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NPTEL

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Courses » Fluid dynamics and turbomachines

Announcements **Course** Ask a Question Progress Mentor FAQ

Week #1.

INTRODUCTION TO FLUID FLOWS

Course outline

How to access the portal

Pre-requisite Assignment

Course Content

Week #1.
INTRODUCTION TO
FLUID FLOWS

- Lec 01 - Introduction to Fluid Flow
- Lec 02 - Flow field, Stresses on fluid element, Newtonian fluid
- Lec 03 - Non Newtonian fluid, Classification of flow, Analysis of flow
- Lec 04 - Tutorial
- Additional Practice Problems - Week 1
- Solutions to the Additional Practice Problems - Week 1
- Week 1 - Presentations
- Quiz : Assignment 1
- WEEK 1 - FEEDBACK - Fluid dynamics and turbomachines

Assignment 1

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

Due on 2018-08-22, 23:59 IST.

- 1) The velocity field of a flow indicates 1 point
- The velocity of a particle in the flow
 - The velocity at a point in the flow field
 - Both a & b
 - None

No, the answer is incorrect.

Score: 0

Accepted Answers:

The velocity at a point in the flow field

- 2) Which of the following indicates a 1D flow? 1 point
- $\vec{V} = xy\vec{i}$
 - $\vec{V} = (x^2 + y^2)\vec{i}$
 - $\vec{V} = (x^3 + t)\vec{i}$
 - None

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\vec{V} = (x^3 + t)\vec{i}$

- 3) Which of the following is true? 1 point
- Streamlines are drawn at a particular time instant
 - Pathlines are drawn at a particular time instant
 - Both a & b
 - None

No, the answer is incorrect.

Score: 0

Accepted Answers:

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Week #4. VISCOUS FLOW

Week #5. INTRODUCTION TO TURBOMACHINES

Week #6. PRINCIPLE OF TURBOMACHINES

Week #7. PERFORMANCE OF PUMPS AND HYDRAULIC TURBINES

Week #8. PERFORMANCE OF STEAM AND GAS TURBINES

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 Both b & c

No, the answer is incorrect.

Score: 0

Accepted Answers:

Tensor

5) If $\tau = \left(\frac{du}{dy}\right)^3$ and $u = y^2\vec{i}$, then the apparent viscosity is

1 point

 2y

 $2y^2$
 4y

 $4y^2$

No, the answer is incorrect.

Score: 0

Accepted Answers:

 $4y^2$

6) Pseudo plastic fluids are also called as

1 point

 Dilatant fluids

 Bingham Plastic fluids

 Shear Thinning fluids

 Shear Thickening fluids

No, the answer is incorrect.

Score: 0

Accepted Answers:

Shear Thinning fluids

7)

1 point

The equation of flow field is given by $\vec{V} = x^2t\vec{i} + t^2\vec{j}$. The equation of stream line at time t_0 is given by

 $xy = t_0$
 $xy = -t_0$
 $x^2y = t_0$
 $xy^2 = -t_0$

No, the answer is incorrect.

Score: 0

Accepted Answers:

 $xy = -t_0$

8) In the above question, find the equation of pathline if the particle passes through (1, 0) at $t = 0$

1 point

 $\frac{1}{x} = \frac{(3y)^{2/3}}{2} - 1$
 $\frac{-1}{x} = \frac{(3y)^{2/3}}{2} - 1$
 $\frac{-1}{x^2} = \frac{(3y)^{2/3}}{2} - 1$
 $\frac{1}{x^2} = \frac{(3y)^{2/3}}{2} - 1$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$\frac{-1}{x} = \frac{(3y)^{2/3}}{2} - 1$$

9) Integral approach during the analysis of flow is used to find out the

1 point

- Velocity, Temperature etc. fields of the flow
- Parameters like drag, lift etc.
- Both a & b
- None

No, the answer is incorrect.**Score: 0****Accepted Answers:***Parameters like drag, lift etc.*10) τ_{zy} represents

1 point

- Normal stress in Y direction in the plane which has normal in Z direction
- Normal stress in Z direction in the plane which has normal in Y direction
- Shear stress in Y direction in the plane which has normal in Z direction
- Shear stress in Z direction in the plane which has normal in Y direction

No, the answer is incorrect.**Score: 0****Accepted Answers:***Shear stress in Y direction in the plane which has normal in Z direction*

11)

1 point

If the velocity field for a flow on wall is given by $\vec{V} = (3y + 4y^2 - 5y^3)$ where $y = 0$ represents the wall, the ratio of shear stress to dynamic viscosity at $y = 0.7$ is given by

- 1
- 1.25
- 1.5
- 1.75

No, the answer is incorrect.**Score: 0****Accepted Answers:***1.25*



