

PART 1

- 1)What are the benefits of renewable energy deployment on sustainable rural development?**
- 2)Can Hydrogen fuel become reliable renewable energy resource?**
- 3)Which Will be the Best Energy Source in the Future; Biofuel, Solar, Wind or Water?**
- 4)How solar energy is useful in agricultural practices?

PART 2

- 1. Write short note on (any five)** (a) Energy audit
(b) Solar heating and cooling of buildings.
(c) Prospects of geothermal energy in context to India.
(d) Which wind data are taken into consideration and site selection of wind mills?
(e) Factors affecting biogas production.
(f) Strategy for meeting the and future energy requirements in India.
- 2(a)** What is Betz coefficient? Show that the ideal maximum theoretical efficiency is 59% for a horizontal axis windmill.
- 2(b)** Describe construction and working thermosyphon solar water heating system.
- 2(c)** What are liquid dominated hydrothermal resources? How these can be utilised in high temperature wet steam system?
- 3(a)** Describe construction and working of floating dome type biogas plant with the help of neat sketch.

3(b) Derive an equation for average tidal power generation per unit area of basin in terms of tidal range.

4(a) Describe working of Darrieus type machines with help of neat sketch and its characteristics.

4(b) Explain wave energy conversion devices?

4(c) Describe the photo voltaic-solar cells and its applications.

5(a) Wind at 1 bar and 20°C has a velocity of 12m/s calculate:

(i) Total power density in wind stream. (ii) maximum power density. (iii) A reasonable obtainable power density

(iv) Total power produced if a rotor diameter is 60m and it runs at 50 rpm.

(v) The torque and axial stress produced at maximum efficiency.

5(b) Describe working of Closed Cycle OTEC system with the help of neat sketch.

5(c) Explain energy consumption as a measure of Nation's development.

6(b) Explain the term 'slope' and surface azimuth angle of a surface facing the sun and bring out how sunset hour angle is affected by the slope

6(c) Explain vapour dominated system belongs to geothermal energy.