

Question Bank

S.Y. B.Sc. Sem-III

Subject: - PHY 302 (A): Electronics –I

Multiple Choice Questions

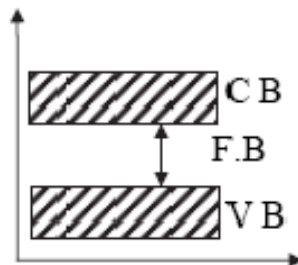
Unit 1

Semiconductor diodes

Multiple Choice Questions for one mark

1. The arrow direction in the diode symbol indicates.....
 - a) Direction of electron flow.
 - b) Direction of hole flow (Direction of conventional current)**
 - c) Opposite to the direction of hole flow
 - d) None of the above
2. The knee voltage (cut in voltage) of Si diode is.....
 - a) 0.2 V
 - b) 0.7 V**
 - c) 0.8 V
 - d) 1.0 V
3. When the diode is forward biased, it is equivalent to.....
 - a) An off-switch
 - b) An On-switch**
 - c) A high resistance
 - d) None of the above
4. Under normal reverse bias voltage applied to diode, the reverse current in Si diode.....
 - a) 100 mA
 - b) order of μA**
 - c) 1000 μA
 - d) None of these
5. Avalanche breakdown in a diode occurs when.....
 - a) Potential barrier is reduced to zero.
 - b) Forward current exceeds certain value.
 - c) Reverse bias exceeds a certain value.**
 - d) None of these
6. Reverse saturation current in a Silicon PN junction diode nearly doubles for very.....
 - a. 20 rise in temp.
 - b. 50 rise in temp.
 - c. 60 rise in temp.
 - d. 100 rise in temp.**
7. A forward potential of 10V is applied to a Si diode. A resistance of 1 K Ω is also in series with the diode. The current is.....
 - a. 10 mA
 - b. 9.3 mA**
 - c. 0.7 mA
 - d. 0 mA
8. Barrier potential at the room temperature (25 $^{\circ}\text{C}$) is 0.7V, its value at 125 $^{\circ}\text{C}$ is.....
 - a. 0.5 V**
 - b. 0.3 V
 - c. 0.9 V
 - d. 0.7 V

9. When a reverse bias is applied to a diode, it will.....
- a. **Raise the potential barrier** b. Lower the potential barrier
 c. Increases the majority-carrier a current greatly d. None of these
10. The best description of zener diode is that
- a. **it operates in reverse region** b. it is a constant voltage device
 c. it is a constant current device d. none of the above
11. The LED is usually made of.....
- a. GeSi b. C and Si **c. GaAs** d. none of the above
12. The P-N junction photodiode operates
- a. first forward biasing the junction and then illuminating it.
b. first reverse biasing the junction and then illuminating it.
 c. first illuminating the junction and then reverse biasing it.
 d. first illuminating the junction and then forward biasing it.
13. Testing a good diode with an ohmmeter should indicate
- a. high resistance when forward or reverse biased
 b. low resistance when forward or reverse biased
c. high resistance when reverse biased and low resistance when forward biased
 d. high resistance when forward biased and low resistance when reverse biased
14. A P-N junction allows current flow when.....
- a. both the n-type and p-type materials have the same potential
b. the n-type material is more positive than the p-type material
 c. the p-type material is more positive than the n-type material
 d. there is no potential on the n-type or p-type materials
15. The diode used in seven segment display is.....
- a. zener diode b. Photo diode **c. LED** d. LASER diode
16. The diagram shown below corresponds to,



