

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI- 86**  
**(For candidates admitted during the academic year 2016–17)**

**SUBJECT CODE : 16VS/VM/BB46**

**B. Voc. DEGREE EXAMINATION, APRIL 2018**  
**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. Hardwood trees include  
a) Teak                      b) Oak                      c) Spruce                      d) a and b
2. Ethanol can be made from any of the following feedstock:  
a) Sugar cane                      b) Corn                      c) Sugar beet                      d) all the above
3. Which is not the component of syngas?  
a) CO                      b) CO<sub>2</sub>                      c) S                      d) H<sub>2</sub>
4. Algae used for biofuel are -----  
a) Chlorella                      b) Gracilaria,                      c) Botryococcus                      d) all the above
5. Third generation biofuels are  
a) Algae                      b) Sugarcane                      c) Maize                      d) Sugarbeet

**II. Fill in the Blanks:**

6. \_\_\_\_\_ is plant matter that can be converted to an energy source.
7. \_\_\_\_\_ is the reaction of a fat or oil with an alcohol to form esters (biodiesel) and glycerol.
8. \_\_\_\_\_ is the energy released by a fuel during the combustion process.
9. \_\_\_\_\_ is the process of thermal conversion (destruction) of organics in the absence of oxygen
10. \_\_\_\_\_ is the by product of biodiesel

**III. State whether true or false:**

11. Copper, brass, bronze, lead containers are used to store the biodiesel.
12. Fermentative hydrogen production is the one of several fermentative aerobic conversion of organic substrates to H<sub>2</sub>.
13. Biomass can be converted to energy producing ethanol and wood pellets.
14. Bioenergy is non-renewable energy made available from materials derived from biological sources.
15. Gasification is a process that converts organic based carbonaceous materials into carbon monoxide, hydrogen and carbon dioxide.

**IV. Answer in a sentence or two:**

16. What are the different types of biofuels?
17. What do you mean by Statutory Minimum Price?
18. Define biorefinery
19. How is biochar produced?
20. Why solvent is used in oil extraction?

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

21. Write the different types of biofuel crops.
22. Give an account on fermentative hydrogen production.
23. Briefly explain the different types of scrubbers.
24. Write the different types of biomass conversion processes.
25. What is the chemical composition of biodiesel? And add on its Physico-chemical properties.
26. What are the characteristics of vegetable oil?
27. Write a note first and second generation biofuels
28. Briefly write the merits and demerits of algae biofuel.

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

29. Explain the production of biodiesel.
30. Elaborate the types of principles and types of gasification.
31. Explain the oil extraction process by the solvent.
32. Give an account on bioethanol production.

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