Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APR / MAY 2024

OPEN ELECTIVE

ME5796 - SOLAR ENERGY TECHNOLOGIES

(Regulation 2019)

Time:3 hrs Max. Marks: 100

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

1 Name any 2 instruments used for measurement of solar irradiation

2 Distinguish beam and diffused radiation

3 Gist on the classification of SPV cells

4 Define : figure of merit

5 What is sensible heating and latent heating?

6 How cooking power of a typical solar cooker is estimated?

7 List any 4 types of solar dryers

8 Sketch a typical solar still

9 What is COP?

10 Define : 1 TR

PART- B (5 x 13 = 65 Marks)

11 (a) (i) With a neat sketch explain the working of a typical liquid flat plate collector (6.5)

(ii) Present its merits and demerits over evacuated tube collector (6.5)

(OR)

11 (b) (i) Gist on any 3 performance indices of a solar collector (6.5)

(ii) Brief on any 4 factors that affects its performance (6.5).

12 (a) With a suitable block diagram, explain the working of a stand-alone solar PV system

(OR)

12 (b) Compare the working, merits and demerits of Grid interactive SPV system with respect to stand-alone solar PV system

13 (a) Estimate the cooking time for preparation of boiled rice in a solar cooker. Make suitable assumptions on all the required parameters.

(OR)

13 (b) Compare the working of a paraboloidal and box type solar cooker

14 (a) List and justify on the parameters required for designing a typical solar dryer.

(OR)

14 (b) How performance of a solar still is measured. Discuss on the avenues for improving

15 (a) With a suitable schematic, explain the working of Aqua Ammonia VARS

(OR)

15 (b) Elucidate on the working principle of a typical solar powered VCRS

PART- C (1 x 15 = 15 Marks)

16. Estimate the typical energy and power requirement for your home.
Design a suitable SPV power plant for energizing it.
Present the specification of all sub components involved in the SPV power plant.