

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

**SUBJECT CODE: 16VS/VM/PD56**

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

**COURSE : MAJOR CORE**

**PAPER : SOLAR POWER PLANT DESIGNING**

**TIME : 6 HOURS**

**MAX.MARKS:100**

**(Theory: 50 marks + Practical: 50 marks)**

**SECTION – A**

**ANSWER ALL QUESTIONS:**

**(20x1=20)**

**I. Choose the correct answer:**

1. If the number of turns of coil in AC generator is increased, the emf produced by it,  
(a) decreases                      (b) remains same                      (c) increases                      (d) does not change
2. All the protection equipment are installed in,  
(a) switch gear                      (b) combiner box                      (c) switch yard                      (d) transformers
3. Earthing conductivity is affected by  
(a) Moisture content in soil                      (b) chemical composition  
(c) Concentration of salts in soil                      (d) all the above
4. The following does not change in a transformer.  
(a) current                      (b) frequency                      (c) voltage                      (d) none
5. This mA current can paralyze muscles and cause a fall on a jobsite.  
(a) 10                      (b) 30                      (c) 50                      (d) 75

**II Fill in the blanks:**

6. Device that breaks the electrical circuit if too much current flows is, \_\_\_\_\_.
7. Device that allows current to flow in one direction only, \_\_\_\_\_.
8. Device used to prevent from over charging or discharging is, \_\_\_\_\_.
9. The number of solar panels needed for a 5 kW system (250W panel) is, \_\_\_\_\_.
10. Basic principle of a transformer is, \_\_\_\_\_.

**III State whether True or False:**

11. We choose the combiner box according to the panel strings.
12. The inverter electronically converts AC power to DC Power.
13. Parallel connected solar panels gives more current.
14. Series connected solar panel gives more voltage.
15. A circuit breaker is an electrical device.

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

16. What is standalone SPV system?
17. How are solar cells better than conventional sources?
18. What is grid connected SPV system?
19. What is standard test condition?
20. What is solar array?

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

21. What is the principle and working of a transformer?
22. Write any three essential parts of an AC generator with its working.
23. Explain any three faults in solar panel.
24. Write any three features of underground cables.
25. What is fuse and how does it works?
26. What is the function of circuit breaker and give its types?
27. Explain the function of substation.
28. What does solar plant infrastructure include?
29. What is the use of an inverter in solar power plant designing?
30. Mention few protective equipment needed in PV project site.

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

31. Explain the design plan for Lightning arrestors.
32. Explain in detail the design of PV system.
33. Explain the design plan for switchyard?
34. Choose an inverter which has a 12 V battery with appropriate rating for a house that has the following AC loads rated at 230V. (i) two 60 W lights, (ii) three 90 W fans, (iii) one 50 W laptop.

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