

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

**SUBJECT CODE: 16VS/VM/NM56**  
**B.Voc. DEGREE EXAMINATION, NOVEMBER 2018**  
**SUSTAINABLE ENERGY MANAGEMENT**  
**FIFTH SEMESTER**

**COURSE : MAJOR CORE**

**PAPER : NOVEL MATERIALS FOR SUSTAINABILITY**

**TIME : 6 HOURS**

**MAX.MARKS:100**

**SECTION – A**

**ANSWER ALL QUESTIONS:**

**(20x1=20)**

**I. CHOOSE THE CORRECT ANSWER:**

1. The advantages for Polymer electrolytes.  
a. Leak proof                      b. very high voltage      c. high efficiency      d. None
2. The advantages of carbon nanotubes  
a. High active area              b. low cost                      c. Both                      d. None
3. The type of “Fuel Cells”  
a. SOFC                              b. PEMFC                      c. Both                      d. None

**II. FILL IN THE BLANKS:**

4. The two most common fullerenes are \_\_\_\_\_ and \_\_\_\_\_.
5. The advantages of dendrimers are \_\_\_\_\_ & \_\_\_\_\_.
6. The basic principle of thermoelectrics is \_\_\_\_\_

**III. STATE WHETHER TRUE OR FALSE:**

7. Do we use membranes for an energy conservation building -
8. Titanium dioxide is preferred as a best catalyst -

**IV. ANSWER IN A SENTENCE OR TWO:**

9. What is the difference between capacitor and supercapacitor?
10. What is meant by “Photocatalysis”?
11. What do you mean by thermal doors?
12. Write down the properties of thermoelectric materials?
13. What do you mean by smart materials?
14. What are the uses of EPS and XPS?
15. What you mean by sustainable energy?
16. What is the difference between organic LED and Polymer LED?
17. Define Xeriscaping.
18. What is the use of extruded polystyrene (XPS)?
19. Write any one importance of Insulation R-value for an insulating material?
20. What is the use of zeolites?

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

21. Write a note on Carbon Nano tubes.
22. Explain the basic components of sustainable habitat.
23. Write a short note on batteries and Supercapacitors.
24. Write short notes on Polymer solar cells.
25. What are all the functional uses of polyurethane?
26. What are the properties of thermoelectric material?
27. Write short notes on Organic LEDs.
28. What are the uses of EPS and XPS?
29. What do you mean by composite material?
30. What are the applications of novel materials?

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

31. Explain any one of the recent energy materials for renewable energy storage and its conversion.
32. Explain the principle and working of Dye Sensitized Solar Cells.
33. Explain about waste water treatment.
34. Explain in detail about insulation materials, its importance and applications.

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