# Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
## (GIET University)

B. Tech (Fifth Semester - Regular) Examinations, November – 2024

### 22BEEPE35011/22BELPE350115050- Renewable Energy Sources
(EE/EEE)

Time: 3 hrs                                                                 Maximum: 70 Marks

**Answer ALL questions**
**(The figures in the right hand margin indicate marks)**

**PART – A**                                                          **(2 x 5 = 10 Marks)**

**Q.1. Answer ALL questions**

|   |   | CO # | Blooms Level |
|---|---|---|---|
| a. | What are the needs of renewable energy use in country? | CO1 | K2 |
| b. | Differentiate between flat plate and concentrating collectors. | CO1 | K2 |
| c. | Define performance coefficient related to wind machine | CO2 | K2 |
| d. | Define Biogas yield. | CO3 | K2 |
| e. | What is meant by hybrid –electrolysis process? | CO4 | K2 |

**PART – B**                                                          **(15 x 4 = 60 Marks)**

**Answer All the questions**

|   |   | Marks | CO # | Blooms Level |
|---|---|---|---|---|
| 2. a. | Discuss various environment consequences of fossil fuel energy use. | 8 | CO1 | K3 |
| b. | Give brief review of various sources of renewable energy. | 7 | CO1 | K2 |
|   | (OR) | | | |
| c. | Describe in detail about the PV module equivalent circuit and its I-V characteristics | 8 | CO1 | K3 |
| d. | Formulate the application of photovoltaic system in various field. | 7 | CO1 | K2 |
| 3.a. | How do aerodynamic forces affect the speed of a wind turbine? | 8 | CO2 | K3 |
| b. | How energy from wind can be extracted? Explain the process by using suitable diagram | 7 | CO2 | K2 |
|   | (OR) | | | |
| c. | Explain the terms  i. Yaw control  ii. Pitch control | 8 | CO2 | K2 |
| d. | Classify the various types of rotor used in the wind turbine. | 7 | CO2 | K2 |
| 4.a. | Discuss the Anaerobic Digestion in biogas generation. | 8 | CO3 | K2 |
| b. | Write the advantages and disadvantages of biomass energy. | 7 | CO3 | K2 |
|   | (OR) | | | |
| c. | Describe in detail how biomass conversion takes place. | 8 | CO3 | K3 |
| d. | List out the classification of biogas plants and explain any two with neat sketch. | 7 | CO3 | K2 |
| 5.a. | Define hybrid system? Discuss the need for hybrid system, its range and its types. | 8 | CO4 | K3 |
| b. | Summarize the Grid integration issues of diesel -PV  System. | 7 | CO4 | K3 |
|   | (OR) | | | |
| c. | Draw the architecture of hybrid electric drive train and explain in detail | 8 | CO4 | K2 |
| d. | Explain the role of Distributed Generation and inter-connection to power Grid. | 7 | CO4 | K3 |

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