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Internal Assesment Test-II

Sub:	Electronic Devices						Code:	18EC33
Date:	14/10/ 2019	Duration:	90 mins	Max Marks:	50	Sem:	4th	Branch: ECE(A,B,C,D,E)

Answer FIVE FULL Questions

		Marks	OBE CO	RBT

1. Explain the operation of an illuminated PN junction using I-V characteristics curve and describe its operation in various quadrants. Write the expression for current in photodiode resulting due to collection of optically generated carriers and open circuited voltage across the junction. — [06+04] CO2 L2

2. With a neat diagram explain the hole and electron flow in PNP transistor with proper biasing. What are the mechanisms (factors) which cause base current in a transistor? — [07+03] CO2 L2

3. Explain the operation of a typical solar cell with a neat diagram. Define fill factor with diagram and describe efficiency of power generation of a solar cell. — [10] CO2 L2

4. Explain switching operation of a transistor in cut off and saturation region. What are the various mechanisms of switching cycle? — [06+04] CO2 L2

5.(a) What are the advantages of using PIN photodiode in photo-detector? What is the figure of merit of a photo-detector? — [05] CO2 L1

(b) Write a note on LED mentioning the applications of LED. What is external quantum efficiency of an LED? — [05] CO2 L1

6.(a) Define and give expressions for
   i. Base transport factor
   ii. Emitter injection efficiency
   iii. Current transfer ratio
   iv. Base to collector current amplification factor.
   — [01+01+01+02] CO2 L1

(b) Explain base narrowing effect (Early effect) in pnp transistor. — [05] CO1 L2

7. Derive the Ebers Moll equations of a PNP BJT and draw the Ebers Moll model (Diode coupled Model) diagram. Also explain the terms involved in it. — [10] CO4 L3