

**2015**

**M.Sc.**

**2nd Semester Examination**

**ELECTRONICS**

**PAPER—ELC-205**

**(PRACTICAL)**

*Full Marks : 50*

*Time : 3 Hours*

*The figures in the right-hand margin indicate full marks.*

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

*Illustrate the answers wherever necessary.*

**(Optoelectronics Lab)**

Out of 35 marks reserved for this final examination, the general allotment of marks (A.M.) is as follows for each experiment except that in Q. No. 9.

(a) Theory - 05, (b) Circuit diagram - 02, (c) Implementation of the circuit - 03, (d), (f) see the end of each question - 20, (3) Graph - 05.

Answer any *one* question by selecting it with a *lucky draw*.

1. Study the Current (I) - Voltage (V) characteristics of Light Emitting Pixels LED of two colours and compare the results.

*(Turn Over)*

Allotment of Marks.

- (a) Theory — 05
  - (b) Circuit diagram — 02
  - (c) Implementation of the circuit — 03
  - (d) Data for I-V characteristics — 9+9
  - (e) Graph — 05
  - (f) Comparison of results and discussion — 02.
2. Draw the characteristics of the given Light Dependent Resistor (LDR) for two light intensities. Calculate LDR resistances for both cases. Compare them.

Allotment of Marks

- (a) Theory — 05
  - (b) Circuit diagram — 02
  - (c) Implementation of the circuit — 03
  - (d) Data for characteristic curves — 14
  - (e) Graph — 05
  - (f) Calculation of LDR resistances in the two cases and discussion about them — 02 + 04.
3. Find the numerical aperture of the given optical fibre. Calculate the acceptance angle of the same fibre.

Allotment of Marks

- (a) Working formula — 05
- (b) Data for numerical aperture — 18
- (c) Calculation of numerical aperture — 05
- (d) Calculation of acceptance angle — 05
- (e) Discussion of the results obtained — 02.

4. Study of Voltage-Lux characteristics of RED and GREEN LEDs and compare the results obtained.

Allotment of Marks

- (a) Theory — 05
- (b) Circuit diagram — 02
- (c) Implementation of the circuit — 03
- (d) Data for Voltage and Lux — 09 + 09
- (e) Graph — 05
- (f) Comparison of results and Discussion — 02.

5. Study the frequency response of the given LDR.

Allotment of Marks

- (a) Theory — 05
- (b) Circuit diagram — 02
- (c) Implementation of the circuit — 03
- (d) Data for frequency response — 18
- (e) Graph — 05
- (f) Discussion — 02.

6. Study the time response of the given LDR.

Allotment of Marks

- (a) Theory — 05
- (b) Circuit diagram — 02
- (c) Implementation of the circuit — 03
- (d) Data for 3 frequencies — 15
- (e) Graph — 05
- (f) Time for response from graph & Discussion — 03+02.

7. Study the Optical conversion of 4-bit digital signal to its analog form by R-2R ladder Network.

Allotment of Marks

- (a) Theory — 05  
 (b) Circuit diagram — 02  
 (c) Implementation of the circuit — 03  
 (d) Recording of data — 18  
 (e) Graph — 05  
 (f) Discussion — 02.
8. Given a slit with a hole of known diameter, determine the wavelength of light from diffraction of a laser beam.

Allotment of Marks

- (a) Working formula — 05  
 (b) Data for diffraction band on both sides of central band — 20  
 (c) Results and discussion — 08+02.

**Marks Distribution**

Experiment	:	35
LNB	:	05
Viva-Voce	:	10
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Total	:	50