

Quantum physics is largely the study of the.

- A. Microscopic world
- B. Macroscopic world
- C. Telescopic world
- D. None

ANSWER: A

The unit of Planck's constant is.

- A. Js
- B. EVs
- C. Both Js & eVs
- D. None

ANSWER: C

If the wave has more energy, its total energy must be an integral multiple of.

- A. hf
- B. hc
- C. cf
- D. None

ANSWER: A

An x ray is a form of radiations which are.

- A. Electric
- B. Magnetic
- C. Electromagnetic
- D. None

ANSWER: C

Compton wavelength is given by the relation.

- A. hmc
- B. fmc
- C. h/mc
- D. None

ANSWER: C

The unit of Stefan-Boltzmann constant is.

- A. $W/m^4 K^4$
- B. $W/m^3 K^4$
- C. $W/m^2 K^2$
- D. $W/m^2 K^4$

ANSWER: D

A moving particle such as an electron can be described as a.

- A. Transverse wave
- B. Longitudinal wave
- C. Matter wave
- D. None

ANSWER: C

The wavelength associated with the matter wave is the particle's de Broglie wavelength and given by.

- A. p/h
- B. ph
- C. h/p
- D. None

ANSWER: C

de Broglie suggested that equation ($p=h/\text{wavelength}$) might apply not only to photons but also to electrons.

- A. Electrons
- B. Protons
- C. Neutrons
- D. All

ANSWER: D

The wavelength associated with the electron is about the size of a typical.

- A. Atom
- B. Electron
- C. Proton
- D. Nucleus

ANSWER: A

If we increase the electron's kinetic energy, the wavelength associated with it becomes.

- A. Larger
- B. Smaller
- C. Remains same.
- D. None

ANSWER: B

A simple traveling wave of any kind, be it a wave on a string, a sound wave, or a light wave, is described in terms of some quantity that varies in a.

- A. Particle like fashion
- B. Electromagnetic fashion
- C. Wave-like fashion
- D. None

ANSWER: C

Which waves for nonrelativistic particles are described by Schrodinger's equation.

- A. Electromagnetic waves
- B. Matter waves
- C. Longitudinal waves
- D. None

ANSWER: B

The SI unit of resistivity is.

- A. Ohm-meter
- B. Ohm/meter
- C. Meter/ohm
- D. None

ANSWER: A

In an insulator the highest band containing any electrons is.

- A. Empty
- B. Fully occupied
- C. Partly occupied
- D. None

ANSWER: B

Diamond is an electrical.

- A. Conductor
- B. Semiconductor
- C. Superconductor
- D. Insulator

ANSWER: D

Both electrons and holes serve as charge carriers when the silicon is put under a.

- A. Pressure
- B. Temperature
- C. Conductor
- D. Potential difference

ANSWER: D

A semiconductor is formed by which bond.

- A. Covalent
- B. Electrovalent
- C. Co-ordinate
- D. None

ANSWER: A

The most commonly used semiconductor is.

- A. Germanium
- B. Silicon
- C. Carbon
- D. Sulphur

ANSWER: B

A semiconductor has generally how many valence electrons.

- A. 2
- B. 3
- C. 6
- D. 4

ANSWER: D

When a pure semiconductor is heated, its resistance.

- A. Goes up

- B. Goes down
- C. Remains the same
- D. None

ANSWER: B

When a pentavalent impurity is added to a pure semiconductor, it becomes.

- A. An insulator
- B. An intrinsic semiconductor
- C. P-type semiconductor
- D. N-type semiconductor

ANSWER: D

Addition of pentavalent impurity to a semiconductor creates many.

- A. Free electrons
- B. Holes
- C. Valence electrons
- D. Bound electrons

ANSWER: A

The number of valence electrons in pentavalent impurity is.

- A. 3
- B. 5
- C. 4
- D. 6

ANSWER: B

An n-type semiconductor is.

- A. Positively charged
- B. Negatively charged

- C. Electrically neutral
- D. None of the above

ANSWER: C

A trivalent impurity has how many valence electrons.

- A. 4
- B. 5
- C. 6
- D. 3

ANSWER: D

Addition of trivalent impurity to a semiconductor creates many.

- A. Holes
- B. Free electrons
- C. Valence electrons
- D. Bound electrons

ANSWER: A

As the doping to a pure semiconductor increases, the bulk resistance of the semiconductor.

- A. Remains the same
- B. Increases
- C. Decreases
- D. None of the above

ANSWER: C

In a semiconductor, current conduction is due to.

- A. Only holes
- B. Only free electrons
- C. Holes and free electrons

D. None of the above

ANSWER: C

In the depletion region of a pn junction, there is a shortage of.

A. Acceptor ions

B. Holes and electrons

C. Donor ions

D. None of the above

ANSWER: B