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Courses » Transport Phenomena of Non-Newtonian Fluids

Announcements **Course** Ask a Question Progress FAQ

Unit 5 - Week 3: Equations of Change

Register for Certification exam

Course outline

How to access the portal

Week 00

Week 1: Introduction of Non-Newtonian Fluids

Week 2: Rheology Measuring Instruments

Week 3: Equations of Change

Lecture 1: Equations of Change for Isothermal Systems

Lecture 2: Equations of Change for Non-Isothermal Systems

Quiz : Week 03 Assignment 01

Week 4: Momentum

Week 03 Assignment 01

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-02-20, 23:59 IST.**

1) Equation describing the time rate of change of density at a fixed point is known as: **4 points**

- Equation of motion
- Equation of energy
- Continuity equation
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Continuity equation

2) For an incompressible fluid, the equation of continuity can be described as **4 points**

- Divergence of temperature is zero
- Divergence of momentum is zero
- Curl of velocity is zero
- Divergence of velocity is zero

No, the answer is incorrect.

Score: 0

Accepted Answers:

Divergence of velocity is zero

3) Momentum transport occur due to following transport mechanism: **4 points**

- Convective transport mechanism
- Molecular transport mechanism
- Both convective and molecular transport mechanism

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|--|-------|--|----------|
| Non-Newtonian Fluids | ce De | 4) Which of the following time derivative is most reliable if there exist flow in the system? | 4 points |
| Week 6: Flow of Non-Newtonian Fluids through Porous Media | | <input type="radio"/> Total time derivative <input type="radio"/> Substantial time derivative <input type="radio"/> Partial time derivative <input type="radio"/> All of the above points a), b) and c) are true | |
| Week 7: Heat Transfer Phenomena of Non-Newtonian Fluids | | No, the answer is incorrect. | |
| Week 8: Heat Transfer Phenomena of Non-Newtonian Fluids | | Score: 0 | |
| Week 9: Mass Transfer Phenomena of Non-Newtonian Fluids | | Accepted Answers: <i>Substantial time derivative</i> | |
| Interaction Session | | 5) Which of the following equation holds good if there exist very slow motion or negligible convection? | 4 points |
| Week 10: Simultaneous Heat and Mass Transfer with Chemical Reactions | | <input type="radio"/> Euler equation <input type="radio"/> Stokes flow or creeping flow equation <input type="radio"/> Both Stokes flow and Euler equations <input type="radio"/> None of the above a), b) and c) points are true | |
| Week 11: Mass Transfer Combined with Heat Transfer | | No, the answer is incorrect. | |
| Week 12: Boundary Layer Flows of Non-Newtonian Fluids | | Score: 0 | |
| | | Accepted Answers: <i>Stokes flow or creeping flow equation</i> | |
| | | 6) Internal energy of a system is associated with: | 4 points |
| | | <input type="radio"/> Kinetic energy of associated molecules <input type="radio"/> Energy associated with vibrations and rotations of molecules <input type="radio"/> Energy associated with molecular interactions of molecules <input type="radio"/> All of the above points a), b) and c) are true | |
| | | No, the answer is incorrect. | |
| | | Score: 0 | |
| | | Accepted Answers: <i>All of the above points a), b) and c) are true</i> | |
| | | 7) Degradation of mechanical energy into thermal energy is known as: | 4 points |
| | | <input type="radio"/> Viscous dissipation <input type="radio"/> Convection of energy <input type="radio"/> Conduction of energy <input type="radio"/> None of the above a), b) and c) points | |
| | | No, the answer is incorrect. | |
| | | Score: 0 | |
| | | Accepted Answers: <i>Viscous dissipation</i> | |
| | | 8) If there exists nuclear energy in a non-isothermal system, associated terms in equation of energy should added as: | 4 points |
| | | <input type="radio"/> Viscous dissipation term <input type="radio"/> Source term <input type="radio"/> Work done due to pressure <input type="radio"/> None of the above a), b) and c) points | |

No, the answer is incorrect.

Score: 0

Accepted Answers:

Source term

9) Most convenient form of energy equation is in terms of?

4 points

- Temperature
- Internal energy
- Enthalpy
- None of the above a), b) and c) points



No, the answer is incorrect.

Score: 0

Accepted Answers:

Temperature

10) Viscous dissipation in non-isothermal flow system is important when

4 points

- Small viscosity and low velocity gradients exist
- High viscosity but low velocity gradients exist
- High viscosity and large velocity gradients exist
- Small velocity but large velocity gradients exist



No, the answer is incorrect.

Score: 0

Accepted Answers:

High viscosity and large velocity gradients exist

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