Electronic Circuits – Tutorial 02

#	Question	Answer
1	Electron-hole pairs are produced by (a) recombination (b) thermal energy (c) ionization (d) doping	b
2	Recombination is when (a) an electron falls into a hole (b) a positive and a negative ion bond together (c) a valence electron becomes a conduction electron (d) a crystal is formed	a
3	A trivalent impurity is added to silicon to create (a) germanium (b) a *p*-type semiconductor (c) an *n*-type semiconductor (d) a depletion region	b
4	The purpose of a pentavalent impurity is to (a) reduce the conductivity of silicon (b) increase the number of holes (c) increase the number of free electrons (d) create minority carriers	c
5	The depletion region is created by (a) ionization (b) diffusion (c) recombination (d) answers (a), (b), and (c)	d
6	The depletion region consists of (a) nothing but minority carriers (b) positive and negative ions (c) no majority carriers (d) answers (b) and (c)	d

Q7	Describe the process of doping and explain how it alters the atomic structure of silicon.
Sol 7	Doping is adding pentavalent atom to silicon to become n-type or adding trivalent atom to silicon to become p-type.

Q8	Because of its barrier potential, can a diode be used as a voltage source? Explain
Sol 8	No. The barrier potential is a voltage drop