



**DRONACHARYA ACADEMY
TOPICWISE -TEST
BRANCH- ELECTRICAL ENGINEERING
Subject - Basic Network**

Maximum marks :- 25

Time :- 30 min

Name :-

Date:-

Marks Obtained :-

INSTRUCTIONS TO STUDENTS

- 1. Write your name on your test booklet.**
- 2. Rough work to be done in the test booklet only.**
- 3. Each question carries 1.0 marks. For each correct answer 1.0 mark shall be awarded. Question not attempted shall be ignored. For wrong answer 0.25 marks will be deducted. There is negative marking in the test.**

Use of electronics/manual calculator and any electronics equipment like mobile phone etc. is not allowed.

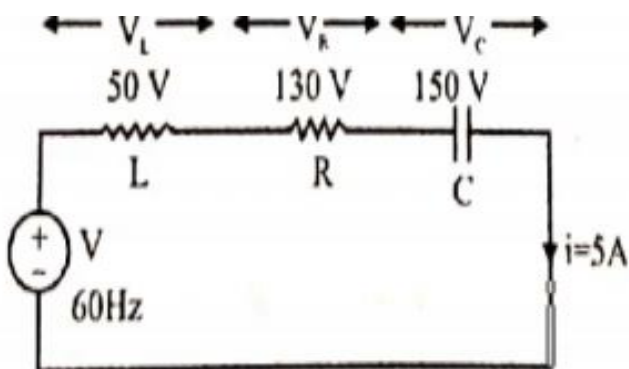
1. What will be the value of capacitive reactance (in ohms) of a circuit, if it is supplied with 25 Hz supply, if the capacitive reactance of the circuit is 30 Ohms, when it is supplied with a 100 Hz supply?

- (a) 50 (b) 60
(c) 75 (d) 120

2. Which of the following is CORRECT about series RLC circuit?

- (a) Its bandwidth decreases with decrease in inductance.
(b) Its bandwidth decreases with decrease in resistance.
(c) Its bandwidth decrease with increase in resistance.
(d) Its bandwidth is independent of both inductance and resistance.

3. What is the value of capacitance (in μF) in the RLC circuit given below:



- (a) 30 (b) 56.94
(c) 75.68 (d) 88.42

4. Determine the fastest rise time (in ms) of a sine wave that is reproduced by a CRO, when the bandwidth of the sine wave is 50 Hz.

- (a) 7 (b) 6
(c) 5 (d) 3

5. Calculate the value of reactive power (in VAR) of a circuit having power factor of 0.8, when the apparent power of the circuit is 200 VA.

- (a) 100 (b) 120
(c) 140 (d) 160

6. What will be the total impedance (in Ohms) of a series RLC circuit, when the resistance of the circuit is 12 ohms, capacitive reactance of the circuit is 3 Ohms and the inductive reactance of the circuit is 8 Ohms connected in series with a 220 V, 50 Hz supply ?

- (a) 10 (b) 12
(c) 13 (d) 15

7. Determine the capacitive reactance (in Ohms) of a series resonant circuit, when the circuit is supplied by a frequency of 50 Hz and having a capacitance of 0.04 mF.

- (a) 65.65 (b) 79.62
(c) 82.26 (d) 84.64

8. Calculate the value of capacitance (in mF) connected in parallel with an inductance of 3 H, when the resonant frequency of the circuit is 4 rad/sec

- (a) 12.63 (b) 15.62
(c) 18.55 (d) 20.83

9. Which of the following is the expression for quality factor of parallel RLC circuit ?

(a) $\frac{1}{R} \sqrt{\frac{L}{C}}$

(b) $\frac{1}{L} \sqrt{\frac{R}{C}}$

(c) $R \sqrt{\frac{C}{L}}$

(d) $C \sqrt{\frac{R}{L}}$

having power factor of 0.6 when the apparent power of the circuit is 120 VA.

- (a) 75 (b) 78
(c) 84 (d) 96

10. At resonant frequency, the impedance of the series RLC circuit is

- (a) purely resistive (b) purely inductive
(c) purely capacitive (d) Zero

11. in a parallel resonant circuit, the input impedance of the circuit is

- (a) maximum (b) minimum
(c) zero (d) infinite

12. What will be the resonant (in kHz) of a tank circuit when the capacitance and inductance of the circuit is 0.04 mF and 0.04 mH respectively?

