

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**MSc DEGREE EXAMINATION MAY 2026
(Fourth Semester)**

Branch- PHYSICS

MAJOR ELECTIVE COURSE –II:APPLIED SOLAR ENERGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	EM Energy spectrum wavelength range for cosmic λ = _____ rays. a) $< 10^{-10} \mu$ b) $< 10^{-8} \mu$ c) $> 10^{-12} \mu$ d) 0.78μ	K1	CO 2
	2	Sun emits radiation. This enormous power is called _____. a) luminosity b) intensity c) fullerene d) radiant flux	K2	CO 3
2	3	Physical principles of the conversion of solar radiation into heat are called _____. a) Green house effect b) photoelectric effect c) Zeeman effect d) stark effect	K1	CO 2
	4	Solar series and parallel arrays, series flow is _____ efficient than parallel and balanced flow. a) higher b) medium c) less d) low	K2	CO 3
3	5	Size of the image as Φ changes, W' also changes such that $\Phi=0$, $W' =$ _____. a) $2f \tan 16'$ b) $2f \sin 16'$ c) $2f \cos 16'$ d) $4f \tan 16'$	K1	CO 2
	6	Air/ Vacuum temperature ($^{\circ}\text{C}$) in paints _____. a) 100/100 b) 70/80 c) 175/200 d) 250/250	K2	CO 3
4	7	Amount of dry material entering the dryer. a) $\frac{100-M_2}{100} \cdot W_2$ b) $\frac{M_2}{100} \cdot W_2$ c) $\frac{100-M_1}{100} W_1$ d) $\frac{M_1}{100} W_1$	K1	CO 2
	8	Co-efficient of performance (COP) a) $\frac{t_2}{t_1}$ b) $\frac{t_2-t_0}{t_1-t_0}$ c) $\frac{t_2/t_0}{t_1/t_0}$ d) $\frac{t_2+t_0}{t_1+t_0}$	K2	CO 3
5	9	Solar pump the overall efficiency of the system $\eta_0 =$ _____. a) η_0/η_c b) $\eta_e + \eta_c$ c) $\eta_e \times \eta_c$ d) $\eta_e + 2\eta_c$	K1	CO 2
	10	Solar cooker maximum temperature can reach upto _____. a) 100°C b) 300°C c) 250°C d) 150°C	K2	CO 3

Cont...

SECTION – B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the classification of energy resources.	K2	CO 3
	(OR)			
	11.b.	Explain pyronanometer schematic for the measurement of global radiation.	K2	
2	12.a.	Build the series and parallel solar arrays.	K2	CO3
	(OR)			
	12.b.	Estimate for selection of materials for FPCs.	K2	
3	13.a.	Write main disadvantages of Flat-plate type collectors.	K2	CO3
	(OR)			
	13.b.	Tabulate thermal and radiative properties of collector cover materials.	K2	
4	14.a.	Distinguish the moisture constant and its measurement.	K2	CO3
	(OR)			
	14.b.	Draw and explain deep bed drying curve.	K2	
5	15.a.	Write the merits and demerits of box type solar cooker.	K2	CO3
	(OR)			
	15.b.	Explain winter and summer green house.	K2	

SECTION –C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Describe the structure of the sun and derive solar constant.	K3	CO4
2	17	With a neat diagram explain different types of solar water heaters.	K3	CO4
3	18	Design the theory of a basin type solar distillation.	K3	CO4
4	19	Estimate power output and conversion efficiency of semiconductor junctions.	K3	CO4
5	20	Discuss system components for solar pumping.	K3	CO4

Z-Z-Z END