

**University of Mumbai**  
**Sample Question Paper**  
**Examination – 2020 Semester-II**

0212\_R12\_FE\_II\_FEC102\_QP1

**1. A semiconductor has ..... temperature coefficient of resistance.**

- A. Positive
- B. Negative
- C. Zero
- D. infinite

**2 When a pure semiconductor is heated, its resistance .....**

- A. Goes up
- B. Goes down
- C. Remains the same
- 1.D. Can't say

**3 Which of the following expression represent the correct formulae for calculating the exact position of the Fermi level for p-type material?**

- A.  $E_F = E_v + kT \ln(N_D / N_A)$
- B.  $E_F = -E_v + kT \ln(N_D / N_A)$
- C.  $E_F = E_v - kT \ln(N_D / N_A)$
- D.  $E_F = -E_v - kT \ln(N_D / N_A)$

**4. By which properties, the orientation of molecules in a layer of liquid crystals can be changed?**

- A. Magnetic field
- B. Electric field
- C. Electromagnetic field
- D. Gallois field

**5. Which of the following effects can be used to produce ultrasonic waves?**

- A. Magnetostriction effect
- B. Doppler Effect
- C. Magnetic effect
- D. Sound effect

**6. In the Hall Effect, the electric field is in x direction and the velocity is in y direction. What is the direction of the magnetic field?**

- A. X
- B. Y
- C. Z
- D. XY plane

**7. Calculate the hall voltage when the Electric Field is 5V/m and height of the semiconductor is 2cm.**

- A. 10V
- B. 1V
- C. 0.1V
- D. 0.01V

**8. For plane (1 0 0) of BCC having a lattice parameter 'a', planar atomic density is given by?**

- A.  $1/a^3$
- B.  $2/a^2$
- C.  $3/a^4$
- D.  $1/a^2$

**9. Which of the following equation describes Bragg's law of diffraction? (Assume that all symbols have their usual meaning.)**

- A.  $2d \sin\theta = \lambda$
- B.  $2d = n\lambda$
- C.  $2d = n\lambda \sin\theta$
- D.  $2d \sin\theta = n\lambda$

**10. For plane (1 1 1) of BCC having a lattice parameter 'a', planar atomic density is given by?**

- A.  $1.07/a^2$
- B.  $0.58/a^2$
- C.  $2.07/a^2$
- D.  $0.78/a^2$