

## Week 5- Maryam hajhashemi

Task 1 In your own words (which means in your own words) write a summary of the topics about radiative heat transfer we went through including the definitions of emissivity, absorptivity and reflectivity, the view factor, the heat exchange between two black surfaces, the heat exchange between the two gray surfaces and finally the definition of radiative resistances

Irradiation      incidental radiation that affects bodies

Radiosity      the emissive power and the reflected irradiation

Emissivity      how much radiation emitted by object

Absorptivity      the amount of energy which absorb

Reflectivity      the amount of energy which reflect

Transmissivity      the amount of energy which transmitted

Radiation heat transfer of black body      view factor = emissivity

Radiation heat transfer of gray body      reflected radiation- emitted radiation

Task 2 Solve the last example you solved in the class (radiative heat exchange between two parallel plates) awhile considering the two emissivities to be 0.1, what can you conclude from the result?

Subject: \_\_\_\_\_ Year: \_\_\_\_\_ Month: \_\_\_\_\_ Day: \_\_\_\_\_ ( ) page: ( )

$$Q_{12} = \frac{A\epsilon (T_1^4 - T_2^4)}{\frac{1}{\epsilon_1} + \frac{1}{\epsilon_2} - 1}$$

$$\frac{Q_{12}}{A} = \frac{5.67 \times 10^{-8} (800^4 - 500^4)}{\frac{1}{0.2} + \frac{1}{0.7} - 1} = 3626137 \text{ W/m}^2$$

$$Q_{21} = \frac{A\epsilon (T_1^4 - T_2^4)}{\frac{1}{\epsilon_1} + \frac{1}{\epsilon_2} - 1} \rightarrow \frac{Q_{21}}{A} = \frac{5.67 \times 10^{-8} (800^4 - 500^4)}{\frac{1}{0.7} + \frac{1}{0.2} - 1}$$

$$\rightarrow 1036197 \text{ W/m}^2$$

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