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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17PH3017** | **Duration :** | **3hrs** |
| **Sub. Name :** | **RENEWABLE ENERGY SOURCES** | **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. | Compile the major and minor sources of energy. | CO1 | 10 |
| b. | Discuss how the climate changes have impact on energy sources. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Explain the various classifications of energy resources. | CO1 | 10 |
| b. | Defend the prospects of non-conventional energy sources in India. | CO1 | 10 |
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| 3. | a. | Bring out the main components of a flat plate solar collector with a neat sketch and explain the function of each component. | CO2 | 10 |
| b. | With a neat sketch, explain the working of a solar furnace. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Compute the following with respect to solar radiation (i) Latitude angle (ii) Altitude angle (iii) Zenith angle (iv) Hour angle with suitable diagrams. | CO2 | 15 |
| b. | How solar energy is stored? | CO2 | 5 |
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| 5. | a. | Summarize the working of Wind Energy Conversion System for generation of electrical energy with a neat diagram. | CO3 | 15 |
| b. | Infer the advantages of WECS. | CO3 | 5 |
| **(OR)** | | | | |
| 6. | a. | List out the different types of wind energy collectors and elaborate on horizontal axis wind turbines. | CO3 | 10 |
| b. | Analyze the importance of wind energy storage system. | CO3 | 10 |
|  |  |  |  |  |
| 7. | a. | Explain the following bio-mass conversion technologies:  i) Wet Process ii) Dry Process | CO4 | 10 |
| b. | Explain the process of Photosynthesis. What are the conditions necessary for it? | CO4 | 10 |
| **(OR)** | | | | |
| 8. | a. | Specify and explain any three factors which affects biodigestion. | CO4 | 10 |
| b. | Give an account of bio-mass conversion technologies. | CO4 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Depict the principle of ocean thermal energy conversion system with a neat sketch. | CO5 | 10 |
| b. | Explain fuel cells and batteries. | CO5 | 10 |