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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

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

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| **Code :** | **14EE3036** | **Duration :** | **3hrs** |
| **Sub. Name :** | **POWER ELECTRONICS IN WIND AND SOLAR POWER CONVERSION** | **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. | Categories the major conventional and non-conventional sources of energy. | CO1 | 10 |
| b. | Outline the methods of measurement of solar radiation. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Summarize with flowcharts Perturb and Observe and Incremental Conductance Algorithm. Mention the advantages and disadvantages of each. | CO1 | 10 |
| b. | In your opinion which renewable energy source in India will play a major role in future? Give reasons. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Classify WEC systems. | CO2 | 10 |
|  | b. | Compare Savonius and Darrieus type wind turbines. List down their advantages and disadvantages. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Point out the basic components of wind energy conversion systems with a neat sketch. | CO2 | 10 |
|  | b. | Define the power coefficient of a wind turbine. Give is its maximum value. | CO2 | 10 |
|  |  |  |  |  |
| 5. |  | Sketch a block diagram of a stand-alone wind / solar PV integrated system and outline its operation. | CO1 | 20 |
| (OR) | | | | |
| 6. | a. | Analyze the role of power electronics in wind and solar power generation. | CO2 | 10 |
|  | b. | Classify and discuss various methods of energy storage. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Figure out various types of DC-DC converters used for wind and solar power applications. | CO3 | 10 |
|  | b. | Elaborate the theory of self-excitation of induction generators. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | Interpret the role of capacitance in power conditioning systems. | CO2 | 10 |
|  | b. | Recall the procedure for determining the minimum value of capacitance required for self-excitation. | CO2 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss on harmonics. Mention the methods of power factor improvement. | CO3 | 10 |
|  | b. | Validate optimization of system components and methodology adopted for optimization. | CO3 | 10 |

ALL THE BEST