

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2016 – 2017& thereafter)

B.Voc. DEGREE EXAMINATION, NOVEMBER 2023
SUSTAINABLE ENERGY MANAGEMENT
THIRD SEMESTER

COURSE : MAJOR CORE
PAPER : BIO ENERGY
SUBJECT CODE : 16VS/VM/BE36
TIME : 2 HOURS

MAX.MARKS:50

SECTION –A

ANSWER ALL QUESTIONS:

(20x1=20)

I CHOOSE THE CORRECT ANSWER:

1. The term biomass most refers to _____
 - a. Inorganic matter
 - b. Organic matter
 - c. Chemicals
 - d. Ammonium compounds
2. The percentage of carbon dioxide in the bio methane is _____
 - a. 30-40
 - b. 32-43
 - c. 35-45
 - d. 55-60
3. What is the major environmental concern related to landfill?
 - a. Limited space
 - b. Limited technology
 - c. Less man-power
 - d. Discharge of leachates
4. Anaerobic digestion produces biogas by
 - a. Produces biogas by heating the biomass
 - b. Produces biogas using micro-organisms in the presence of Oxygen
 - c. Produces biogas by subjecting the biomass to high pressures
 - d. Produces biogas using micro-organisms in the absence of Oxygen
5. Bioethanol is produced through the fermentation of _____ and starch components
 - a. Fats
 - b. Sugar
 - c. Protein
 - d. Acids
6. Which type of plant is portable?
 - a. Flexible Bag biogas plant
 - b. Fixed dome biogas plant
 - c. Floating drum biogas plant
 - d. KVIC type biogas plant

II FILL IN THE BLANKS:

7. A biomass feedstock with a high _____ is used to produce ethanol.
8. The fixed carbon of the biomass is _____.
9. _____ of the KVIC model biogas plant is made of mixture of cement, concrete and brick.
10. _____ process is the thermal decomposition of biomass at elevated temperatures.
11. The origin of biomass energy is _____.

III. STATE WHETHER TRUE OR FALSE

12. Moisture in the biomass retards the combustion of biomass
13. Proximate analysis denotes the elemental analysis of the biomass

IV. ANSWER IN SENTENCE OR TWO:

14. List few examples of aquatic biomass
15. Justify why biomass is a carbon neutral source of energy.
16. What is the composition of a Landfill gas?
17. Name few feedstocks suitable for biogas production.
18. Mention the optimum C/N ratio for the biogas production.
19. What are the disadvantages of biogas?
20. What is calorific value of a material?

SECTION – B**ANSWER ANY SIX QUESTIONS:****(6x3=18)**

21. Write short notes on the origin of biomass.
22. Mention the significance of bioenergy?
23. Classify biomass with few examples.
24. What is the use of proximate analysis of a biomass?
25. Write short notes on aquatic biomass.
26. Describe the process of Liquefaction.
27. Write short notes on PRAGATI model of a biogas plant.
28. Comment on the Ferrocement model of a biogas plant.
29. Explain briefly the pyrolysis of wood.
30. Write brief notes on the three phases of biogas production.

SECTION – C**ANSWER ANY TWO QUESTIONS:****(2x6=12)**

31. Explain in detail the ultimate analysis of biomass.
32. Explain in detail the processing of wood and wood waste for feeding into an incineration plant with some examples of Wood used as a feedstock in India.
33. Explain the anaerobic fermentation process associated with the biomass.
34. Compare KVIC, Janata and Deenabandhu models of biogas plants
