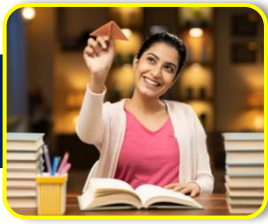


MULTIPLE CHOICE QUESTIONS

1. A semiconductor is an element with a valence electron ---
(a) **Four** (b) Eight
(c) Two (d) One
2. A pure semiconductor is known as
(a) Extrinsic (b) **Intrinsic**
(c) Transistor (d) Diode
3. An acceptor atom is also called
(a) Penta-valent atom (b) **Trivalent atom**
(c) Minority carrier (d) Majority carrier
4. With which one of the following elements should silicon be doped to give a p-type of semiconductor?
(a) Germanium (b) Arsenic
(c) Selenium (d) **Boron**
5. For a full-wave rectifier, the output frequency
(a) Equals one-half the input frequency (b) Equals the line frequency
(c) **Equals two times the input** (d) Is three times the line frequency
6. LED construction needs a semiconductor material is:
(a) Silicon (b) Germanium
(c) Gallium (d) **Gallium arsenide**
7. The frequency of a half-wave signal is
(a) Twice the line frequency (b) **Equal to the line frequency**
(c) One-half of the line frequency (d) One-fourth of the line frequency
8. The voltage gain of an emitter follower circuit is
(a) High (b) Low
(c) Very high (d) **close to 1**
9. What is also called as the conventional amplifier?
(a) Common-collector circuit (b) Emitter follower circuit
(c) Common base circuit (d) **Common emitter circuit**
10. An op-amp with negative feedback provides an output parameter.
(a) Gain (b) Bandwidth
(c) Input-output impedance (d) **All of these**

UNIT -22 SOLID STATE ELECTRONICS



EXAM PRACTICE MCQs

1. An n-type semiconductor can be obtained by doping pure silicon with:
(a) Boron (b) Aluminum
(c) Gallium (d) **Arsenic**
2. The donor impurity must have _____ electrons.
(a) 3 (b) 4
(c) **5** (d) 6
3. N-type semiconductor is obtained by doping silicon with:
(a) **Phosphorus** (b) Aluminum
(c) Boron (d) Germanium
4. What kind of semiconductor is formed when phosphorus is added to silicon?
(a) P-type (b) **N-type**
(c) PNP-type (d) NPN-type
5. The minority carriers in n-type semiconductors are:
(a) Electrons (b) **Holes**
(c) Positions (d) Protons
6. A semiconductor in its purest form is called.....
(a) Insulator (b) Superconductor
(c) **Intrinsic semiconductor** (d) Extrinsic semiconductor
7. A P-type semiconductor results when
(a) A Pentavalent impurity is added to an intrinsic semiconductor
(b) **A trivalent impurity is added to an intrinsic semiconductor**
(c) Either a pentavalent or trivalent impurity is added to an intrinsic semiconductor
(d) None of the above
8. An intrinsic semiconductor at absolute zero.....
(a) Becomes an extrinsic semiconductor
(b) **Behaves like an insulator**
(c) Disintegrates into pieces
(d) Becomes a superconductor
9. A semiconductor has.... temperature coefficient of resistance.
(a) Zero (b) Positive
(c) **Negative** (d) infinity
10. A doped semiconductor is also known as
(a) Intrinsic semiconductor (b) **Extrinsic semiconductor**
(c) Diffused semiconductor (d) superconductor
11. Which of the following cannot exist outside a semiconductor
(a) **Hole** (b) Electron
(c) .Both (a) and (b) (d) photon
12. As the temperature of a semiconductor increases its
(a) **Conductivity increases** (b) Resistivity increases
(c) Atomic number decreases (d) temperature coefficient becomes zero

UNIT -22 SOLID STATE ELECTRONICS

- 13 The conduction band
(a) Is always above the forbidden energy level
(b) Is the region of free electrons
(c) Concentrates holes for the flow of current
(d) **Is a range of energies corresponding to the energies of the free electrons**
- 14 has the highest mobility.
(a) **Electron** (b) Positive ions
(c) positron (d) Neutron
- 15 The atomic number of germanium is.....
(a) 4 (b) 8
(c) 16 (d) **32**
- 16 The crystal diode is used as a
(a) **Rectifier** (a) Amplifier
(a) Oscillator (a) all of the above
- 17 The collector current I_C and emitter current I_E have---?
(a) Same sign in both n-p-n and p-n-p transistors.
(b) **Opposite sign in both n-p-n and p-n-p transistors.**
(c) No sign in both n-p-n and p-n-p transistors
(d) None of the above
- 18 A transistor has _____.
(a) One PN junction (b) **Two PN junctions**
(c) Three PN junctions (d) Four PN junctions
- 19 The element that has the biggest size in a transistor is _____.
(a) **Collector** (b) Base
(c) Emitter (d) all of these
- 20 In a PNP transistor, the current carriers are _____.
(a) Acceptor ions (b) Donor ions
(c) Free electrons (d) **Holes**
- 21 In a transistor, the base current is about _____ of the emitter current.
(a) 25 % (b) 20 %
(c) 35 % (d) **5 %**
- 22 The relation between β and α is _____.
(a) $\beta = 1/(1-\alpha)$ (b) $\beta = (1-\alpha)/\alpha$
(c) **$\beta = \alpha/(1-\alpha)$** (d) $\beta = 1/(1+\alpha)$
- 23 The value of β for a transistor is generally _____.
(a) 1 (b) Less than 1
(c) **Between 20 and 500** (d) Above 500
- 24 The phase difference between the input and output voltage in a common base arrangement is _____.
(a) 180° (b) 90°
(c) 270° (d) **0°**
- 25 The voltage gain of a transistor connected in a common collector arrangement is _____.
(a) Equal to 1 (b) More than 10
(c) More than 100 (d) **Less than 1**