Task 1:

a) **Emissivity:** It is defined as the ratio of the energy radiated from a material's surface to that radiated from a perfect emitter, at the same temperature and wavelength and under the same viewing conditions.

b) **Absorptivity:** The ratio of the absorbed heat to the total energy of the projected heat onto the object. The object that can absorb all the rays is a black body, and its absorption rate is 1.

c) **Reflectivity:** It is an optical property of material, which describes how much light is reflected from the material in relation to an amount of light incident on the material.

d) **The view factor:** The view factor F12 is the fraction of energy exiting an isothermal, opaque, and diffuse &om surface 1 [by emission or reflection), that directly to the surface 2.

e) **The heat exchange between two black surfaces:** The black surfaces will constantly absorb and emission all the radiation. Suppose there are two black surfaces with given area, All for the first object and A2 for the second object.

f) **The heat exchange between two grey surfaces:** The two grey surfaces will absorb and reflect a certain fraction of radiation. The reflect part will also constantly absorb by the other side for a certain fraction and reflect the other radiation, and the same thing happens in the other surface. The radiation will generally lose its power during the process.

g) **Radiation resistance:** It is a value to measure the energy depleted by loss resistance which is converted to heat radiation, the energy lost by radiation resi3os converted to radio waves.

Task 2:

When ε_1=0.2, ε_2=0.7,

$Q_{net12}= A\sigma(T_1^4-T_2^4)/[(1/\varepsilon_1) + (1/\varepsilon_2)-1]=$ **3624.41A W**

When ε_1=0.1, ε_2=0.1,

$Q_{net12}= A\sigma(T_1^4-T_2^4)/[(1/\varepsilon_1) + (1/\varepsilon_2)-1]=$ **1035.81A W**

In conclusion： The increase of emissivity resulting in the increase of heat exchange between the two parallel plates.