

**B.E. ELECTRONICS AND TELE-COMMUNICATION ENGINEERING**  
**FOURTH YEAR SECOND SEMESTER EXAM 2023**  
**RENEWABLE ENERGY SOURCES**

Time: Three hours

**Marks: 100**

*(Answer **ALL** questions)*

*Different parts of the same question should be answered together.*

- Q1** Answer any **SIX** questions (6 X 5) =30 30
- (CO1)**
- a) Briefly compare between renewable and non-renewable energy sources.
  - b) What are the merits and demerits of wind energy?
  - c) What is tidal energy? Discuss its advantages and limitations.
  - d) What is geothermal energy? Explain briefly about different types of geothermal resources.
  - e) What is fuel cell? How fuel cells are classified?
  - f) What is hydrologic cycle? Briefly explain its different component.
  - g) Discuss the advantages and dis-advantages of solar PV.
  - h) What are the advantages and dis-advantages of small hydro-plant?
- Q2** Answer any **FIVE** questions (5 X 6) =30 30
- (CO2)**
- a) What is anaerobic digestion? Explain the different processes in an anaerobic digester.
  - b) Discuss the different factors affecting anaerobic digestion.
  - c) What is gasification? Discuss the different factors affecting gasification process.
  - d) Explain two systems that can harness power from tides.
  - e) Explain the operation of solar central receiver power plant.
  - f) Explain the working principle of solar PV.
  - g) Explain two systems that can harness power from waves.

[ Turn over

**Q3** Answer any **FOUR** questions (4 X 5) =20 20

- (CO3)**
- a) Draw a biogas plant and explain the function of different components.
  - b) Explain the function of different components of wind power plant with a schematic.
  - c) Draw a schematic diagram of small hydro plant with its major components.
  - d) Discuss the Power-Velocity characteristics of wind power.
  - e) Briefly discuss about the production methods of Hydrogen.
  - f) Write a short note on Hybrid System.
  - g) Discuss the site selection criteria of small hydro plant.

**Q4** Answer any **FOUR** questions (4 X 5) =20 20

- (CO4)**
- a) Explain the storage and safety issues of hydrogen.
  - b) Write a short note on "Pump storage hydro-power plant"
  - c) Discuss the prospect and challenges of solar PV.
  - d) Explain the different materials used in solar cells.
  - e) Discuss the prospect and challenges of gasification technology.
  - f) How biomass can be converted into fuels/power?
  - g) What are the different non-solar applications of solar energy?