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



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

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|  |  |  |  |
| **Code :** | **14EE2031** | **Duration :** | **3hrs** |
| **Sub. Name :** | **RENEWABLE ENERGY-I** | **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. | Briefly explain the photovoltaic effect. | CO1 | 10 |
| b. | Draw and discuss the effect of temperature and radiation on the output of solar cell. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Design a solar array of 48V and 10A with necessary solar modules. The solar cells used in the module assembly can generate 0.6V, 1A at STC. | CO1 | 10 |
| b. | Analyse the global and Indian energy scenario. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Discuss the role of bypass diode and blocking diode in detail. | CO1 | 15 |
|  | b. | Mention the standard testing condition of solar cell. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Track the maximum power point of SAPV system using any one algorithm and mention the merits and demerits. | CO2 | 15 |
|  | b. | Mention the role of charge controller in the SAPV system. | CO2 | 5 |
|  |  |  |  |  |
| 5. | a. | Draw and explain the operation of Grid connected PV system. | CO2 | 15 |
|  | b. | Compare the lead-acid and lithium-ion batteries of SAPV system. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Analyse the maintenance of MPP voltage using boost DC-DC Converter in SAPV system. | CO2 | 15 |
|  | b. | Discuss about Betz Limits. | CO2 | 5 |
|  |  |  |  |  |
| 7. |  | Design a complete SAPV system for supplying the load of your home. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Draw and explain the operation of vertical axis wind turbine. | CO3 | 12 |
|  | b. | Compare the solar and wind energy system in domestic application. | CO3 | 8 |
|  | |  |  |  |
|  | | **Compulsory:** |  |  |
| 9. | a. | Discuss the operation of horizontal axis wind turbine. | CO3 | 10 |
|  | b. | Mention the various factor that affect the performance of a solar PV system and how can they be overcome. | CO2 | 10 |

ALL THE BEST