

# Yashwantrao Chavan College of Science, Karad

## Question Bank

### DSC- 9A NETWORK ANALYSIS AND ANALOG ELECTRONICS (Paper-I)

#### Multiple Choice Questions

1. A circuit has a Norton's current of 10mA and Norton's resistance of 10KΩ then its

Thevenin's Voltage is .....

- a) 10V
- b) 1000V
- c) 1V
- d) 100V**

2. If the Zener diode in a Zener regulator is connected with the wrong polarity, the  $V_L$  will be close to .....

- a) 0.7V**
- b) 0.3V
- c) 0.2V
- d) 1V

3. At absolute zero temperature an intrinsic semiconductor has .....

- a) holes or free electrons
- b) no holes or free electrons**
- c) holes
- d) free electrons

4. A P- type semiconductor contains holes and..... immobile ions.

- a) +ve
- b) -ve**
- c) both +ve & -ve
- d) none of these

5. In carbon composition resistor the last colour band of silver indicates .....% of tolerance.

- a) ±1%
- b) ±5%
- c) ±0.1%
- d) ±10%**

6. Inductor allows ..... & block .....

- a) **DC, AC**
- b) AC, DC
- c) DC, DC
- d) AC, AC

7. For an ideal current source the internal resistance must be .....

- a) small
- b) large
- c) **infinite**
- d) Zero

8. Norton`s equivalent current is ..... current.

- a) **short circuit**
- b) open circuit
- c) both a & b
- d) none of these

9. Terminal common to two or more branches is known as .....

- a) mesh
- b) **node**
- c) both a & b
- d) none of these

10. Band gap energy of Si is .....

- a) 0.72eV
- b) 1.12eV
- c) 0.78eV
- d) **1.21eV**

11. Resistor colour coded with orange-red-red & silver has resistance value .....

- a) 32K $\Omega$  $\pm$ 10%
- b) **3.2K $\Omega$  $\pm$ 10%**
- c) 32 $\Omega$  $\pm$ 10%
- d) 3.2 $\Omega$  $\pm$ 10%

12. The transformer turn ratio = .....

- a)  $I_S/I_P$
- b)  **$I_P/I_S$**
- c)  $I_S/I_S$
- d)  $I_P/I_P$

13. Power P = .....

- a) IV
- b)  $V^2/R$
- c)  $I^2R$
- d) **all of these**

14. An ideal current source has .....internal resistance.

- a) 0
- b)  $\infty$
- c) 1
- d) none of these

15. If Norton's resistance of given circuit is  $70\Omega$ , then Thevenin's resistance of same circuit is .....

- a)  $35\Omega$
- b)  $50\Omega$
- c)  **$70\Omega$**
- d)  $100\Omega$

16. Norton's theorem gives an equivalent network in..... form.

- a) series
- b) **shunt**
- c) ladder
- d) T

17. In carbon composition resistor the last colour band of Gold indicates .....% of tolerance.

- a)  $\pm 1\%$
- b)  **$\pm 5\%$**
- c)  $\pm 0.1\%$
- d)  $\pm 10\%$

18. According to Kirchhoff's current law current meeting the junction point are considered as .....

- a) one
- b) **zero**
- c) infinite
- d) none of these

19. If turn ratio of transformer is greater than one, the transformer is .....

- a) isolation
- b) step down
- c) **step up**
- d) none of these

24. Transformer works on the principle of .....

- a) **mutual inductance**
- b) self inductance
- c) both a & b
- d) none of these

25. In Maximum Power Transfer theorem, Maximum power transfer when .....

- a)  $R_s < R_L$
- b)  $R_s > R_L$
- c)  **$R_s = R_L$**
- d) none of these

26. In Thevenin's circuit, Thevenin's resistance  $R_{TH}$  is ..... resistance.

- a) open circuit
- b) short circuit
- c) both a & b
- d) none of these

27. Resistor colour coded with orange-orange-orange & silver has resistance value .....

- a)  $33\text{K}\Omega \pm 10\%$
- b)  $3.3\text{K}\Omega \pm 10\%$
- c)  $33\Omega \pm 10\%$
- d)  $3.3\Omega \pm 10\%$

