Unit 6 - Module 4

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

- 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
- 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

- 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) \( \chi^2 \) 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
- 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 of 0.16 m/s having density of 1000 kg/m³ and dynamic viscosity of 1cP, the fanning friction factor(f) is 1 point

- 0.001
- 0.1
- 0.01
- 1

No, the answer is incorrect.
Score: 0
9) For water flowing in a circular channel of diameter 100 mm with velocity of 0.16 m/s having density of 1000 kg/m³ and dynamic viscosity of 1cP, the fanning friction factor (f) is

- 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 kg/m².s. obtain the two phase pressure drop for quality of 0.3.

Given for system viscosity of gas and liquid are $1.8 \times 10^{-5}$ kg/m.s and 0.001 kg/m.s respectively and density of gas and liquid as 2.4 kg/m³ and 1000 kg/m³

- $47.45 \times 10^{-5}$
- $50.35 \times 10^{-5}$
- $56.75 \times 10^{-5}$
- $53.70 \times 10^{-5}$

No, the answer is incorrect.
Score: 0
Accepted Answers: $47.45 \times 10^{-5}$

11) Flow regimes in liquid-liquid flow depends on

- 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

- Cross flowing
- Perpendicular flowing
- Head-on flow
13) At high flow rates of phases in flow focusing devices, which of the following regime is observed?

- Dripping
- Squeezing
- Jetting
- Flooding

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

14) A liquid flow in a long cylinder breaks into small droplets due to

- 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 microchannels can be measured by

- 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