- (a) the single energy level of an electron.
 (b) the discrete energy level of an electron.
 (c) the energy transfer diagram.
(d) the energy band diagram.
17. The space between the outermost filled energy band and the next empty band is called
 (a) valence band (b) conduction band (c) **forbidden zone** (d) none of these
18. The forward biased resistance of the diode isthan its reverse biased resistance.
 (a) larger (b) double (c) **smaller** (d) none of these
19. A zener diode is operated in
 (a) **breakdown region** (b) forward characteristics region
 (c) zero biasing (d) none of these
20. If the p-n junction diode is heavily doped then breakdown voltage will
 (a) increases (b) **decreases** (c) remains same (d) none of these
21. Solar cell works on the principle of.....
 (a) photo thermal conversion (b) **Photovoltaic conversion**
 (c) electron pumping (d) none of these
22. For artificial satellite the source of energy is.....
 (a) fuel cell (b) Edison cell (c) **solar cell** (d) biological cell
23. The electrical behavior of a solid material is determined by.....
 (a) **the energy band gap** (b) the energy levels of inner shell electrons
 (c) zero biasing (d) none of these
24. The barrier potential for an unbiased silicon junction diode at room temperature is.....
 a. 0.2 V **b. 0.7 V** c. 0.8 V d. 1.0 V
25. A zener diode is used as a.....
 (a) half wave regulator (b) half wave rectifier
(c) voltage regulator (d) amplifier
26. In operation, a photo diode is
 (a) unbiased (b) always forward biased
(c) always reverse biased (d) either forward or reverse biased

27. A photo diode is used in.....
- (a) a break indicator **(b) an optocoupler**
(c) a regulated power supply (d) a logic gate
28. The acronym LED stands for
- (a) light energized diode **(b) light emitting diode**
(c) low energy device (d) low energy dynamo
29. The arrow direction in the diode symbol indicates
- a. Direction of electron flow. **b. Direction of hole flow (Direction of conventional current)**
c. Opposite to the direction of hole flow d. None of the above
30. When the diode is forward biased, it is equivalent to
- a. An off-switch **b. An On-switch** c. A high resistance d. None of the above
31. By adding.....impurity in intrinsic semiconductor P type semiconductor is made.
- a. trivalent** b. pentavalent c. quadra valant d. divalent
32. The charge on P-type semiconductor is.....
- a. positive **b. neutral** c. negative d. either positive or negative
33. From the following semiconductor diodes, only.....operates in forward bias only.
- a. LED** b. zener c. photodiode d. None of the above

Unit 2

Rectifiers and power supplies

Multiple Choice Questions for ONE (01) marks

- In a half rectification diode conducts during.....
 - both half cycles
 - positive half**
 - negative half
 - one half input
- A full-wave rectifier is..... efficient than a half wave rectifier.
 - more**
 - less
 - equal
 - none of the above
- In full-wave rectification, if i/p frequency is 50 Hz then output frequency is.....
 - 50 Hz
 - 100 Hz**
 - 200 Hz
 - 400 Hz
- Ripple factor of a full wave rectifier is.....
 - 0.58
 - 0.48**
 - 0.28
 - 0.38
- The maximum efficiency of a full-wave rectifier is.....
 - 41.2 %
 - 31.2 %
 - 91.2 %
 - 81.2 %**
- In half-wave rectification if i/p frequency is 50 Hz, then o/p frequency is.....
 - 50 Hz
 - 100 Hz
 - 250Hz
 - 25 Hz**
- In a half wave rectifier, the load current flows for.....
 - the complete cycle of the input signal.
 - only for the positive half-cycle of the input signal.**
 - less than half cycle of the i/p signal.
 - more than half cycle but less than the complete cycle of the input signal.
- The RMS value of a half wave rectifier current is 10 A. Its value for full wave rectification current would be
 - 10 A
 - 14.14 A**
 - $(20/\pi)$ A
 - 20 A.
- The ripple factor of a full-wave rectifier circuit compared to that of a half wave rectifier circuit without filter is.....

- a) half of that for a half 'wave rectifier
rectifier circuit
- b) **less than half that for a half-wave**
- c) equal to that of a half wave rectifier
- d) none of the above.
10. Filter circuits after rectifiers.....
- a. **smoothens pulsation**
- b. hardens pulsation
- c. keeps the pulsation as it is
- d. doubles the pulsations
11. is not an essential element of d. c. power supply.
- a) Rectifier b) Filter c) Voltage Regulator **d) Voltage Amplifier**
12. A voltage regulator is a circuit which.....
- a. Converts the d. c. voltage into a. c. voltage.
- b. Smoothens the ac variations in d. c. output voltage.
- c. Maintains a constant dc output voltage in spite of the fluctuations in a. c. input voltage or load current.**
- d. None of the above.
13. The % load regulation of a power supply providing 100V unloaded and 95V at full load is.....
- a) 5.26 %** b) 5.0% c) 0.526% d) None of the above
14. The main function of a voltage regulator is to provide a nearly..... output voltage.
- a) Sinusoidal b) constant **c) smooth** d) fluctuating

