ANALOG ELECTRONICS 39 MOST IMPORTANT MCQ PDF

1. Which of the following is (are) diodes?

- A. Schottky
- B. Varactor
- C. Tunnel
- D. All of the above

ANS- D. All of the above

2. Which of the following metals is (are) used in the fabrication of Schottky diodes?

- A. Molybdenum
- B. Platinum
- C. Tungsten
- D. All of the above

ANS- D. All of the above

3. What are the typical ranges of reverse-bias current levels I_S for low-power and high-power Schottky diodes at room temperature?

- A. Picoamperes, nanoamperes
- B. Nanoamperes, microamperes
- C. Microamperes, milliamperes
- D. Milliamperes, amperes

ANS- C. Microamperes, milliamperes

4. What is the voltage drop across Schottky diodes?

- A. 0 V to 0.2 V
- B. 0.7 V to 0.8 V
- C. 0.8 V to 1.0 V
- D. 1.0 V to 1.5 V

ANS- A. 0 V to 0.2 V

5. What metal(s) is(are) used in the construction of Schottky diodes?

- A. Molybdenum
- B. Platinum
- C. Tungsten
- D. Silicon
- E. Any of the above

ANS- E. Any of the above

6. For a 50-A unit, the PIV of the Schottky is about _____ compared to 150 V for the p-n junction variety.

- A. 25
- B 50
- C. 75
- D. 100

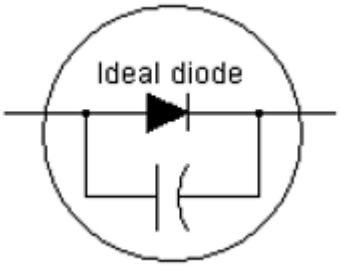
ANS- B 50

7. Schottky diodes are very effective at frequencies approaching _____.

- A. 20 GHz
- B. 10 MHz
- C. 100 MHz
- D. 1 MHz

ANS- A. 20 GHz

8. This is an approximate equivalent circuit for the _____ diode.



- A. Schottky
- B. varicap
- C. tunnel

ANS- A. Schottky

9. What is the range of the varying capacitor C_T in varactor diodes?

- A. 0 pF to 5 pF
- B. 2 pF to 100 µF
- C. 2 µF to 100 µF
- D. 2 pF to 100 pF

ANS- D. 2 pF to 100 pF

10. Which of the following areas is (are) applications of varactor diodes?

- A. FM modulators
- B. Automatic-frequency control devices
- C. Adjustable bandpass filters
- D. All of the above

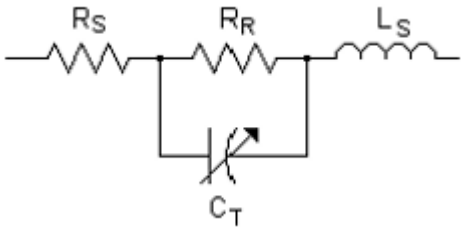
ANS- D. All of the above

11. The tuning diode is a _____-dependent, variable _____.

- A. voltage, resistor
- B. current, capacitor
- C. voltage, capacitor
- D. current, inductor

ANS- C. voltage, capacitor

12. This is an equivalent circuit for the _____ diode.



- A. Schottky
- B. varicap
- C. tunnel

ANS- B. varicap

13. The varicap diode has a transition capacitance sensitive to the applied reverse-bias potential that is a maximum at zero volts and decreases _____ with increasing reverse-bias potentials.

- A. logarithmically
- B. parabolically
- C. exponentially

ANS- C. exponentially

14. The majority of power diodes are constructed using _____.

- A. molybdenum
- B. platinum
- C. tungsten
- D. silicon

ANS- D. silicon

15. The current capability of power diodes can be increased by placing two or more in series.

- A. True
- B. False

ANS- B. False

16. The PIV rating of power diodes can be increased by stacking the diodes in series.

- A. True
- B. False

ANS- A. True

17. Which of the following diodes has a negative-resistance region?

- A. Schottky
- B. Varactor
- C. Tunnel
- D. Power

ANS- C. Tunnel

18. Which of the following semiconductor materials is (are) used in the manufacturing of tunnel diodes?

- A. Germanium
- B. Gallium
- C. Both germanium and gallium arsenide
- D. Silicon

