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.

C/15/M.Sc./2nd Seme./ELC-205 (Continued)
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

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<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Experiment</td>
<td>35</td>
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<tr>
<td>LNB</td>
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