**KSHITIJ TUTORIALS**

**(**Shop no. 15, First Floor Tropical lagoon shopping center, Anand Nagar, Thane West**)**

**(Semiconductors)**

 Standard:- XII (SSC Board) Marks :- 25 Time:- 60 minutes

I). Choose the correct alternative 7 M

1. In a BJT, the largest current flow occurs

1. in the emitter 2. in the collector 3. in the base 4. through CB junction

2. A LED emits visible light when its

1. junction is reverse biased 2. depletion region widens 3. holes and electrons recombine 4. junction becomes hot

3. A logic gate is an electronic circuit which:

1. makes logical decisions 2. allows electron flow only in one direction

3. works using binary algebra 4. alternates between 0 and 1 value

4. Solar cell operates on the principle of:

 1. diffusion 2. Recombination 3. photovoltaic action 4. carrier flow

5. A logic gate is an electronic circuit which:

1. makes logical decisions 2. allows electron flow only in one direction 3. works using binary algebra

4. alternates between 0 and 1 value

II). Answer in short 10 M

1. Why is the base of a transistor made thin and is lightly doped?
2. On which factors does the wavelength of light emitted by a LED depend?
3. State the principle of solar cells.
4. Draw the circuit diagram of a half-wave rectifier.
5. Why do we need filters in a power supply ?

III). Answer in long 8 M

1. Draw a neat diagram of a full-wave rectifier and explain it’s working.
2. Explain the principle of operation of a photodiode.

OR

1. What are logic gates? Name them. Why is a NOT gate known as an inverter?
2. Define α and β. Derive the relation between then