



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Tech (ECE)/SEM-2/PGEC-203/2013**

**2013**

**OPTOELECTRONICS & DISPLAY DEVICES**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

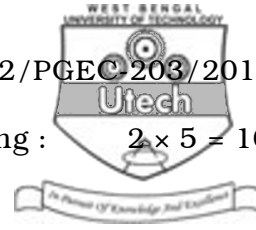
*Candidates are required to give their answers in their own words as far as practicable.*

Answer Question No. **5** and any *three* from the rest.

1. a) Describe double heterostructure surface emitter LED. 5
- b) Make a relative comparison of output of surface and edge emitter LEDs. 4
- c) Explain the function of resonance cavity in LASER. 3
- d) What is Q-switching in Ruby Laser ? 4
- e) Compare different types of Lasers. 4
2. a) Describe the following : 9
  - i) Population inversion
  - ii) Coherent sources
  - iii) Stimulating emission.



- b) Explain the operation of diode laser. Discuss its limitations. 6
- c) What is heterostructure laser ? How are they better compared to diode laser ? 5
3. a) Explain the spectral response of human eye and its relation with energy band of semiconductors. 5
- b) Describe the following : 3 × 5
- i) Solar cell construction
  - ii) Phototransistor
  - iii) Optocoupler.
4. a) Briefly discuss the limiting factors for LED emission and its remedy. 6
- b) Explain in detail Edge emitting LED. 4
- c) Give the typical modulation circuit for a LED. 3
- d) Give the explanation of the performance of LED in terms of temperature. 3
- e) Discuss a common photo-conductive cell based of CdS and its limitation and spectral response. 4



5. Write short notes on any *two* of the following :

2 × 5 = 10

- a) Photon detectors
  - b) Coherent sources
  - c) Optical emission in semiconductors
  - d) PIN photodetectors.
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