Unit 3

Bipolar Junction Transistors

Multiple Choice Questions for ONE (01) mark

- 1) A transistor hasPN junctions.
a. one **b. two** c. three d. four
- 2) The emitter isdoped.
a. heavily b. lightly **c. moderately** d. not
- 3) The base isdoped.
a. heavily **b. lightly** c. moderately d. not
- 4) The collector isdoped.
a. heavily b. lightly c. moderately d. not
- 5) The value of α is _____.
a. less than 1 b. greater than 1 c. less than 0 d. equal to 0
- 6) The main function of a transistor is to do.....
a. rectification **b. amplification** c. light emission d. heat emission
- 7) Transistors would be classified as..... electronic devices.
a. active b. passive c. both active and passive d. neither active nor passive
- 8) The emitter- base junction of a bipolar transistor is.....
a. always reverse biased b. forward biased or reverse biased
c. always forward biased d. neither forward or reverse biased
- 9) From working of transistor operation one can write _____.
a. $I_B = I_C + I_E$ b. $I_C = I_B + I_E$ c. $I_E = I_C - I_B$ **d. $I_E = I_C + I_B$**
- 10) For CE transistor configuration o/p characteristics is graph of _____.
a. I_B verses V_{BE} b. I_B verses V_{CE} c. I_E verses V_{CE} **d. I_C verses V_{CE}**
- 11) For proper working of transistor_____.

- a) **EB junction should be forward biased and CB junction should be reverse biased**
- b) EB junction should be reverse biased and CB junction should be forward biased
- c) EB junction and CB junction should be reverse biased
- d) EB junction and CB junction should be forward biased

Unit 4

Digital electronics

Multiple Choice Questions for ONE (01) mark

1. A logic circuit is an electronic circuit which
 - (a) makes logic decision
 - (b) allows electron flow only in one direction
 - (c) works on binary algebra
 - (d) Alternates between 0 and 1 values.
2. An Ex-OR gate produces an output only when its two inputs are
 - (a) high** (b) low (c) different (d) same
3. An AND gate
 - (a) implements logic addition**
 - (b) is equivalent to a series switching circuit
 - (c) is an any-or-all gate
 - (d) is equivalent to a parallel switching circuit
4. When an input electrical signal A = 10100 is applied to a NOT gate, its output signal is
 - (a) 01011** (b) 10101 (c) 10100 (d) 00101
5. The only function of a NOT gate is to
 - (a) stop a signal (b) recomplement a signal
 - (c) invert an input signal** (d) acts as a universal gate.
6. A NOR gate is ON only when all its inputs are
 - (a) ON (b) positive (c) high **(d) OFF**
7. The output of two input OR gate is high
 - (a) Only if both inputs are high
 - (b) Only if both inputs are low

- (c) Only if one input is high and other is low
(d) If at least one of the input is high
8. The output of two input AND gate is high
(a) Only if both inputs are high
(b) Only if both inputs are low
(c) Only if one input is high and other is low
(d) If at least one of the input is low
9. The output of two input NOR gate is high
(a) Only if both inputs are high
(b) Only if both inputs are low
(c) Only if one input is high and other is low
(d) If at least one of the input is high
10. The output of two input NAND gate is high
(a) Only if both inputs are high
(b) Only if both inputs are low
(c) Only if one input is high and other is low
(d) If at least one of the input is low
11. A digital word has even parity
(a) If it has even number of 1's
(b) If it has even number of 0's
(c) If the decimal value of digital word is even
(d) None of these
12. An Ex-OR gate gives a high output
(a) If there are odd number of 1's in the input
(b) If there are even number of 1's in the input
(c) If there are odd number of 0's in the input
(d) If there are even number of 0's in the input
13. The gate ideally suited for bit comparison is
(a) Two input Ex-OR gate
(b) Two input Ex-NOR gate
(c) Two input NOR gate

24. If input of EX-OR gate $A = 1$ and $B = X$ then Y is

a) 0

b) X

c) **X**

d) XX

25. The output of NAND gate is zero when.....

a) all its inputs are zero

b) all its inputs are one

c) any one of its input is zero

c) any one of its input is one

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