22PHP420A

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(Fourth Semester)

Branch – **PHYSICS**

MAJOR ELECTIVE COURSE – II: APPLIED SOLAR ENERGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 The inclination of earth's axis in degrees is
(i) 23 (ii) 23.5
(iii) 20 (iv) 21.5

2 Which part of flat plate collectors is coated in black?
(i) Transparent cover (ii) Absorber plate
(iii) Insulation (iv) Fins

3 Name the two variants of solar still is
(i) Box and flat (ii) Parabolic and pit
(iii) Active and passive (iv) Active and inactive

4 In indirect solar dryers _____is used as air exhausts.
(i) Fan (ii) Conveyors
(iii) Turbines (iv) Chimney

5 Which of the following principles is used to concentrate sunlight in solar cookers?
(i) Specular reflection (ii) Reflection
(iii) Rarefaction (iv) Transmission

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Discuss the economic feasibility in harnessing solar energy.
OR
b Examine the importance of solar energy in the present day energy crisis.

7 a How do solar collectors work?
OR
b Comment on the importance of solar water heaters.

8 a Brief on the advantages of solar concentrators.
OR
b What is central receiver tower? Give the importance of its geometry.

9 a Trace the importance of solar dryers.
OR
b With a neat sketch, explain the pn junction's fabrication.

10 a What is solar pumping?
OR
b How box type solar cooker works?

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Elaborate the structure and physics of the sun, with a sketch.

OR

b Examine the working of a pyrheliometer.

12 a Explain the construction and working of flat plate solar collectors. Discuss the thermal analysis of flat plate collector.

OR

b Describe the importance of solar water heater and their installation.

13 a With neat sketch, examine the working principle of various types of concentrating solar collectors.

OR

b Comment on the theory and working of solar distillation system.

14 a Explain the term solar photo voltaic conversion. List its advantages and disadvantages.

OR

b Critically examine the principle and working of solar air heater.

15 a Analyse the importance of solar cooker along with its principle and working.

OR

b Examine how the solar heated green house works.

Z-Z-Z END