28. The turn ratio  $N_S/N_P$  of the transformer is always equal to .....

- a)  $V_S/V_P$
- b)  $V_P/V_S$
- c)  $V_S/I_P$
- d)  $I_S/V_P$

29. Two port network has ..... terminals.

- a) two input & two output
- b) one input & two output
- c) two input & one output
- d) two input & two output

30. Z- parameters are also known as ..... parameters.

- a) open circuit
- b) short circuit
- c) both a & b
- d) none of these

31. In two port network short circuit parameters is called.....

- a) impedance
- b) admittance
- c) hybrid
- d) none of these

32. In two port network open circuit parameters is called.....

- a) impedance
- b) admittance
- c) hybrid
- d) none of these

33. Which of the following is passive component.

- a) Diode
- b) transistor
- c) capacitor
- d) FET

34. Mesh analysis is based on .....

- a) **KCL**
- b) KVL
- c) both a & b
- d) none of these

35. Y- parameters are also known as ..... parameters.

- a) open circuit
- b) **short circuit**
- c) both a & b
- d) none of these

36) In photo diode, when there is no light, a small amount of current flows which is termed as .....

- a) **Dark Current**
- b) Small current
- c) Zener Current
- d) photo Current

37. The ripple factor of full wave rectifier is .....

- a) 1.21
- b) **0.48**
- c) 0.406
- d) 0.812

38. The change in regulated output voltage per unit change load current, it is called.....

- a) **load regulation**
- b) Line regulation
- c) both a & b
- d) none of these

39) A N- type semiconductor contains an electrons and ..... immobile ions.

- a) + ve
- b) -ve
- c) both +ve & -ve
- d) none of these

40) A N- type semiconductor contains ..... majority charge carriers.

- a) holes
- b) **electrons**
- c) both holes & electrons
- d) none of these

41) A P- type semiconductor contains ..... majority charge carriers.

- a) **holes**
- b) electrons
- c) both holes & electrons
- d) none of these

10. Band gap energy of Ge is .....

a) 0.72eV

b) 1.12eV

c) **0.78eV**

d) 1.21eV

## **Q2) Long Answer questions**

- 1) Explain I-V characteristics of forward biased PN junction diode with circuit diagram.
- 2) Draw circuit diagram of bridge full wave rectifier and explain working with input output waveforms.
- 3) Draw circuit diagram of shunt capacitor filter and explain working with input output waveforms.
- 4) Explain I-V characteristics of reverse biased PN junction diode with circuit diagram.
- 5) Obtain the h parameters of networks.
- 6) Obtain the Z parameters of networks.
- 7) State and explain Thevenin`s theorem. Write steps for solving Thevenin`s theorem.
- 8) Explain concept of voltage and current source with circuit diagrams.
- 9) Obtain the Y parameters of networks.
- 10) Obtain the h parameters of networks.

## **Q3) Short Answer questions**

- 1) State and explain Kirchhoff`s voltage and current law`s.
- 2) State and explain Norton`s theorem.
- 3) Write conversion of Z to h parameters
- 4) Explain construction and working of LED.
- 5) Explain construction and working of Zener diode.

- 6) Explain Zener diode as voltage regulator.
- 7) Define Line and Load regulation.
- 8) Explain half wave rectifier with circuit diagram and input output waveforms.
- 9) Explain center tapped full wave rectifier.
- 10) Explain construction and working of Seven segment display.
- 11) Describe Zener and Avalanche breakdown.
- 12) Describe the construction and working of forward biased PN junction diode.
- 13) With block diagram explain the two port network.
- 14) State and explain Superposition theorem.
- 15) Explain Mesh analysis.
- 16) Explain construction and working of Transformer.
- 17) State and explain Thevenin`s theorem.
- 18) Explain concept of voltage source with circuit diagram.
- 19) Explain concept of current source with circuit diagram.
- 20) Describe the construction and working of Reverse biased PN junction diode.
- 21) Explain construction and working of Photo diode.