Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **14EC2046** | **Duration :** | **3hrs** |
| **Sub. Name :** | **OPTOELECTRONICS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Discuss the wave nature of light and describe polarization. | CO1 | 12 |
|  | b. | Give the relationship between electric and magnetic field in optical wave equation? | CO1 | 8 |
| (or) | | | | |  | Sketch the wave packets for combination of two progressive waves in equal frequency and discuss the same based on group velocity? |
| 2. |  | Explain the carrier concentration in Extrinsic semiconductors with respect to Fermi Dirac distribution. | CO1 | 20 |
|  |  |  |  |  |
| 3. | a. | Illustrate the principle of occurrence of photoluminescence. | CO2 | 10 |
|  | b. | Articulate why the cathodoluminescence is less efficient than photoluminescence. | CO2 | 10 |
| (OR) | | | | |
| 4. |  | Enumerate the importance of electroluminescence and injection electroluminescence in a LED. | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Explicate the working principle of thermoelectric detectors with neat diagrams. | CO2 | 10 |
|  | b. | Explicate the working principle of Bolometer with neat diagrams. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Explain the working principle of Pneumatic detector with neat diagrams. | CO2 | 10 |
|  | b. | Extend the working principle of Pyroelectric detector with neat diagrams. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Paraphrase about analog modulation with necessary graphs. | CO2 | 12 |
|  | b. | Compare Pockels effect and Kerr effect. | CO2 | 8 |
| (OR) | | | | |
| 8. | a. | Explain the importance of Digital modulation. | CO2 | 10 |
|  | b. | Brief on BRAQWET Modulator. | CO2 | 10 |
|  |  |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Elucidate the techniques for fabricating waveguides with necessary diagrams. | CO3 | 20 |

ALL THE BEST