

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc. (Hons.) Agriculture Summer 2018 - 19 Examination

Semester: 4

Date: 10/04/2019

Subject Code : 20106252

Time: 10:30 AM to 01:00 PM

Subject Name: Renewable Energy & Green Technology

Total Marks: 50

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 Do as Directed.**A. Fill in the blanks. (Each of 0.5 marks)****(05)**

- 1 Briquettes can be produced with the density of _____ Kg/m³ from loose agro residues with a bulk density of _____ Kg/m³.
- 2 Floating dome type biogas plant is named as _____ type of biogas plant also.
- 3 The gas produced in the gasifier is a clean burning fuel having heating value of about _____ kcal/m³
- 4 Biogas generally contains _____ % CO₂.
- 5 The conversion of biomass to heat and power by directly burning it, is called _____ process.
- 6 In biogas plant, proportion of cattle dung and water is _____ for inlet feed slurry
- 7 Large size gasifiers have power generation capacity _____
- 8 _____ bacteria work better at _____ temperature to produce maximum biogas.
- 9 Biomass based producer gas is contained _____ CO (carbon monoxide) and _____ H₂ (Hydrogen).
- 10 For producing 1 m³ biogas _____ kg of cow dung is required.

B. Multiple choice type questions. (Each of 0.5 marks)**(10)**

1. What is one example of Biomass?

a) Electricity	c) Wind
b) Trees	d) Water
2. Common energy source in Indian villages is

a) Electricity	c) Wood and animal dung
b) Coal	d) Sun
3. A natural resource that can be replaced in same rate at which it is consumed or used is known as

a) Natural Resources	c) Renewable Resources
b) Artificial Resources	d) Non-renewable Resources
4. Both power and manure is provided by

a) Nuclear plants	c) Thermal plants
b) Biogas plants	d) Hydroelectric plant
5. 1 kg fresh cow dung produces _____ m³ biogas

a) 0.08 m ³	c) 0.02 m ³
b) 0.1 m ³	d) 0.04 m ³
6. Horizontal axis and vertical axis are the types of

a) Nuclear reactor	c) Biogas reactor
b) Wind mills	d) Solar cell
7. For optimum condition for anaerobic digestion, the carbon to nitrogen (C:N) ratio is to be in range of _____ for better production of biogas plants

a) 10 to 20:1	c) 05 to 10:1
b) 20 to 30:1	d) 30 to 40:1

1. Biogas
2. Gasifiers
3. Wind mill or wind turbine:
4. Define Digestion process in biogas plant
5. Briquetting
6. Pyrolysis
7. Define Solar cell {photovoltaic (PV)}

B. Answer the following. (Any Five)

(05)

1. State the use of Briquettes
2. State the different stages of Biogas production
3. Write unit operations of Briquetting Process
4. State the function of energizer in solar fencing system
5. Difference between Briquetting and Pelleting
6. State any three factors effect on biogas production
7. State the function of Central Guide Frame in KVIC type biogas plant

Q.3 Write short notes. (Any five)

(10)

1. Types of wind mills
2. Describe working of solar water pumping system
3. Factors Affecting Densification / Briquetting
4. State the advantages of digested slurry derived from biogas plat
5. Biomass briquetting technologies
6. Explain classification of Energy sources
7. The advantages of gasifier are

Q.4 Attempt any Three / Long Questions / Example

(15)

1. State different components of Wind turbine and its function
2. Explain Downdraft Gasifier (Co-current)
3. Explain in details the Comparison between KVIC type and Janata type biogas plants
4. Explain different components of BIOGAS PLANT AND ITS Function
5. State the different components of solar fencing with their specific functions