25PY101: Engineering Physics

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References

post M2 pre-T1 slot2 and upto M2T1

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1 Topics

Topics	Avadhanulu	Neamen
Photo-diode		
	38.11 Photodetectors	14.3 Photodetectors
Light Emitting Diode		
	38.10 Light Emitting Diode	14.4 Photo luminescence and Electro luminescence 14.5 Light Emitting Diode

2 Test your understanding

Photo-diode

1. Explain the principle of a photoconductive cell.
2. Explain construction and discuss $I-V$ characteristics of the following opto-electronic devices – (a) Photo diode (b) Solar cell.
3. Draw the $I-V$ characteristic of photo diode. What is dark current?
4. Why photo diode in reverse bias has linear response?
5. Can photo diode in reverse bias be used for ultra-low intensity light sensing?
6. Photo diode in the reverse bias has low junction capacitance. Explain.
7. What is meant by dynamic range? In which mode photo-diode has high dynamic range?
8. What is an LDR? Explain its construction and working.

Light Emitting Diode

1. Explain the basic operation of LED. Why direct band gap materials are preferred for LED application?
2. Compare LED and LCD.
3. How can different colours be obtained in an LED?
4. What are the mechanisms due to which efficiency of LED is reduced?

3 Technical terms

Photo-diode

- photo conductive effect
- dark current
- junction capacitance
- linearity of sensor
- dynamic range
- avalanche photo diode

Light Emitting Diode

- photoluminiscence
- electroluminiscence
- efficiency of LED