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2112E147

BACHELOR OF VOCATION

Solar Technology

Subject: PV Module design and Thermal Installation

Subject Code: ST-603

Semester: Third

December 2021

Theory (External): 35 Marks

Time: 03 hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

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SECTION -A (OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. Define fill factor for PV cells.
- B. Define packing factor for PV module.
- C. The I-V characteristics of a solar cell are drawn in the fourth quadrant.
a) True
b) False
- D. What is the effect of partial shading on performance of PV module?
- E. What is the effect of hot spot on performance of PV module?
- F. 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.
- G. Write the use of direct current load switch in PV array.
- H. What is the sun path diagram?
- I. Most widely used solar material is
a) Arsenic
b) Silicon
c) Cadmium
d) Steel

- J. What is the effect duct deposition on PV array?

SECTION -B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Draw the equivalent circuit of PV cell. Explain the V-I characteristics of PV cells with figure.
2. Explain the steps to select the location or site for PV plant installation.
3. What are the steps taken for installation of PV systems at field? Discuss in details.
4. Explain economical view and life cycle cost analysis of PV system PV system.
5. Explain the characteristics curve and properties of grid connected inverters.
6. How we perform shading analysis before installation of PV system in field.
7. What are the steps for sizing the module and string cabling of PV system installation.
8. Explain different solar thermal energy storage systems and applications.

===END OF PAPER===