Assignment 03

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-10-07, 22:00 IST.

1) The Falkner-Skan equation related to boundary layer flow over a wedge is a
   ○ Third order, linear PDE
   ○ Third order, non-linear PDE
   ○ Third order, non-linear ODE
   ○ Third order, linear ODE
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   Third order, non-linear ODE

2) For the given real temperature variation for flat plate, \( T(x) = T_0 +Cx \), where \( C \) is some constant. We can achieve uniform heat flux condition at flat plate for \( x = \) ______
   ![Diagram]
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 0.5

3) Which of the following is NOT an assumption for boundary layer flows
   ○ Navier-Stokes fluid flow
   ○ High Reynolds number flow
   ○ Laminar flow
   ○ None of these
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   None of these

4) For boundary layer flows on wedge shaped body, with wedge angle \( \theta \), and wedge parameter \( m \), free stream velocity in such wedge flows is of the form \( U_0 = \text{c} \text{m}^m \). What is the relation between \( m \) and \( \beta \)
   ○ \( \beta = \frac{m}{3} \)
   ○ \( \beta = \frac{m}{5} \)
   ○ \( \beta = \frac{m}{4} \)
   ○ Independent of each other
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   \( \beta = \frac{m}{4} \)

5) For the velocity profile, \( \frac{\nu}{\nu} = \left( \frac{x}{h} \right) - \left( \frac{x}{h} \right)^3 \), the shape factor \( \beta = \frac{\nu}{\nu} \) (ratio of displacement thickness to momentum thickness).
   ○ \( \beta = 0.1 \)
   ○ \( \beta = 0.3 \)
   ○ \( \beta = 0.5 \)
   ○ \( \beta = 0.7 \)
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   \( \beta = 0.5 \)

6) For boundary layer flows, if the fluid properties are assumed to be constant, the velocity field will be independent of the temperature field.
   ○ True
   ○ False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   True

7) At the leading edge of flat plate, the boundary layer approximations are NOT valid
   ○ True
   ○ False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   True

8) For the velocity profile, \( \frac{\nu}{\nu} = \frac{1}{3} \), find the ratio \( \frac{\gamma}{\delta} \) where, \( \gamma \) is the displacement thickness and \( \delta \) is the boundary layer thickness.
   ○ 0.5
   ○ 0.2
   ○ 0.1
   ○ 0.05
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   0.5