



GIET UNIVERSITY, GUNUPUR – 765022

B.Sc (Ag) (Fourth Semester) Examinations, June - 2021

**FMP (AG) – 222 - RENEWABLE ENERGY AND GREEN TECHNOLOGY**

Time: 2 hrs

Maximum : 50 Marks

**The figures in the right hand margin indicate marks.****PART – A****Q.1. Fill in the blanks with suitable word / figure.****(0.5 x 10 = 5 Marks)**

- a. Average gas produced per kg of cattle dung is around-----
- b. Pvrnometer is used to measure -----.
- c. The orientation of solar collector is approximately -----.
- d. Biogas release constant pressure in----- biogas plant.
- e. Major byproduct of biodiesel is -----.
- f. ----- of biomass is known as briquetting.
- g. E20 consists of ----- and -----
- h. Deenbandhu Biogas plant is ----- type of biogas plant.
- i. Main components of Syngas is-----.
- j. Temperature of flat plate collector is ----- than that of focussing plate collector.

**Q. 2. Define (or) Explain the following in one or two sentences.****(1 x 5 = 5 Marks)**

- a. What is renewable Energy?
- b. What is pyrolysis?
- c. Difference between cell and module in a PV system
- d. How the Horizontal axis wind turbine work?
- e. What is a solar pond?

**Q3. Match the following****(0.5 x 10 = 5 Marks)****Column – A****Column – B**

- |  |   |
|--|---|
| <b>(a)</b> Fixed dome Model<br><b>(b)</b> Flat plate<br><b>(c)</b> Tip Speed ratio<br><b>(d)</b> Ethanol<br><b>(e)</b> Transesterification<br><b>(f)</b> Pyrolysis<br><b>(g)</b> Combustion<br><b>(h)</b> Salt concentration<br><b>(i)</b> Thermal decomposition<br><b>(j)</b> $w_p$ | <b>(i)</b> 400°C<br><b>(ii)</b> Wind mill<br><b>(iii)</b> Fermentation<br><b>(iv)</b> Bio-diesel<br><b>(v)</b> Solar pond<br><b>(vi)</b> Solar cell<br><b>(vii)</b> Water heater<br><b>(viii)</b> 1000 °C<br><b>(ix)</b> Gasifier<br><b>(x)</b> Bio-gas plant |
|--|---|

**Q4. Write True or False against each statement**

**(0.5 x 10 = 5 Marks)**

- a. Acidic pH is good for biogas production in bio-gas plant
- b. 5 to 10 biodiesel is appropriate for petrol engine
- c. Most of the wind mill in India a vertical wind mill for power generation
- d. Methanogenic bacterial are passive in 35<sup>0</sup> C temperature
- e. Solar PV system is mostly use for water heating purpose
- f. Up draft type gasifiers are suitable for engine operation.
- g. The flammable gas in the biogas are CO<sub>2</sub> and CH<sub>4</sub> both
- h. OREDA is the nodal agency of solar installation in Odisha.
- i. B50 use in diesel engine is 50% diesel
- j. Solar energy is the all form of renewable energy except geothermal

**PART – B**

**Attempt ANY FIVE questions. All question carries equal marks**

**(6 x 5 = 30 Marks)**

- 5. Describe the different types of biogas plants and factors affecting biogas production.
- 6. Describe the different routes of biomass conversation to energy .
- 7. What is the principle of solar dryer and describe the different types of solar dryer?
- 8. Draw a line diagram for an integrated biodiesel plant with detail production processes
- 9. Difference between conventional and non-conventional energy
- 10. What are the different types of wind mill? Describe one of them in detail.

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