J-61/2041

11067/A

Semiconductor Devices EFT-102

Time Allowed: 1.5 Hrs **Roll no.....**
Maximum Marks: 50 **Minimum Pass Marks :33%**

Instructions: Theory paper will consist of Fifty multiple choice questions of 1 mark each. Note: All questions are compulsory. Tick the correct option.

Q1. The advantage of LED is

1. Long life
2. Fast on-off switching
3. Low operating voltage
4. All of above

Q2. The knee voltage of a crystal diode is approximately equal to

1. applied voltage
2. breakdown voltage
3. forward voltage
4. barrier potential

Q3. When the graph between current through and voltage across a device is a straight line, the device is referred to as

1. linear
2. active
3. nonlinear
4. passive

Q4. When the diode current is large, the bias is

1. forward
2. inverse
3. poor
4. reverse

Q5. The maximum efficiency of a half-wave rectifier is

1. 40.6 %
2. 81.2 %
3. 50 %
4. 25 %

Q6. The most widely used rectifier is

1. half-wave rectifier
2. centre-tap full-wave rectifier
3. bridge full-wave rectifier
4. none of the above

Q7. The forward voltage drop across a silicon diode is about

1. 2.5 V
2. 3 V
3. 10 V
4. 0.7 V

Q8. If the doping level of a crystal diode is increased, the breakdown voltage

1. remains the same
2. is increased
3. is decreased
4. none of the above

Contd

Q9. A crystal diode is used as

1. an amplifier
2. a rectifier
3. an oscillator
4. a voltage regulator

Q10. An ideal crystal diode is one which behaves as a perfect ..... when forward biased.

1. conductor
2. insulator
3. resistance material
4. none of the above

Q11. The ripple factor of a half-wave rectifier is

1. 2
2. 1.21
3. 2.5
4. 0.48

Q12. There is a need of transformer for

1. half-wave rectifier
2. centre-tap full-wave rectifier
3. bridge full-wave rectifier
4. none of the above

Q13. A zener diode is used as

1. an amplifier
2. a voltage regulator
3. a rectifier
4. a multivibrator

Q14. The most widely used rectifier is

1. half-wave rectifier
2. centre-tap full-wave rectifier
3. bridge full-wave rectifier
4. none of the above

Q15. A transistor has

1. one pn junction
2. two pn junctions
3. three pn junctions
4. four pn junctions

Q16. The number of depletion layers in a transistor is

1. four
2. three
3. one
4. two

Q17. The base of a transistor is ..... doped

1. heavily
2. moderately
3. lightly
4. none of the above

Q18. The element that has the biggest size in a transistor is

1. collector
2. base

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3. emitter
4. collector-base-junction

Q19. In a pnp transistor, the current carriers are

1. acceptor ions
2. donor ions
3. free electrons
4. holes

Q20. Photodiode is used in the detection of

1. visible light
2. invisible light
3. no light
4. both visible and invisible light

Q21. A transistor is a ..... operated device

1. current
2. voltage
3. both voltage and current
4. none of the above

Q22. In a npn transistor, the minority carriers are

1. free electrons
2. holes
3. donor ions
4. acceptor ions

Q23. Which process of Electron-hole pair is responsible for emitting of light?

1. Generation
2. Recombination
3. Diffusion
4. Movement

Q24. In a transistor, the base current is about ..... of emitter current

1. 25%
2. 20%
3. 35 %
4. 5%

Q25. At the base-emitter junctions of a transistor, one finds

1. a reverse bias
2. a wide depletion layer
3. low resistance
4. none of the above

Q26. The input impedance of a transistor is

1. high
2. low
3. very high
4. almost zero

Q27. Most of the majority carriers from the emitter

1. recombine in the base
2. recombine in the emitter
3. pass through the base region to the collector
4. none of the above

Q28. The current I_B is

1. electron current
2. hole current

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3. donor ion current
4. acceptor ion current

Q29. In a transistor

1. $I_C = I_E + I_B$
2. $I_B = I_C + I_E$
3. $I_E = I_C - I_B$
4. $I_E = I_C + I_B$

Q30. The most commonly used semiconductor is

1. Germanium
2. Silicon
3. Carbon
4. Sulphur

Q31. When a pentavalent impurity is added to a pure semiconductor, it becomes

1. An insulator
2. An intrinsic semiconductor
3. p-type semiconductor
4. n-type semiconductor

Q32. Addition of pentavalent impurity to a semiconductor creates many

1. Free electrons
2. Holes
3. Valence electrons
4. Bound electrons

Q33. Which of the following is the most conductive element?

1. Copper
2. Iron
3. Silver
4. Rubber

Q34. A material that has zero resistance is called

1. Insulator
2. Conductor
3. Superconductor
4. semiconductor

Q35. Why is copper a preferred choice in making electrical wires?

1. Copper is a good conductor of electricity
2. Poor conductors of electricity
3. Insulators
4. Superconductors

Q36. Which among the following is not an insulator?

1. Wool
2. Plastic
3. Silver
4. Paper

Q37. What is the inverse of resistance called?

1. Inductance
2. Conductance
3. Resistivity
4. permittivity

Q38. The energy gap is maximum in

1. Conductors
2. Semiconductors

3. Insulators
4. Superconductors

Q39. Conductors are materials that allow

1. Allow the flow of heat
2. Does not allow heat to flow
3. Allows cold to flow
4. Stops cold from passing through

Q40. Good conductors have many loosely bound

1. Atoms
2. Protons
3. Molecules
4. Electrons

Q41. The resistance of the conductor is directly proportional to

1. Length
2. Area of cross-section
3. Temperature
4. resistivity

Q42. With the increase in temperature the resistance of semiconductors

1. Decreases
2. Increases
3. Remains constant
4. Initially increases and then decreases

Q43. Peak Inverse voltage of a bridge rectifier is

1. V_m
2. $2V_m$
3. $4V_m$
4. None of these

Q44. Frequency of DC signal is

1. Infinity
2. Zero
3. 60 Hz
4. None of these

Q45. In center tap full wave rectifier

1. four diodes are used
2. one diode is used
3. two diodes are used
4. none of these

Q46. The collector-base junction in a transistor has

1. forward bias at all times
2. reverse bias at all times
3. low resistance
4. none of the above

Q47. Beta's current ratio is

1. I_C/I_B
2. I_C/I_E
3. I_B/I_E
4. I_E/I_B

Q48. Most of the electrons in the base of an NPN transistor flow

1. out of the base lead
2. into the collector

3. into the emitter
4. into the base supply

Q49. In a transistor, collector current is controlled by

1. collector voltage
2. base current
3. collector resistance
4. all of the above

Q50. The most commonly used transistor is

1. common emitter
2. common base
3. common collector
4. none of the above

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