

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86**  
**(For candidates admitted during the academic year 2016–17 & thereafter)**  
**SUBJECT CODE: 16VS/VM/SE16**

**B.Voc. DEGREE EXAMINATION, NOVEMBER 2017**  
**SUSTAINABLE ENERGY MANAGEMENT**  
**FIRST SEMESTER**

**COURSE : MAJOR CORE**  
**PAPER : SOLAR ENERGY**  
**TIME : 6 HOURS**

**SECTION- A**

**ANSWER ALL QUESTIONS (20 X 1 = 20)**

**CHOOSE THE CORRECT ANSWER:**

1. The energy which is not derived from the sun is \_\_\_\_\_.  
a. bio-mass    b. fossil fuels    c. nuclear energy    d. geo-thermal energy
2. Harmful radiation emitted by the sun is \_\_\_\_\_.  
a. Visible                      b. infra-red                      c. ultra-violet    d. radio waves
3. The lid of the solar cooker is made up of \_\_\_\_\_.  
a. plastic sheet                      b. black sheet                      c. plane mirror                      d. glass
4. What is meant by the Standard Test Condition (STC)  
a. Radiation:  $1,000\text{W/m}^2$ , temperature:  $25^\circ\text{C}$ , and Air Mass: 1.5  
b. Radiation:  $1,000\text{W/m}^2$ , temperature:  $20^\circ\text{C}$ , and Air Mass: 1.5  
c. Radiation:  $1,024\text{W/m}^2$ , temperature:  $25^\circ\text{C}$ , and Air Mass: 1.5  
d. Radiation:  $1,000\text{W/m}^2$ , temperature:  $18^\circ\text{C}$ , and Air Mass: 1.0 2.
5. An inverter is required on a PV system if  
a. batteries are used                      b. AC power is needed                      c. DC power is needed
6. You are in Northern Hemisphere, in what direction would you point your solar panels to get the most energy?  
a. North    b) South                      c) Southeast    d)Northeast
7. The efficiency of the solar cell is about  
a. 25 %    b. 17 %                      c. 40 %                      d. 60 %
8. The function of a solar collector is of converting solar energy into  
a. Radiations  
b. Electrical energy directions.  
c. Thermal energy.  
d. All of these.
9. . What are pyrheliometers?  
a. Instruments measures beam radiations  
b. Diffuse radiations.  
c. Direct radiations only.  
d. None of the abo
10. A module in a solar panel refers to  
a. Series arrangement of solar cells.  
b. Parallel arrangement of solar cells  
c. Series and parallel arrangement of solar cells.  
d. None of the above.

**FILL IN THE BLANKS:**

11. A solar cell is made up of \_\_\_\_\_.
12. The source of energy of the sun is \_\_\_\_\_.
13. The total power across 3 PV cells of 0.5V connected in parallel when  $I_{\text{cell}} = 0.6 \text{ A}$  is \_\_\_\_\_.
14. An inverter is required on a PV system if \_\_\_\_\_.
15. Photons of light knock \_\_\_\_\_ in a solar panel

**STATE WHETHER TRUE OR FALSE**

16. While installing and connecting PV modules, the  $I_{\text{mpp}}$  of each module should be taken into account.
17. Direct radiations are also called as beam radiations.

**ANSWER BRIEFLY:**

18. What is a Pyranometer?
19. What is photovoltaic effect?
20. State Ohms law.

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

21. What are the different types of solar technologies?
22. Differentiate solar insolation and solar constant.
23. Classify the semiconductors with examples. Explain the photovoltaic effect in a semiconductor.
24. Explain various parameters which affect the performance of a solar cell?
25. Define solar cell, solar module and solar array.
26. Write a note on solar pond.
27. What are solar water heating systems?
28. Explain the different type of solar collectors.
29. Write a note on solar cookers.
30. What is a net meter? Give its uses.

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

31. Define a black body. Explain the absorptive, emissive power of a black body.
32. Explain the Principle of Physics and operation of solar cells with necessary diagram
33. Can solar energy be used to heat and also to cool a room? Explain
34. Write a note of safety precaution to be followed before an installation

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