

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

B.Voc. DEGREE EXAMINATION, NOVEMBER 2024
SUSTAINABLE ENERGY MANAGEMENT
FIFTH SEMESTER

COURSE : MAJOR CORE
PAPER : NOVEL MATERIALS FOR SUSTAINABILITY
SUBJECT CODE : 16VS/VM/NM56
TIME : 6 HOURS **MAX.MARKS:100**
(Theory: 50 Marks + Practical: 50 Marks)

SECTION – A

I. CHOOSE THE CORRECT ANSWER: **(20 x 1 = 20)**

1. The bulk solid form of pure or mixed fullerenes is called _____.
a) Bucky tube b) Bucky ball c) Fullerite d) Bucky onion
2. _____ is a porous rock formed by consolidation of volcanic ash.
a) Zeolites b) Tuff c) Sorbent d) MOF
3. Dye sensitized solar cell is a _____ system.
a) Photoelectron b) Electrical c) Chemical d) Photoelectrochemical
4. _____ is manufactured in a continuous extrusion process that produces a closed cell form of foam insulation.
a) EPS b) XPS c) HSC d) OSB
5. Thermoelectric effect is used to _____.
a) generate electricity c) measure temperature
b) change the temperature of the objects d) all the above

II. FILL IN THE BLANKS:

6. Materials that change the rate of chemical reaction when exposed to light are _____.
7. WHRU is a tool involved in _____ process.
8. _____ breaks water into oxygen and hydrogen.
9. Molecules that change upon temperature are called _____.
10. _____ panel are used in the construction industry.

III. STATE WHETHER TRUE OR FALSE

11. Thickness of the coating material affects the reflective property.
12. O-LED emits light when electric current passes through it.
13. Si Ge alloys are used for low temperature applications.
14. Noble catalyst elements improve water splitting efficiency.
15. Reducing fuel and electricity consumption can lower carbon di oxide emissions.

IV. ANSWER IN ONE OR TWO SENTENCES

16. What is meant by Sustainable energy?
17. List out the characteristics of smart materials.
18. What is a Fuel cell?
19. Mention any three properties of thermoelectric materials.
20. What are the uses of polyurethane?

SECTION – B**ANSWER ANY SIX QUESTIONS:****(6 x 3 = 18)**

21. Define the term R-Value. Give its expression.
22. Write a brief note on foam plastic insulation.
23. What are sorbents? Explain any two agricultural by product that are used as sorbents.
24. Discuss the energy efficient materials used in lighting and screens.
25. Define Seebeck and Peltier effect.
26. List any three advances in the field of thermoelectrical.
27. Explain the working principle of photovoltaics.
28. Mention the application of titanium dioxide.
29. Explain the term electrification.
30. What are the essential components of sustainable habitat?

SECTION – C**ANSWER ANY TWO QUESTIONS:****(2 x 6 = 12)**

31. Explain the working of waste heat recovery system.
32. Discuss the theory behind the energy conservation windows.
33. Write a brief note on O-Led and P-Led.
34. With a neat diagram, explain the Photo catalysis Process.
