

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

SUBJECT CODE: 16VS/VM/NM56

B. Voc. DEGREE EXAMINATION, NOVEMBER 2022
SUSTAINABLE ENERGY MANAGEMENT
FIFTH SEMESTER

COURSE : MAJOR CORE

PAPER : NOVEL MATERIALS FOR SUSTAINABILITY

TIME : 6 HOURS

MAX.MARKS:100

(Theory: 50 marks + Practical: 50 marks)

SECTION – A

I CHOOSE THE CORRECT ANSWER: (20x1=20)

1. Sustainability refers to
(a) water (b) fuel (c) electricity (d) All of these
2. Solar cells are electrochemical energy ----- devices
(a) storage and conversion (b) charging (c) dielectric (d) None of these
3. A typical thermoelectric material should have
(a) high electrical conductivity (b) low thermal conductivity
(c) must maintain a temperature gradient (d) All of these
4. Agricultural byproducts are commonly used as
(a) commercial adsorbents (b) sorbents (c) Ion exchangers (d) All of these
5. A vacuum insulated panel (VIP) is a form of consisting of a gas-tight enclosure surrounding a rigid core.
(a) Thermal insulation (b) electrical insulation
(c) mechanical insulation (d) All of these

II FILL IN THE BLANKS:

6. LCA stands for_____
7. Bucky balls are a type of _____ shaped like _____.
8. Polymer solar cell is known as _____ cell.
9. ----- is the conversion between electricity and heat.
10. XPS stands for_____

III STATE WHETHER TRUE OR FALSE

11. Production of hydrogen is done using photocatalysis
12. Ductility is a property of titanium di oxide
13. Low e-window is used for energy efficiency

14. Conversion of heat to cold is Peltier effect.
15. Heat resistance is a property of thermoelectric materials.

IV ANSWER ALL QUESTIONS:

16. Define Seebeck effect
17. Define the sustainability of water.
18. What is the difference between organic LED and Polymer LED?
19. What are smart materials?
20. Define Xeriscaping.

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

21. Explain the basic components of sustainable habitat.
22. Write a note on Fullerenes.
23. What are the advantages of CNT?
24. What are the applications of novel materials in the field of medicine?
25. What is the importance of hydrogen as fuel?
26. What are the properties of thermoelectric material?
27. Explain the use of expanded polystyrene (EPS).
28. Write short notes on Zeolites.
29. Write short notes on Plant based polyurethane foams from bamboo.
30. Discuss Energy conserving windows

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

31. Discuss broadly materials with potential biological impact and their applications.
32. Explain the process of photo catalysis and water splitting-catalysis.
33. Discuss energy saving LEDs, organic LED and their applications in novel devices.
34. Write an essay on polystyrene and its functional uses.
