

M.E. Second Semester (Mechanical Engineering (Thermal Engg.)) (New-CGS)
13523 : Elective-II : Solar Energy : 2 MTE 5

P. Pages : **2**

Time : Three Hours



AU - 3375

Max. Marks : 80

- Notes :
1. All question carry equal marks.
 2. Answer **three** question from Section A and **three** question from Section B.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Diagrams and chemical equations should be given wherever necessary.
 6. Retain the construction lines.

SECTION – A

1. a) Discuss the principle of solar collector. How the collector coating can improve the performance of collector.
b) What are the standard requirement of absorbing surfaces for proper working of collector.
2. Derive an expression for transmittivity based on absorption of glass cover system of LFPC. **13**
3. a) Discuss
 - i) Acceptance angle.
 - ii) Concentration Ratio.
 - iii) Optical efficiency.b) What is the purpose of double glazing in green house? Explain briefly.
4. a) Explain photovoltaic principle. Describe a basic photovoltaic system for power generation.
b) Discuss
 - i) Thermo-chemical heat storage arrangement.
 - ii) Sensible storage arrangement.
5. a) Explain the working of solar pond with neat sketch. **7**
b) Explain the working of solar cooker with neat sketch. **7**

SECTION – B

6. a) Explain the passive solar heating with neat sketch.
b) Explain solar absorption system based on Li-Br & water absorption system.

7. a) Derive an Expression for useful heat gain of L.D.F.C.
b) Derive an expression for Temperature distribution across the absorber plate of LFPC.
8. a) Discuss the following.
i) Area concentration ratio.
ii) Interrupt factor.
b) What are tracking requirements? Explain different tracking modes used for orientation of a collector.
9. What are the various testing methods for flat plate collectors? Describe in detail. 13
10. a) For compound parabolic collector, prove that 7
$$\frac{H}{W} = \frac{1}{2}(1 + C_r) \sqrt{1 - \left(\frac{1}{C_r}\right)^2}$$

Where C_r = concentration Ratio.
- b) Explain different types of concentrating collectors with its advantages & disadvantages. 7

http://www.sgbauonline.com

Whatsapp @ 9300930012

Your old paper & get 10/-

पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से