# NATIONAL MODEL SENIOR SECONDARY SCHOOL
# PEELAMEDU – COIMBATORE

## CLASS: XII PHYSICS

### CHAPTER 14: SEMICONDUCTOR

### MCQ ASSESSMENT

1. Bonds in a semiconductor :

(a) trivalent (b) covalent (c) bivalent (d) monovalent

2. Number of electrons in the valence shell of a semiconductor is:

(a) 1 (b) 2 (c) 3 (d) 4

3. In a p-type semiconductor, current conduction is by:

(i) atoms (ii) holes (iii) electrons (iv) protons

4. Electric conduction in a semiconductor takes place due to

(i) electrons only (ii) holes only

(iii) both electrons and holes (iv) neither electrons nor holes

5. If a small amount of antimony is added to germanium crystal

(i) it becomes a p–type semiconductor (ii) the antimony becomes an acceptor atom

(iii) there will be more free electrons than holes in the semiconductor

(iv) its resistance is increased

6. Potential barrier developed in a junction diode opposes the flow of

(i) minority carrier in both regions only (ii) majority carriers only

(iii) electrons in p region (iv) holes in p region

7. With fall of temperature, the forbidden energy gap of a semiconductor

(i) increases (ii) decreases

(iii) sometimes increases and sometimes decreases (iv) remains unchanged

8. At absolute zero, Si acts as which of the following?

(i) Non-metal (ii) Metal

(iii) Insulator (iv) Superconductor

9. The electrical conductivity of pure germanium can be increased by

(i) increasing the temperature (ii) doping acceptor impurities

(iii) doping donor impurities (iv) All of the above

10. Thermal equilibrium implies equality of:

(a) energy (b) internal energy

(c) K.E. (d) temperature

11. Region without free electrons and holes in a p-n junction is

(i) n-region (ii) p-region

(iii) depletion region (iv) none of these

12. Which of the following is true regarding insulators?

(i) The valence band is partially filled with electrons

(ii) The conduction band is partially filled with electrons

(iii) The conduction band is filled with electrons and valence band empty

(iv) The conduction band is empty and valence band is filled with electrons

13. In a half wave rectifier circuit operating from 50 Hz mains frequency, the fundamental frequency in the ripple would be

(i) 25 Hz (ii) 50 Hz (iii) 70.7 Hz (iv) 100 Hz

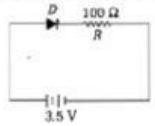
14. In a semiconductor, the forbidden energy gap between the valence band and the conduction band is of the order is

(i) 1 MeV (ii) 0.1 Mev

(iii) 1 eV (iv) 5 eV

15.

In the given figure, a diode D is connected to an external resistance R = 100 Ω and an e.m.f of 3.5 V. If the barrier potential developed across the diode is 0.5 V, the current in the circuit will be




1. 30mA

2. 40mA

3. 20mA

4. 35mA

16. If the energy of a photon of sodium light (A = 589 nm) equals the band gap of semiconductor, the minimum energy required to create hole electron pair

(i) 1.1 eV (ii) 2.1 eV

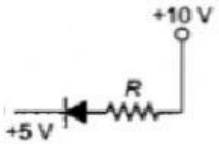
(iii) 3.2 eV (iv) 1.5 eV

17. What is a rectifier used for?

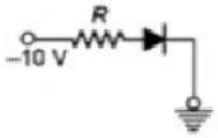
(i) Convert ac voltage to dc voltage (ii) Convert dc voltage to ac voltage

(iii) Measure resistance (iv) Measure current

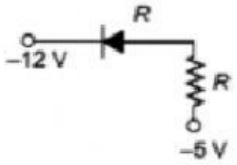
18. Diode which is forward biased is



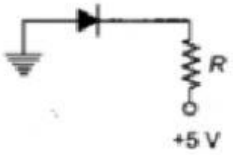

a




b



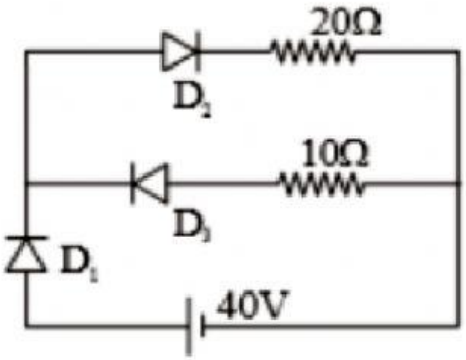

c




d

a. A only b. A and B c. A and C d. All the above

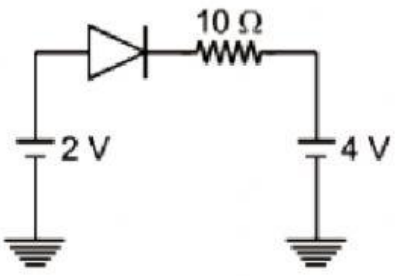
19. Current in the circuit is:




a. 2A b. 4A c. 8A d.1.1A

20.

The current through an ideal p-n junction diode shown in the circuit will be -




a. 0.2A b. 0.4 c. 2A d. zero