**Birzeit University**

 **Mechanical & Mechatronics Engineering Department**

**Heat Transfer ENME 431-1**

**Quiz # 5 Form A**

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

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

A rectangular hot surface at 40oC; width 1 m and length 2m is placed in a room where ambient air at 20oC, k=0,032 W/m2.K, Pr =0.7, ν=26.0X10-6, α=38.0 X 10-6 m2/s.

1. For horizontal layout of surface find heat transfer coefficients for both sides of surface?
2. Find heat transfer by convection and radiation from both sides for above arrangement?
3. Surface is placed vertically with 2 m side on vertical direction calculate heat transfer coefficients in this case?
4. Calculate total heat lost from surface for this layout?

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**Quiz # 5 Form B**

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

A cylinder 0.2m diameter, and 2 m long its surface at 50oC; is placed in a room where ambient air at 20oC, k=0,030 W/m2.K, Pr =0.7, ν=26.0X10-6, α=38.0 X 10-6 m2/s.

1. For horizontal layout of cylinder find heat transfer coefficients for side area of surface?
2. Find heat transfer by convection and radiation from side area for above arrangement?
3. Cylinder is placed vertically with 2 m side on vertical direction calculate heat transfer coefficients in this case?
4. For vertical cylinder find also heat transfer from both ends of cylinder?

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**Quiz # 5 Form C**

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

A horizontal plate with a shape of half circle ( disc ) 1.0m diameter its surface at 65oC; is placed in a room where ambient air at 15oC, k=0,028 W/m2.K, Pr =0.7, ν=26.0X10-6, α=38.0 X 10-6 m2/s. Wall temperature same as air.

1. For horizontal layout of plate find heat transfer coefficients for both sides of surface?
2. Find heat transfer by convection and radiation from both sides for above arrangement?
3. Plate is placed vertically with 1 m diameter side in horizontal direction calculate heat transfer coefficients in this case?
4. Find also heat transfer from both ends of surface?