Assignment-06

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

Due on 2021-03-03, 23:59 IST.

1) How can the convection loss from the absorber plate be minimized for a flat plate collector?
   - By painting the plate black
   - By increasing the spacing between the plate and the cover
   - By evacuating the spacing between the plate and the cover
   - By increasing the insulation-thickness at the bottom of the plate
   - No, the answer is incorrect.
   - Score: 0
   - Accepted Answers: By evacuating the spacing between the plate and the cover

2) Find out the radiation heat transfer coefficient between a flat plate collector top cover and the ambient (in W/m²K) if the cover temperature = 55°C. Ambient temperature = 20°C. The sky temperature is estimated as 15°C less than the ambient. Given: emissivity of the top cover = 0.7.
   - No, the answer is incorrect.
   - Score: 0
   - Accepted Answers:
     (Type: Range) 6.2,6.5

3) Find out the effective absorptivity-transmissivity product for the cover absorber system in a flat plate collector if the transmissivity of the cover = 0.95; absorptivity of the absorber plate = 0.86 and the reflectivity of the cover material for long wave length radiation = 0.8. Consider the plate and the cover to be infinitely large parallel planes.
   - No, the answer is incorrect.
   - Score: 0
   - Accepted Answers:
     (Type: Range) .86,.91

4) Find out the mass-flow rate of water (in kg/hr) to obtain steady outlet temperature of 90°C with a conventional liquid flat plate collector of area 2 m² and heat removal factor 0.9 when the rate of radiation absorption (S) is 700 W/m². Given: Overall loss coefficient = 5 W/m²K; water inlet temperature = 62°C; ambient temperature = 30°C; specific heat of water = 4.2 kJ/kgK.
   - No, the answer is incorrect.
   - Score: 0
   - Accepted Answers:
     (Type: Range) 29.5,30

5) For a flat plate collector, when the cover is partially transparent to the reflected radiation, which statement(s) is/are correct?
   - Cover does not interact radiatively with the plate
   - Plate directly interacts through convection with the ambient
   - Plate interacts radiatively with the sky
   - Plate does not interact radiatively with the sky
   - No, the answer is incorrect.
   - Score: 0
   - Accepted Answers: Plate interacts radiatively with the sky

6) Bottom thermal loss coefficient for a conventional liquid flat plate collector is majorly influenced by
   - Thermal resistance of the insulation layer
   - Emissivity of the absorber plate
   - Cover temperature
   - Mass flow rate of the working fluid
   - No, the answer is incorrect.
   - Score: 0
   - Accepted Answers: Thermal resistance of the insulation layer