- (a) 8 (b) 6
(c) 4 (d) 1

13. Which one of the following represents the time constant of a series R-C circuit?

- (a) RC (b) RC²
(c) R²C (d) R/C

14. Determine the capacitive reactance (in Ohms) of a circuit, if the supplied frequency is 50 Hz and the capacitance of the circuit is 60 micro- Farad

- (a) 52.4 (b) 53.1
(c) 54.4 (d) 55.5

15. Determine the value of reactive power (in VAR) of a circuit

16. What will be the capacitance (in mF) of a circuit is supplied with a 50 Hz frequency and the capacitive reactance of the circuit is 40 ohms?

- (a) 0.4 (b) 0.8
(c) 1.4 (d) 2.6

17. Determine the capacitive susceptance (in Siemens) of a circuit if the capacitor of the circuit is 0.08 mF and supplied with a 50 Hz frequency.

- (a) 0.025 (b) 0.034
(c) 0.046 (d) 0.064

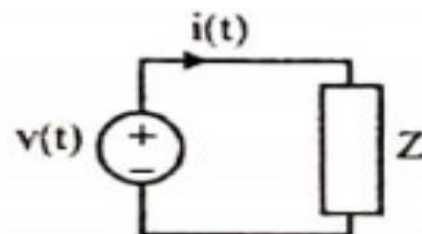
18. What will be the transient time (in seconds) of a series RC circuit when the value of the capacitance is 600 micro farad and the value of the resistance is 20 kilo-ohms?

- (a) 10 (b) 12
(c) 14 (d) 16

19. Two alternating voltages are given by $V_1 = 120 \sin(\omega t + \pi/3)$ volts and $V_2 = 220 \sin(\omega t - \pi/4)$ volts. The phase difference between them expressed in degrees is?

- (a) 105 degrees (b) 60 degrees
(c) 15 degree (d) 50 degree

20. The complex power absorbed by Z in the following AC circuit given below is the product of



- (a) phasor current and conjugate of phasor Voltage
- (b) phasor voltage and phasor current
- (c) phasor voltage and line voltage
- (d) phasor voltage and conjugate of phasor Current

- (a) 100
- (b) 5C
- (c) 7.5C
- (d) 15C

21. To calculate the power factor which of the following is odd one?

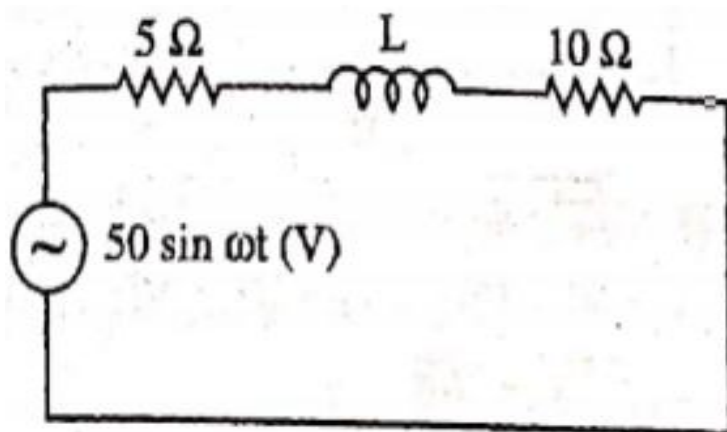
- (a) True power/apparent power
- (b) P/VI
- (c) R/Z
- (d) V/I

25. In the circuit shown in the figure, if the power consumed by the 5Ω resistor are $10W$, then the power factor of the circuit is

- (a) 0.8
- (b) 0.5
- (c) 0.6
- (d) 0

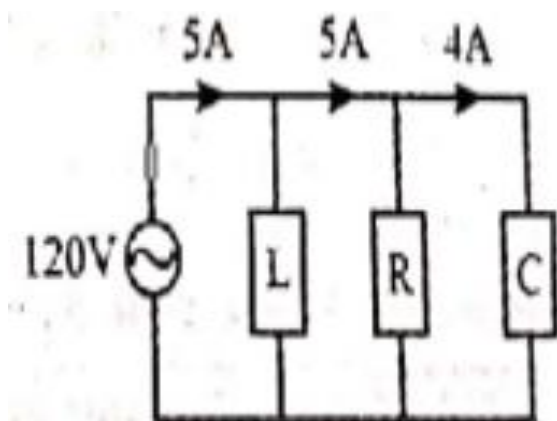
22. In pure capacitive circuit angle the voltage with respect to current is?

- (a) 0°
- (b) 90° leading
- (c) 90° lagging
- (d) None of the above.



23. In the shown figure, the value of current through the inductor will be?

- (a) 8A
- (b) 0A
- (c) 1A
- (d) 5A



24. The total charge entering a circuit element between $t = 1$ sec and $t = 2$ sec if the current passing through the element is $i = 5t$, is :