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Eighth Semester B.E. Degree Examination, July/August 2021

Operation and Maintenance of Solar Electric Systems

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. Explain the effect of Earth's atmosphere on Solar radiation with neat diagram. (08 Marks)
b. Explain the Geometry for installing solar arrays. (08 Marks)

- 2 a. Explain performance of photovoltaic cell with neat graphical representation. (07 Marks)
b. Explain any three Emerging technology
i) Dye sensitized solar cells
ii) Silver cells
iii) III – V semiconductor
iv) Solar concentrators (09 Marks)

- 3 a. Explain the main stream Inverter technologies
i) String Inverter (04 Marks)
ii) Multi string inverter (04 Marks)
b. Explain about the system monitoring
i) Net metering (04 Marks)
ii) Gross metering (04 Marks)

- 4 a. Explain in detail with neat diagram
i) Roof mounting system (04 Marks)
ii) Pitched roof for metal roof (04 Marks)
b. List types of sun tracking mechanism. With neat diagram explain sun tracking mechanism. Give its disadvantages. (08 Marks)

- 5 a. Define Solar pathfinder. Explain the working principle of solar pathfinder with neat diagram. (08 Marks)
b. Explain the following steps taken in selecting area suitable for PV installation and explain protrait and landscape installation. (08 Marks)

- 6 a. Explain in detail why system protection is required. Explain over current and fault current protection. (08 Marks)
b. Explain the losses in utility interactive PV system. (08 Marks)

- 7 a. Explain utility grid inter connection with neat diagram. (07 Marks)
b. Explain in detail about
i) PV combiner box
ii) System Earthing
iii) Inverter Installation (09 Marks)

- 8 a. Explain the points to be ensure by installer for system testing. (08 Marks)
b. Write about Troubleshooting done in
i) Identifying problem
ii) PV system arrays
iii) Inverter
iv) Under performing system (08 Marks)
- 9 a. Explain about main cost associated with PV system. (08 Marks)
b. Explain why marketing knowledge is required for PV installer and gives barrier. (08 Marks)
- 10 a. Write short notes on :
i) Rebates (04 Marks)
ii) Renewable portfolio standard (04 Marks)
b. Explain importance of valuing PV system. (08 Marks)
