



Sainath Education Trust's
Rajiv Gandhi College
of Arts, Commerce, & Science. Vashi Navi Mumbai.
{Permanently Affiliated to University Of Mumbai}
ACCREDITED BY NAAC, GRADE 'B'

Sample Multiple Choice Questions

Class: F.Y.B.Sc.

Subject: PHYSICS PAPER – II

Semester: II

1. A $1.2\text{ k}\Omega$ 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 ohm
- (b) 1526 ohm
- (c) 1200 ohm
- (d) 942 ohm

Ans. b

2. A $3.3\text{ k}\Omega$ resistor and a 120 mH coil are in parallel. Both components are across a 2 kHz , 12 V ac source. The total current in the circuit is

- (a) 8.74 mA
- (b) 874 mA
- (c) $874\text{ }\mu\text{A}$
- (d) $8.74\text{ }\mu\text{A}$

Ans. a

3. If the resistance in parallel with a parallel resonant circuit is reduced, the bandwidth

- (a) Disappears
- (b) Becomes sharper
- (c) Increases
- (d) Decreases

Ans. d

4. A $15\text{ }\Omega$ resistor, an inductor with $8\text{ }\Omega$ inductive reactance, and a capacitor with $12\text{ }\Omega$ capacitive reactance are in parallel across an ac voltage source. The circuit impedance is

- (a) 12.7 Ω
- (b) 127 Ω
- ©4,436 Ω
- (d) 6,174 Ω

Ans. a

5. If the value of C in a series RLC circuit is decreased, the resonant frequency

- (a) Is not affected
- (b) Increases
- ©Is reduced to zero
- (d) Decreases

Ans. b

6. In a series RLC circuit that is operating above the resonant frequency, the current

- (a) Lags the applied voltage
- (b) Leads the applied voltage
- ©Leads the applied voltage
- (d) Is zero

Ans. a

7. At 2 MHz, the resonance is obtained with a resonating capacitance value of 12 pF and at 400 kHz, the resonance is obtained with resonating capacitance value of 320 pF. Then the self capacitance of the coil is

- a. 0.62 pF
- b. 0.83 pF
- c. 1.2 pF
- d. 1.5 pF

Ans. a

8. In AC bridges, the Wagner earth devices are used to

- a. Remove all the earth capacitances from the bridge circuit
- b. Remove harmonics
- c. Reduce error caused by stray electric field
- d. All of these

Ans. d

9. If a capacitor is connected across a portion of resistance of multiplier of the wattmeter then the pressure coil of the circuit becomes

- a. Inductive
- b. Non inductive
- c. Capacitive
- d. Non capacitive

Ans. b

10. For the measurement of unknown inductance in terms of known capacitance, the suitable ac bridges are

- a. Maxwell and Schering bridge
- b. Maxwell and Wien's bridge
- c. Maxwell and Hay's bridge
- d. Hay's and Wien's bridge

Ans. c

11. The Wien's bridge is suitable for the measurement of frequency of the range of

- a. Less than 100 Hz
- b. 100 Hz to 100 kHz
- c. 1 kHz to 100 MHz
- d. More than 100 MHz

Ans. b

12. The Wien's bridge is suitable for the measurement of frequency of the range of

- a. Schering bridge
- b. Wien bridge**
- c. Hay's bridge
- d. Anderson bridge

Ans. b

13. If C_4 is the capacitance and R_4 is the resistance of Hay's bridge, then the Q factor of Hay's bridge is given by

- a. $1 / (\omega C_4 R_4)$
- b. $\omega C_4 R_4$**

c. $(\omega C_4) / R_4$

d. $(\omega R_4) / C_4$

Ans. a

14. In Maxwell's Inductance - Capacitance bridge, the frequency ω

a. Is directly proportional to the inductance in the balanced equation

b. Is inversely proportional to the capacitance in the balanced equation

c. Is directly proportional to the product of inductance and capacitance

d. Does not appear in the balanced equations

Ans. d

15. Thevenin resistance is found by _____

a) Shorting all voltage sources

b) Opening all current sources

c) Shorting all voltage sources and opening all current sources

d) Opening all voltage sources and shorting all current sources

Ans.c

16. The Thevenin voltage is the _____

a) Open circuit voltage

b) Short circuit voltage

c) Open circuit and short circuit voltage

d) Neither open circuit nor short circuit voltage

Ans. a

17. Thevenin's theorem is true for _____

a) Linear networks

b) Non-Linear networks

c) Both linear networks and nonlinear networks

d) Neither linear networks nor non-linear network

Ans. a

18. V_{th} is found across the _____ terminals of the network.

a) Input

b) Output

c) Neither input nor output

d) Either input or output

Ans.b

19. The NOR gate output will be high if the two inputs are _____

a) 00

b) 01

- c) 10
- d) 11

Ans. a

20. How many two-input AND and OR gates are required to realize $Y = CD + EF + G$?

- a) 2, 2
- b) 2, 3
- c) 3, 3
- d) 3, 2

Ans. a

21. A universal logic gate is one which can be used to generate any logic function. Which of the following is a universal logic gate?

- a) OR
- b) AND
- c) XOR
- d) NAND

Ans. d

22. A full adder logic circuit will have _____

- a) Two inputs and one output
- b) Three inputs and three outputs
- c) Two inputs and two outputs
- d) Three inputs and two outputs

Ans. d

23. How many two input AND gates and two input OR gates are required to realize $Y = BD + CE + AB$?

- a) 3, 2
- b) 4, 2
- c) 1, 1
- d) 2, 3

Ans. a

24. Which of following are known as universal gates?

- a) NAND & NOR
- b) AND & OR
- c) XOR & OR
- d) EX-NOR & XOR

Ans.a

25. The gates required to build a half adder are _____

- a) EX-OR gate and NOR gate
- b) EX-OR gate and OR gate
- c) EX-OR gate and AND gate
- d) EX-NOR gate and AND gate

Ans. c