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 – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **15PH3019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PRINCIPLES OF RENEWABLE ENERGY** | **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. | What are the prospects of renewable energy sources in India? Mention the advantages of renewable energy sources | CO1 | 15 |
| b. | Explain the significance of energy consumption as a measure of prosperity | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Define the following with respect to solar radiation (i) Latitude angle (ii) Altitude angle (iii) Zenith angle with suitable diagrams. | CO1 | 15 |
| b. | Calculate the sunset hour angle and day length at location latitude of 35° N on February 20. | CO1 | 5 |
| 3. | a. | What are the main components of a flat plate solar collector? With a neat sketch, explain the function of each component. | CO1 | 12 |
|  | b. | With a neat sketch, explain the working of a solar furnace. | CO1 | 8 |
| (OR) | | | | |
| 4. | a. | With a neat sketch, explain any one type of solar energy storage systems. | CO1 | 10 |
|  | b. | Enumerate the different types of concentrating type collectors. | CO1 | 10 |
| 5. | a. | What is the basic principle of wind energy conversion? | CO1 | 5 |
|  | b. | With the help of a neat schematic, explain the working of WECS for generation of electric energy | CO1 | 15 |
| (OR) | | | | |
| 6. | a. | Explain the working of Wind Energy Conversion System for generation of Electrical energy with a neat diagram | CO1 | 12 |
|  | b. | Derive an expression for the available power in the wind. | CO1 | 8 |
| 7. | a. | Define biomass. Give a descriptive classification of biomass resources. | CO1 | 15 |
|  | b. | Explain any three factors which affect biodigestion | CO1 | 5 |
| (OR) | | | | |
| 8. | a. | With a neat diagram, explain the principle of biogas plant. | CO1 | 10 |
|  | b. | Give an account of bio-mass conversion technologies. | CO1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | With a neat diagram, explain the principle of tidal power. | CO1 | 10 |
|  | b. | With a neat diagram, explain the principle of ocean thermal energy conversion system. | CO1 | 10 |

ALL THE BEST