

**M.Sc. 2nd Semester Examination, 2013**

**ELECTRONICS**

*(Optoelectronics Lab)*

( Practical )

PAPER – ELC - 205

*Full Marks : 50*

*Time : 3 hours*

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

1. Study the I-V characteristics of LEDs of two colours and compare the results.

Allotment of marks

- (a) Theory – 5
- (b) Circuit diagram – 2
- (c) Circuit implementation – 3
- (d) Recording of data – 9 + 9
- (e) Graph – 5
- (f) Comparison of results and discussion about them – 2.

( Turn Over )

2. Study of the V-L characteristics of LEDs of two colours and comparison of the results obtained.

Allotment of marks

- (a) Theory – 5
  - (b) Circuit diagram – 2
  - (c) Implementation of the circuit – 3
  - (d) Data – 9 + 9
  - (e) Graph – 5
  - (f) Comparison of results with discussion – 2.
3. Study of the LDR characteristics for two light intensities.

Allotment of marks

- (a) Theory with working formula – 5
- (b) Circuit diagram – 2
- (c) Circuit implementation – 3
- (d) Data recording – 14
- (e) Graph – 5
- (f) Calculation of LDR resistance – 2
- (g) Comparison of resistance and discussion – 4

( 3 )

4. Find the numerical aperture of the given optical fibre. Calculate the acceptance angle for the fibre.

Allotment of marks

- (a) Working formula – 6
  - (b) Data for N.A. – 20
  - (c) Calculation of N.A. – 2
  - (d) Calculation of acceptance angle – 2
  - (e) Discussion – 5
5. Optical conversion of 4 bit signal to its analog from by R-2R ladder network.

Allotment of marks

- (a) Theory – 5
- (b) Circuit diagram – 2
- (c) Implementation of the circuit – 3
- (d) Recording of data – 18
- (e) Graph – 5
- (f) Discussion – 2.

( 4 )

6. Measure the diameter of a narrow wire by diffraction of LASER beam. Use any other method to measure the same.

Allotment of marks

- (a) Working formula— 5
- (b) Data for diffraction band on both sides of central band – 16
- (c) Calculation of diameter – 2
- (d) Diameter measurement by second method— 8
- (e) Comparison of results and discussion – 4

( 5 )

7. Measure the diameter of the supplied wire by any method and use it to determine the wavelength of the given LASER light with the help of diffraction of it by the given wire.

Allotment of marks

- (a) Working formula— 5
- (b) Diameter measurement— 8
- (c) Data for diffraction band on both sides of the central band — 16
- (d) Calculation of wavelength— 2
- (e) Discussion about the difficulties met with and their possible remedies— 4

8. Study of the time response of the given LDR.

Allotment of marks

- (a) Theory – 5
- (b) Circuit diagram – 2
- (c) Implementation of the circuit – 3
- (d) Data for three frequencies – 15
- (e) Graph – 5
- (f) Time of response from graph – 3
- (g) Discussion – 2

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Marks distribution

LNB	– 05
Viva-voce	– 10
Experiment	– 35
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Total	– 50
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