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PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2025
(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	Mass of the sun M _____ a) 1.991 x 10^{30} kg b) 2.991 x 10^{30} kg c) 1.331 x 10^{30} kg d) 2.818 x 10^{30} kg	K1	CO2
	2	Structure of the Sun the Energy reaction 4_1H^1 - a) $_2He^4$+26.7MeV b) $_2He^4$+2MeV c) $_2He^2$+26.7MeV d) $_2He^4$+24.7MeV	K2	CO3
2	3	Wien's law expressed is $\lambda_{max}T$ = _____ a) 2989μm Kelvin b) 1889μm Kelvin c) 2989nm Kelvin d) 1872m Kelvin	K1	CO2
	4	Solar water having the _____ use of solar energy. a) Indirect b) Direct c) Common d) Filter	K2	CO3
3	5	Size of the image W'= _____ a) $2r\ tan16'/cos\Phi$ b) $2r.sin16'/tan\Phi$ c) $2r\ sin16'/cos\Phi$ d) $2l\ tan16'/cot\Phi$	K1	CO2
	6	Refraction Index (n) in polycarbonate materials _____. a) 1.518 b) 1.49 c)1.586 d) 1.50	K2	CO3
4	7	The moisture content M, dry basis, present is a) $\frac{Wd}{Wm}x\ 100$ b) $\frac{Wm}{Wd}$ c) $\frac{Wm}{Wd}x\ 100$ d) $Wm + Wd$	K1	CO2
	8	Amount of dry material leaving the dryer. a) $\frac{M2}{100} - W2$ b) $\frac{100-M2}{100}.W2$ c) $\frac{M1}{100}\ x\ W1$ d) $\frac{100-M1}{100}.W1$	K2	CO3
5	9	Solar pump is not _____ from a solar heat engine. a) Similar b) Different c) Equal d) Good	K1	CO2
	10	The first solar cooker was developed by a) Charles fritts b) Edmond Becquerel c) M.K.Ghosh d) Bell Lbs Team	K2	CO3

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.	Demonstrate the Electromagnetic Energy Spectrum.	K2	CO3
		(OR)		
	11.b.	Summarize the advantages and disadvantages of conventional energy source.		
2	12.a.	Utilize general description of flat-plate collectors.	K2	CO3
		(OR)		
	12.b.	Examine the effect of dust and shading.		
3	13.a.	Write main advantage of concentrator systems over Flat-plate type collectors.	K2	CO3
		(OR)		
	13.b.	Distinguish some possible focusing configuration in parabolic system.		
4	14.a.	Explain types of air heaters.	K2	CO3
		(OR)		
	14.b.	Derive the equation mass and heat balance in Grain Drying.		
5	15.a.	Discuss application of Solar Energy in Space.	K2	CO3
		(OR)		
	15.b.	Write a Short note on Solar Green House.		

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	Estimate solar constant and imagine the diagram of the earth's orbit around the sun.	K3	CO4
2	17	Elaborate the thermal losses and efficiency and Flat-plate collector.	K3	CO4
3	18	Recommend the solar disk and theoretical solar images.	K3	CO4
4	19	Explain about Cu_2S/CdS solar cells.	K3	CO4
5	20	Design principle and constructional details of Box type solar cooker.	K3	CO4

Z-Z-Z END