Assignment 07

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

1) Grontz number (Gr) is defined as

\[ \frac{Gr}{Pr} = \frac{Lm}{Pr} \]

\[ \frac{Gr}{Pr} = \frac{C_1}{Pr} \]

\[ \frac{Gr}{Pr} = \frac{C_2}{Pr} \]

\[ \frac{Gr}{Pr} = \frac{C_3}{Pr} \]

No, the answer is incorrect.

Score: 0

Accepted Answers:

2) For uniform surface heat flux condition, the value of Nusselt number for hydrodynamically developed and thermally developing flow in a circular duct is

- 4.936
- 4.95
- 4.96
- 4.94

No, the answer is incorrect.

Score: 0

Accepted Answers:

3) For uniform wall temperature condition, the value of Nusselt number for hydrodynamically developed and thermally developing flow in a circular duct is

- 3.914
- 3.98
- 4.00
- 3.95

No, the answer is incorrect.

Score: 0

Accepted Answers: 3.66

4) Consider the following statements:

1. Shape of the fully developed temperature profile is same as the temperature profile of thermally developing flow.
2. For the similar conditions, the values of convection heat transfer coefficients are more in forced convection than in free convection.
3. In the thermally and hydrodynamically fully developed flow of a fluid with constant properties in a circular duct, the wall heat flux increases exponentially with x.

Choose the correct option.

- Only 1 is correct
- Both 1 and 2 are correct
- Both 1 and 3 are correct
- 1, 2, 3 are correct

No, the answer is incorrect.

Score: 0

Accepted Answers: Both 1 and 2 are correct

5) Consider the following statement regarding heat transfer in plate Casson flow with upper and bottom plates maintained at different temperature whereas upper plate temperature is higher than bottom plate.

1. When Eor < 2, heat generation within the fluid is small and therefore heat still occurs from the hotter top wall.
2. When Eor = 2, the heat generation is so large that heat has to be removed from both the top wall and the bottom wall.
3. When Eor > 2, no heat transfer on top wall.

Choose the correct option.

- Only statement 3 is correct
- Only 1 and 2 are correct
- Only 1 and 3 are correct
- 1, 2, 3 are correct

No, the answer is incorrect.

Score: 0

Accepted Answers: Both 1 and 2 are correct

6) The correct scaling for local Nusselt number in the thermally developing section is

- \[ Nu = \left( \frac{Re Pr}{Gr} \right)^{0.5} \]
- \[ Nu = \left( \frac{Re Pr}{Gr} \right)^{0.7} \]
- \[ Nu = \left( \frac{Re Pr}{Gr} \right)^{0.9} \]
- \[ Nu = \left( Re Pr \right)^{0.9} \]

No, the answer is incorrect.

Score: 0

Accepted Answers:

7) Britzman number is the combination of

- Prandtl number and Nusselt number
- Edder number and Reynolds number
- Prandtl number and Eckert number
- Reynolds number and Prandtl number

No, the answer is incorrect.

Score: 0

Accepted Answers: Prandtl number and Eckert number

8) Air flows with a mean velocity of 2 m/s through a tube of diameter 1 cm. The mean temperature at a given section in a fully developed region is 30°C. The surface of tube is maintained at a uniform temperature of 100°C. Determine the length (m) of the tube section needed to raise the mean temperature to 105°C. (upto two decimal places)

No, the answer is incorrect.

Score: 0

Accepted Answers: 0.05