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

SUBJECT CODE : 16VS/VM/BB46

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

COURSE : MAJOR CORE
PAPER : BIOFUEL CROPS AND BIOFUELS (THEORY)
TIME : 6 HOURS **MAX. MARKS : 100**
(Theory: 50marks +Practical: 50 marks)

SECTION – A

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

I. CHOOSE THE CORRECT ANSWER

1. Biofuels are
   a. Renewable b. Non-Renewable c. Pollution producing d. Organic waste
2. Which of the following gasses is chiefly found in biogas?
   a. Nitrogen b. Hydrogen c. Methane d. Ethane
3. The biomass with a moisture content less than _____ is called a dry biomass.
   a. 42.5% b. 10% c. 30% d. 73%
4. The third-generation biofuels are produced from_____
   a. Sugarcane b.Algae c.Wheat d.Corn
5. B-20 biodiesel is a mixture of _____
   a. 75% biodiesel 25% normal diesel b.50% biodiesel 50% normal diesel
   c.80% biodiesel 20% normal diesel d.20% biodiesel 80% normal diesel

II. FILL IN THE BLANKS

6. Biomass gasification is a process of converting _____ into a gaseous combustible gas through a sequence of thermo-chemical reactions
7. Scrubbers are _____ controlling devices that use liquid to remove particulate matter from exhaust.
8. Biodiesel is made through a chemical process called transesterification whereby the glycerin is separated from _____.
9. Biodiesel production also produces _____ as a by-product, which has a lot of applications in the pharmaceutical industry, organic synthesis, and the cosmetic industry for manufacturing Soaps.
10. Hydrogen produced through the action of _____ is called biohydrogen.

III. SAY TRUE OR FALSE

11. Biomass is a Clean and Nonrenewable Energy source.
12. Sugarcanes are used for the production of Sugar and Ethanol.
13. Gasification is a process that converts burning of organic materials at high temperatures (>700°C), with combustion to produce biogas.
14. The calorific value of pure biodiesel is always less than 20 MJ/kg
15. Green, Brown, and Red marine seaweed is gaining popularity as a viable and promising renewable source for biofuels production

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IV. ANSWER IN A SENTENCE OR TWO

16. Define - Energy Plantation
17. Differentiate between Diesel and BioDiesel
18. What are various types of Gasifiers you know? Name any two
19. State the difference between first and second generation biofuels.
20. Name any two raw materials used widely for the production of bioethanol.

SECTION – B

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

21. Give any three examples for biofuel crops grown in India.
22. What are the cultivation practices followed in the production of biofuel crops?
23. Justify the use of scrubbers and tell about the types of it.
24. What are the post production processes to be followed for biodiesel?
25. Write a short note on "Storage of Biodiesel".
26. Elucidate the properties required for a good biodiesel
27. Analyze the production of biodiesel from different oils
28. State the merits and demerits of production of biodiesel from algae.
29. How is "bio-hydrogen" produced?
30. Discuss about the emission norms of biodiesel.

SECTION – C

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

31. Explain in detail about the importance of vegetable oil based biodiesel. Do you think that it can replace petrol in the near future?
32. With a neat diagram write about the working of a gasifier.
33. Discuss about, a. processing of oil seeds, 2. chemistry of biodiesel and 3. properties of biodiesel.
34. Enumerate the advantages of any two biorefinery concepts.

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