SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

DEPARTMENT OF MECHANICAL ENGINEERING

Unit 1-INTRODUCTION TO SOLAR PHOTOVOLTAICS

1. What is solar cell?
2. What is a solar PV module?
3. What is the rating of PV module?
4. Define the short circuit current of the PV module?
5. What is Fill Factor?
6. Explain how solar photovoltaic cell generates electricity in detail.
7. What are the different Solar cell technologies
8. Explain all the parameters of solar cells.
9. A solar cell having an area of 100 cm gives 3.1 A current at maximum power point and 0.5 V at maximum power point at STC. The cell gives 3.5 A short circuit current and 0.6 V open circuit voltage. What is the maximum power point of the solar cell? Also find out the efficiency of the cell.
10. A solar cell having an area of 25 cmgives 0.85 A current at maximum power point and 0.55 V at maximum power point at STC. The cell gives 0.9 A short circuit current and 0.65 V open circuit voltage. What is the maximum power point; fill factor and efficiency of the solar cell?
11. A solar cell having Fill factor (FF) 68% gives 0.6 V at maximum power point at STC. The cell gives 3 A short circuit current and 0.7 V open circuit voltage. What is the current at maximum power point of the solar cell?
12. A solar cell has maximum power point of 0.3 W. The cell voltage at maximum power point at STC is 0.65 V. What is the current at maximum power point of the solar cell?
13. Discuss all the factors affecting electricity generated by a solar cell
14. Calculate the output power from a solar cell if its efficiency (in %) is 30, 24, 19, 16, 12, input power density is 1000 W/m2 and area of the solar cell is 100 cm2 (a) Calculate new value output current for solar cells of area 20, 30, 50, 80 and 100 cm , when current density of cell is 3 mA/cm2
17What are the different Standard PV module parameters? Discuss all of the parameters
18. Discuss all the factors affecting electricity generated by a solar PV module.
19 What are the different Measuring Parameters of the PV module? Give a brief idea about this.
20 Design a Solar PV module for providing Voltage at maximum power point of Vm 30 V (STC) and 28.5 V (under operating conditions, 55 0C cell temperature). Use the cells with open circuit voltage of 0.62 V and 0.002 V decrease in Vm per degree centigrade rise in temperature