

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B Tech. Summer 2021- 22 Examination

Semester: 8**Subject Code: 203109451/03109452****Subject Name: Renewable energy engineering****Date: 30-03-2022****Time: 10:30am to 1:00pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Each of one mark) (15)

1. The angle subtended by a vertical line to the zenith and the line of sight to the sun is called
 (a) Zenith angle (b) Declination angle (c) Hour angle (d) Latitude angle
2. Which of the following country generate all their electricity using renewable energy.
 (a) Iceland (b) England (c) USA (d) China
3. Power is proportional to _____ of the diameter of swept area of wind turbine.
 (a) Cube (b) Directly (c) Square (d) None of the above
4. A fuel cell, in order to produce electricity used _____ as fuel.
 (a) Helium (b) Hydrogen (c) Nitrogen (d) None of the above
5. The bio methane is produced by the _____ of biomass.
 (a) Aerobic oxidation (b) Anaerobic oxidation (c) Augmentation (d) none of above
6. _____ measures either Global or Diffuse radiation falling on a horizontal surface over hemispherical field of view.
7. _____ is a process of producing energy by utilizing heat trapped inside the earth surface.
8. The time period for which biomass remain inside the digester is known as _____.
9. _____ material is mostly used as catalyst in fuel cell.
10. _____ is a device measures wind velocity.
11. Define Solar Constant
12. Define total power density in wind.
13. Enlist three different parameter affecting biogas generation.
14. Write three different application of fuel cell.
15. Write hydrolysis process for biogas generation.

Q.2 Answer the following questions. (Attempt any three) (15)

- A) Describe the need of Renewable Energy India.
- B) Explain with neat sketch working of solar photovoltaic cells.
- C) Differentiate between open and close cycle OTEC system.
- D) write site selection criteria for wind mills

Q.3 A) Calculate number of daylight hours at Delhi on 21st December and 21st June in year 2012. Take Latitude of Delhi = 28°35' N. (07)

- B) Which instruments are used for Solar radiation measurements? Explain construction and working of Pyranometer. (08)

OR

- B) Describe various components and Explain working of horizontal axis wind turbine. (08)

Q.4 A) Explain construction and working of Fuel cell with neat sketch. (07)

OR

- A) Explain with neat sketch vapour dominated Geothermal system. (07)

- B) Describe with neat sketch construction and working of KVIC biogas plant. (08)