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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **16NT3011** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PHOTOVOLTAICS: ADVANCED MATERIALS AND DEVICES** | **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. | Explain the construction and working of basic solar cell device. | CO1 | 10 |
| b. | Classify the Photovoltaic cells based on the materials and illustrate them in short. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Draw an equivalent circuit of solar cells and elucidate the conditions for achieving enhanced efficiency in solar cells. | CO1 | 10 |
| b. | With suitable equations and notations describe the parameters of solar cells. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Reveal the experimental and chemical procedure for the preparation of single crystalline silicon. | CO2 | 10 |
| b. | Recall the photovoltaic technology in amorphous silicon solar cells. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Draw the structure of thin film solar cells and clarify the importance of different layers in detail. | CO2 | 10 |
| b. | Describe the construction and working of polycrystalline thin film solar cells using copper indium diselenide. | CO2 | 10 |
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| 5. | a. | Expound the properties and preparation methods of CZTS thin film. | CO2 | 10 |
| b. | Illustrate the construction and working of the solar cells using the CZTS thin film. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Give details about the different components used in dye sensitized solar cells. | CO2 | 10 |
| b. | Exemplify the construction and working of dye sensitized solar cells with necessary diagrams. | CO2 | 10 |
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| 7. |  | Paraphrase the principle and mechanism involved in organic solar cells. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Summarize the materials used for flexible solar cells with their properties. Investigate the stability and mechanical tolerance of flexible solar cells. | CO2 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Demonstrate in detail the various industrial applications of solar cells. | CO2 | 20 |