



Eighth Semester B.E. Degree Examination, June/July 2023
Operation and Maintenance of Solar Electric Systems

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is Sun Geometry? Briefly explain the geometry for installing solar arrays. (08 Marks)
- b. Compare monocrystalline silicon, multi crystalline silicon and thin solar films. (06 Marks)
- c. Briefly explain the graphical representation of PV cell performance. (06 Marks)

OR

- 2 a. Briefly explain the effect of the Earth's atmosphere on solar radiation. (06 Marks)
- b. Explain the emerging technologies of Solar cells. (08 Marks)
- c. Briefly explain the photo voltaic array performance. (06 Marks)

Module-2

- 3 a. Briefly explain the types of main stream inverter technologies. (10 Marks)
- b. What is Roof mounting systems? Briefly explain the Rock mounts and Direct mounts. (10 Marks)

OR

- 4 a. What is system monitoring? Compare the Net metering and Gross metering. (10 Marks)
- b. Briefly explain the balance of system equipment components. (10 Marks)

Module-3

- 5 a. List and explain the important features to be considered while choosing system components. (10 Marks)
- b. Briefly explain the losses in utility interactive PV systems which causes de-rating. (05 Marks)
- c. Briefly explain the roof specification for the site assessment. (05 Marks)

OR

- 6 a. List and explain any 5 system protection technique used for the protection. (10 Marks)
- b. Compare portrait installation and Landscape installation. (05 Marks)
- c. Explain the calculation of maximum voltage and minimum voltage for a PV cell. (05 Marks)

Module-4

- 7 a. Explain the information required for the installations of Grid connected PV systems. (10 Marks)
- b. What is trouble shooting? Explain the trouble shooting of PV arrays and inverters. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. What are the system documents to be supplied to the owner after the completion of PV installation? (10 Marks)
- b. Explain the final inspection to be carried out for the PV system, before the PV system is commissioned. (10 Marks)

Module-5

- 9 a. What are the unique features of PV system among electricity generating technologies that contribute to its popularity. (10 Marks)
- b. List and explain strong barriers to PV technology. (10 Marks)

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OR

- 10 a. What is feed in tariff? What are the two different ways of FiT (Feed in Tariff). Give important features of feed in Tariffs. (10 Marks)
- b. What are the main costs associated with the individual components of PV system. (10 Marks)
