Unit 2 - Week 0

Course outline

How does an NPTEL online course work?

Week 0

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Assignment 0

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-01-27, 23:59 IST.

1) Which of the following parameters can't be found with Hall Effect? *1 point*

(a) Polarity

(b) Conductivity

(c) Carrier concentration

(d) Area of the device

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

2) In the Hall Effect, the current is in x direction and the Hall voltage is in y direction. What is the direction of the magnetic field? *1 point*

(a) X

(b) Y

(c) Z

(d) XY plane

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

3) Hall Effect can be used to measure *1 point*

(a) Magnetic field intensity

(b) Electric field intensity

(c) Carrier concentration

(d) None of the above

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

4) In the crystal structure of Si we have *1 point*

(a) Ionic bonding

(b) Covalent bonding

(c) Vander wall bonding

(d) Metallic bonding

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

5) The crystal lattice is a lattice in real ordinary space but the reciprocal lattice is a lattice in a *1 point*

(a) Gaussian space

(b) Laplacian space

(c) Fourier space

(d) Hypothetical space

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

6) The reciprocal lattice to an FCC lattice is *1 point*

(a) An FCC lattice

(b) An SC lattice

(c) A BCC lattice

(d) None of these

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

7) The Bragg's reflection by a crystal occur when the X-ray wavelength λ and interatomic distance d must be as *1 point*

(a) $\lambda > 2d$

(b) $\lambda > 3d$

(c) $\lambda > 4d$

(d) $\lambda \leq 2d$

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

8) The Laue method of X-ray diffraction by a crystal is suitable for determination of *1 point*

(a) Crystalline structure, crystal symmetry and crystal imperfection

(b) Surface structure of the crystal

(c) Magnetic moment of the material

(d) Magnetic permeability of the material

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

9) Ionic crystals are very good insulators at room temperature but conducting at higher temperature due to *1 point*

(a) Production of electron-hole pairs as semiconductor material

(b) Thermal expansion of the ionic solid

(c) Transition of large number of electrons from valence band

(d) Motion of ionic charge

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

10) Electronic contribution to the specific heat of a metal at low temperature is *1 point*

(a) An exponential function of temperature (T)

(b) A linear function of temperature (T)

(c) Zero

(d) None of these

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

11) A ferromagnetic material has a curie temperature 100 K when it is cooled from 300 K to 200 K its susceptibility *1 point*

(a) Will increase

(b) Will decrease

(c) Remain unchanged

(d) None of these

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

12) In superconducting state- *1 point*

(a) Entropy increases and thermal conductivity decreases

(b) Entropy and thermal conductivity decreases

(c) Entropy and thermal conductivity increases

(d) Entropy decreases and thermal conductivity increases

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

13) The temperature at which a conductor becomes a superconductor is called *1 point*

(a) Fermi temperature

(b) Curie temperature

(c) Debye temperature

(d) Transition temperature

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

14) The critical magnetic field for a solid in superconducting state *1 point*

(a) Does not depend upon temperature

(b) Increases if the temperature increases

(c) Increases if the temperature decreases

(d) None of these

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

15) A crystal is held together entirely by *1 point*

(a) Gravitational force

(b) Electrostatic force

(c) Magnetic force

(d) Nuclear force

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

16) In a very strong magnetic field, the splitting of a spectral line is called *1 point*

(a) Stark Effect

(b) Zeeman Effect

(c) Compton Effect

(d) Raman Effect

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

17) The splitting of a spectral line in the presence of an electric field is called *1 point*

(a) Stark Effect

(b) Zeeman Effect

(c) Compton Effect

(d) Raman Effect

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

18) The substances which are expected to show electron spin resonance (E.S.R) spectroscopy when atoms and molecules of the substance have *1 point*

(a) No net electron spin

(b) No net electronic magnetic moment

(c) No interaction between the electron spins and an applied magnetic field

(d) Unpaired electron spins

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

19) The magnetoresistance is defined as the *1 point*

(a) Ratio of change in charge of a substance due to the application of magnetic field to the charge in the zero magnetic fields

(b) Ratio of change in resistance of a substance due to the application of magnetic field to the resistance in zero magnetic fields

(c) Ratio of change in temperature of a substance due to the application of magnetic field to the temperature in zero magnetic fields

(d) Ratio of change in current of a substance due to the application of magnetic field to the current in zero magnetic fields

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)