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Courses » Multiphase Microfluidics Announcements Course Ask a Question Progress Mentor

Unit 6 - Module 4

Course outline

New Unit

assignment zero

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[Week 04 Lec 01] Void Fraction and Pressure drop

[Week 04 Lec 02] Liquid-Liquid Flow: Flow Regimes

Quiz : Assignment 4

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Assignment 4

The due date for submitting this assignment has passed. **Due on 2018-03-08, 13:29 IST.**

Submitted assignment

1.1) Homogeneous void fraction is the volume fraction of the gas if we assume _____ between the two phases **1 point**

- No slip
 free slip
 velocity gradient
 none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

No slip

2) The value of constant C used in Armand's correlation is **1 point**

- 1
 0.5
 0.833
 -1

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.833

3) According to Butterworth-type Correlation for homogeneous model the homogeneous void fraction is _____ to void fraction **1 point**

- Greater than
 Less than
 Equal to
 Has no relation

No, the answer is incorrect.

Score: 0

Accepted Answers:

Equal to

4) Slip ratio is ratio of **1 point**

Liquid to gas velocity ratio

Liquid to gas volume ratio

Gas to liquid volume ratio

Gas to Liquid velocity ratio

No, the answer is incorrect.

Score: 0

Accepted Answers:

Gas to Liquid velocity ratio

5) What is hydraulic diameter (D_H) for square channel (Where D is the channel dimension)

1 point

0.5D

D

2D

0

No, the answer is incorrect.

Score: 0

Accepted Answers:

D

6) X^2 in Lockhart-Martinelli correlation is the ratio of

1 point

Pressure drop for gas-only flow to pressure drop for liquid-only flow

Pressure drop for liquid-only flow to pressure drop for gas-only flow

Liquid velocity gradient to gas velocity gradient

Gas velocity gradient to liquid velocity gradient

No, the answer is incorrect.

Score: 0

Accepted Answers:

Pressure drop for liquid-only flow to pressure drop for gas-only flow

7) The total pressure drop at steady state is sum of

1 point

Accelerational pressure drop

Hydrostatic pressure drop

Frictional pressure drop

All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

8) For water flowing in a circular channel of diameter 1 mm with velocity **1 point** of 0.16 m/s having density of 1000 k/m³ and dynamic viscosity of 1cP, the fanning friction factor(f) is

0.001

0.1

0.01

1

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.1

9) For water flowing in a circular channel of diameter 100 mm with velocity of 0.16 m/s having density of 1000 kg/m^3 and dynamic viscosity of 1cP, the fanning friction factor(f) is 1 point

- 0.005
- 0.001
- 0.002
- 0.007

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

0.007

10) Consider a capillary tube of diameter 0.2 mm for mass flux of $1000 \text{ kg/m}^2 \cdot \text{s}$. obtain the two phase pressure drop for quality of 0.3. 1 point

Given for system viscosity of gas and liquid are $1.8 \times 10^{-5} \text{ kg/m} \cdot \text{s}$ and $0.001 \text{ kg/m} \cdot \text{s}$ respectively and density of gas and liquid as 2.4 kg/m^3 and 1000 kg/m^3

- 47.45×10^{-5}
- 50.35×10^{-5}
- 56.75×10^{-5}
- 53.70×10^{-5}

No, the answer is incorrect.**Score: 0****Accepted Answers:** 47.45×10^{-5}

11) Flow regimes in liquid-liquid flow depends on 1 point

- Contact pattern of fluids at the inlet
- Wetting properties of the two fluids
- Interfacial tension
- All of the above

No, the answer is incorrect.**Score: 0****Accepted Answers:***All of the above*

12) Mode of liquid-liquid flow operations in T-junction can be 1 point

- Cross flowing
- Perpendicular flowing
- Head-on flow

All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

13) At high flow rates of phases in flow focusing devices, which of the following regime is observed? **1 point**

- Dripping
- Squeezing
- Jetting
- Flooding

No, the answer is incorrect.

Score: 0

Accepted Answers:

Jetting

14) A liquid flow in long cylinder breaks into small droplet due to **1 point**

- Kelvin Helmholtz instability
- Drift mirror instability
- Richtmyer–Meshkov instability
- Plateau Rayleigh instability

No, the answer is incorrect.

Score: 0

Accepted Answers:

Plateau Rayleigh instability

15) The void fraction in microchannel can be measured by **1 point**

- Photographic analysis
- Electrical resistance tomography (ERT)
- Electrical capacitance tomography (ECT)
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

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End



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