10mH. and C = 50μF connected to single phase ac 230V supply. What is the value of resonant frequency?
    i) 50Hz
    ii) 314Hz
    iii) 225.08Hz
    iv) 500Hz