ANS- C. Both germanium and gallium arsenide

19. What is the ratio I_P / I_V for gallium arsenide?

- A. 1:1
- B. 5:1

- C. 10:1
- D. 20:1

ANS- D. 20:1

20. What is the limit of peak current IP in tunnel diodes?

- A. A few microamperes to several hundred amperes
- B. A few microamperes to several amperes
- C. A few microamperes to several milliamperes
- D. A few microamperes to several hundred microamperes

ANS- A. A few microamperes to several hundred amperes

21. What is the maximum peak voltage for tunnel diodes?

- A. 50 mV
- B. 100 mV
- C. 250 mV
- D. 600 mV

ANS- D. 600 mV

22. In which region is the operating point stable in tunnel diodes?

- A. Negative-resistance
- B. Positive-resistance
- C. Both negative- and positive-resistance
- D. Neither negative- nor positive-resistance

ANS- B. Positive-resistance

23. Which of the following diodes is limited to the reverse-bias region in its region of operation?

- A. Schottky
- B. Tunnel
- C. Photodiode
- D. Rectifier

ANS- C. Photodiode

24. Schottky diodes have _____.

- A. quick response time
- B. a lower noise figure
- C. both quick response time and a lower noise figure

- D. None of the above

ANS-. C. both quick response time and a lower noise figure

25. Schottky diode construction results in a _____ uniform junction region and a _____ level of ruggedness.

- A. more, high
- B. less, high
- C. more, low
- D. less, low

ANS- A. more, high

26. In both n-type and p-type silicon materials, the _____ is the majority carrier in a Schottky diode.

- A. hole
- B. electron
- C. proton
- C. neutron

ANS- B. electron

27. The barrier at the junction for a Schottky diode is _____ that of the p-n junction device in both the forward- and reverse-bias regions.

- A. the same as
- B. more than
- C. less than
- D. None of the above

ANS- C. less than

28. A Schottky diode has _____ level of current at the same applied bias compared to that of the p-n junction at both the forward- and reverse-bias regions.

- A. a lower
- B. a higher
- C. the same
- D. None of the above

ANS- B. a higher

29. The PIV of Schottky diodes is usually _____ that of a comparable p-n junction unit.

- A. 1/2
- B. 1/3
- C. 1/4
- D. 1/5

ANS- B. 1/3

30. Varactor diodes are _____.

- A. semiconductor devices
- B. voltage-dependent
- C. variable capacitors
- D. All of the above

ANS- D. All of the above

31. In varactor diodes, as the reverse-bias potential increases, the width of the depletion region _____, which in turn _____ the transition capacitance.

- A. increases, increases
- B. decreases, reduces
- C. increases, reduces
- D. decreases, increases

ANS-. C. increases, reduces

32. The normal range of reverse-bias voltage V_R for varactor diodes is limited to about _____.

- A. 15 V
- B. 20 V
- C. 25 V
- D. 40 V

ANS- B. 20 V

33. In the reverse-bias region of varactor diodes, the resistance R_R in parallel with the varying capacitor is _____ and the series resistance R_S is _____.

- A. very large, very small
- B. very large, very large
- C. very small, very large
- D. very small, very small

ANS- A. very large, very small

34. The majority of power diodes are constructed using silicon because of its higher _____ rating(s).

- A. current
- B. temperature
- C. PIV
- D. All of the above

ANS- D. All of the above

35. The current capability of power diodes can be increased by placing two or more of the diodes in _____, and the PIV rating can be increased by stacking the diodes in _____.

- A. parallel, parallel
- B. series, parallel
- C. parallel, series
- D. series, series

ANS- C. parallel, series

36. In the negative-resistance region of tunnel diodes, as the terminal voltage increases, the diode current _____.

- A. remains the same
- B. decreases
- C. increases
- D. is undefined

ANS- B. decreases

37. The p-n junction of a tunnel diode is doped at a level from _____ to _____ times that of a typical semiconductor diode.

- A. one, several
- B. several, ten
- C. more than ten, several hundred
- D. one hundred, several thousand

ANS- D. one hundred, several thousand

38. The negative-resistance region of tunnel diodes can be used in the design of _____.

- A. oscillators
- B. switching networks
- C. pulse generators
- D. All of the above

ANS- D. All of the above

39. The wavelength is usually measured in _____.

- A. angstrom units
- B. micrometers
- C. both angstrom units and micrometers
- D. None of the above

ANS- C. both angstrom units and micrometers