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

SUBJECT CODE : 16VS/VM/AB46

B. Voc. DEGREE EXAMINATION, APRIL 2023
SUSTAINABLE ENERGY MANAGEMENT
FOURTH SEMESTER

COURSE : MAJOR CORE
PAPER : ADVANCED BIOENERGY
TIME : 6 HOURS **MAX. MARKS : 100**
(Theory: 50marks +Practical: 50 marks)

SECTION – A

ANSWER ALL QUESTIONS **(20x1 = 20)**

I. CHOOSE THE CORRECT ANSWER

1. Which of the following is most suitable for dry wastes?
   a) Aerobic composting b) Anaerobic composting
   c) Closed vessel d) None of the above

2. Which of the following is an end product of anaerobic composting which is a source of energy?
   a) Biogas b) Alcohol c) Amino acid d) Toxic products

3. The amount of feedstock required for $3m^3$ biogas plant is_____.
   a) 25 b) 30 c) 50 d) 75

4. Which of the following is an INCORRECT statement.
   a) CO is inflammable b) CO_2 is non-flammable.
   c) CH_4 is inflammable d) H_2 is non-flammable

5. _____ is the term used to indicate the digester content.
   a) compost b) feedstock c) slurry d) manure

II. FILL IN THE BLANKS

6. The optimum pH level inside a biogas plant is_____.
7. The electricity generated from biomass is called_____.
8. The production of bio ethanol is by fermenting the _____ and starch components.
9. An example of woody biomass is _____.
10. The ignition temperature of biogas is_____ than of diesel.

III. STATE WHETHER TRUE OR FALSE

11. Scrubber is an essential part of biogas plant

..2

12. Heating value is used to define sustainability of biogas feedstock.
13. The process of converting wet waste to manure is called vermicomposting.
14. Nitrogen is released into biosphere from nuclear power plants.
15. The optimal temperature for biogas production is 70^0C.

IV. ANSWER IN A SENTENCE

16. Define Slurry.
17. Drop-in-fuels
18. Biopower.
19. Types of biofuel.
20. Genotoxic waste.

SECTION – B

Answer any SIX questions: **(6x3=18)**

21. Why are drop-in-fuels important?
22. Write down the safety measures and maintenance of a biogas plant.
23. Write short notes on infectious and pharmaceutical waste.
24. Explain briefly about the phases involved in the conversion of biomass into biogas.
25. What are the uses of dual-fuel engine?
26. What are the different methods involved in the purification of biogas?
27. Explain in detail about the estimation of biogas plant capacity.
28. Write short notes on Cryogenic separation.
29. What are the materials fed into biogas plant?
30. Explain in detail about the factors which affect the production of biogas.

SECTION – C

Answer any TWO questions: **(2x6=12)**

31. Elaborate on impact of radioactive waste on the environment.
32. Explain the ways in which the slurry can be utilized.
33. Explain in detail about the uses of a biogas stove and mention its advantages and disadvantages.
34. Describe the first and second generation feed stocks.

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