**Birzeit University**

**Mechanical & Mechatronics Engineering Department**

**Heat Transfer ENME 431-2**

**Quiz # 5**

**Instructor: Dr. Afif Akel Hasan 1st. semester 2020/2021**

***Closed book formula sheet is attached***

A rectangular double glass **vertical** window 1.5 wide and 1 m high with 15 mm air gap in between. Inside layer at 25oC, while outside layer at 15oC, room air at 30oC, and outside air at 5 oC. Use following air properties k=0,025 W/m2.K, Pr =0.7, ν=20.0X10-6.

1. Find heat transfer coefficients and heat transfer between the glass layers?
2. If window is horizontal with inside layer at 25 oC while outside at 15 oC find heat transfer coefficient and heat transfer the glass layers?
3. Find heat transfer from upper glass layers to outside air for horizontal case?
4. Find heat transfer from lower glass layers to inside air for horizontal case?