



## Weekly Test 1 – Introduction to Electronics

**Date:** 18-08-2012

**Time:** 30 Min

**Course:** E2Sem1\_ECE & CSE

**Max Marks:** 10

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1. *Thermocouple* type transducer convert  $X$  form of energy to  $Y$  form of energy, where.

- (a)  $X$  = Heat,  $Y$  = Electrical
- (b)  $X$  = Mechanical,  $Y$  = Electrical
- (c)  $X$  = Electrical,  $Y$  = Heat
- (d)  $X$  = Electrical,  $Y$  = Mechanical

2. The junction capacitance of a p-n junction depends on

- (a) Doping concentration only
- (b) Applied voltage only
- (c) Both doping concentration and applied voltage
- (d) Barrier potential only

3. Which one of the following gate is a binary multiplier.

- (a) XOR
- (b) OR
- (c) AND
- (d) NAND

4. Which one the following gate is the binary adder.

- (a) OR
- (b) AND
- (c) NOR
- (d) None of these

5. +2 volt is applied to p side of the p-n junction and +3 volt to n-side.

Which one of the following is true with respect to the depletion(space charge) region width

- (a) Increases
- (b) Decreases
- (c) Unaffected
- (d) Damages the junction

6. Which one of the following has maximum probability of finding electrons in between conduction band and valence band.

- (a) Semicondutor
- (b) Insulator
- (c) Dielectric material
- (d) Metal

7. Mobility of mobile charge carrier in the semiconductor block is

$$\mu = 3800 \text{ cm}^2/\text{V}\text{-sec} \text{ and length of the semiconductor block is } 1 \text{ mm. } 10 \text{ mV}$$

Potential is applied across two terminal of block. Compute drift velocity of carrier.

(a)  $3.8 \text{ m/s}$

(b)  $380 \text{ cm/s}$

(c) Both a & b

(d)  $38 \text{ cm/s}$

8. If the energy of the lower edge of conduction band (CB) is  $6 \text{ eV}$  and the energy of upper edge of valence band (VB) is  $6 \times 10^{-19} \text{ joule}$ . Then how much energy is required in milli-joules to transfer the electron from VB to CB.

(a)  $3.6 \times 10^{-16}$

(b)  $3.6 \times 10^{-19}$

(c)  $36 \times 10^{-19}$

(d)  $36 \times 10^{-16}$

**9.** Conductivity of semiconductor material is dependent on which of the following parameters.

- (a)** Only concentration of mobile carrier
- (b)** Only mobility of the carrier
- (c)** Only charge magnitude of the carrier
- (d)** All of above, a & b & c.

**10.** Potential difference is applied across the semiconductor block, and then electrons drift in  $X$  direction and current flows in  $Y$  direction. Which one of the following is the true combination of  $X$  and  $Y$ .

- (a)**  $X$  = +ve polarity to -ve polarity,  $Y$  = -ve polarity to +ve polarity
- (b)**  $X$  = -ve polarity to +ve polarity,  $Y$  = -ve polarity to +ve polarity
- (c)**  $X$  = +ve polarity to -ve polarity,  $Y$  = +ve polarity to -ve polarity
- (d)**  $X$  = -ve polarity to +ve polarity,  $Y$  = +ve polarity to -ve polarity

## **Answer Key**

1. (a)

2. (c)

3. (c)

4. (d)

5. (a)

6. (d)

7. (c)

8. (a)

9. (d)

10. (d)