1) SUMMARY – CONVECTIVE HEAT TRANSFER

- CONVECTIVE HEAT TRANSFER IS ONE OF THE 3 WAYS OF HEAT TRANSFER AND IS ALSO KNOWN AS HEAT CONVECTION.

- IT IS A PHENOMENON THAT HAPPENS BETWEEN 2 MOVING FLUIDS SUCH AS LIQUID-LIQUID, GAS-LIQUID, GAS-GAS OR IT HAPPENS BETWEEN SOLIDS AND MOVING FLUIDS SUCH AS GAS AND SOLID.

- CONVECTION IS CAUSED DUE TO THE DIFFERENCE OF TEMPERATURE BETWEEN THE TWO FLUIDS IN MOTION OR BETWEEN A SOLID AND A FLUID.

- HEAT IS USUALLY TRANSFERRED FROM THE OBJECT WHICH IS HOT TO THE COOLER OBJECT.AND THERE WILL BE A CHANGE OF TEMPERATURE IN BOTH THE OBJECTS. THE TEMPERATURE OF HOTTER OBJECT REDUCES, WHEREAS THE COOLER OBJECT'S TEMPERATURE INCREASES.

- CONVECTION IS OF 2 TYPES- 1) FREE CONVECTION OR NATURAL CONVECTION
  2) FORCED CONVECTION

- FREE CONVECTION - WHEN TWO MOVING FLUIDS OR A SOLID AND A MOVING FLUID WITH DIFFERENT TEMPERATURE CONTACT WITHOUT AN EXTERNAL FORCE, THE HEAT IS BEING TRANSFERRED FROM THE HOTTER PART TO THE COOLER PART.

- FORCED CONVECTION - WHEN TWO MOVING FLUIDS OR A SOLID AND A MOVING FLUID WITH DIFFERENT TEMPERATURE CONTACT DUE TO AN EXTERNAL FORCE, YET THE HEAT IS TRANSFERRED FROM THE HOTTER PART TO THE COOLER PART.

2) REVIEWS:

- DID NOT CONSIDER THE THICKNESS OF THE WALL.

3) SOLVE THE SAME PROBELM AS THAT OF DOUBLE PANE WINDOW WITH WITH THE AIR- GAP THICKNESS OF 13 MM AND GLASS THICKNESS OF 6 MM, COMMMENT ON YOUR RESULTS AND EXPLAIN WHY WE HAVE AN OPTIMAL RANGE FOR THE AIR-GAP'S DISTANCE.

$$R_{g_1} = R_{g_2} = \frac{L_g}{(K_g \times A)} = \frac{0.006}{0.78 * 0.8 * 1.5} = 0.0064\,^{\circ}\frac{C}{W}$$

$$R_{airGap} = \frac{L_{airGap}}{\left(K_{airGap} \times A\right)} = \frac{0.013}{0.026 * 1.2} = 0.4166\ °C/W$$

$$R_{conv_1} = \frac{1}{h_1 \times A} = \frac{1}{10 * 1.2)} = 0.0833\ °C/W$$

$$R_{conv_2} = \frac{1}{h_2 \times A} = (\frac{1}{40 * 1.2)} = 0.0208\ ° \frac{C}{W}$$

$$R_{tot} = 0.0833 + 0.0208 + 2 * 0.0064 + 0.4166 = 0.5335\ ° \frac{C}{W}$$

$$\dot{Q} = \frac{\Delta T}{R_{Tot}} = \frac{30}{0.5335} = 56.2324\ W$$