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Unit 4 - Week 3

Assignment 3

The due date for submitting this assignment has passed. Due on 2016-10-05, 05:25 IST.
As per our records you have not submitted this assignment.

1) Match the following *1 point*

1) Rectangular channel	a) Asymmetric Taylor bubble
2) Circular channel	b) Corner drainage
3) Annular channel	c) Axisymmetric Taylor bubble
4) Bends	d) Intense slugging

- 1-d, 2-c, 3-a, 4-b
- 1-b, 2-c, 3-a, 4-d
- 1-c, 2-b, 3-a, 4-d
- 1-b, 2-c, 3-d, 4-a

No, the answer is incorrect.
Score: 0

Accepted Answers:
1-b, 2-c, 3-a, 4-d

2) Taylor bubbles moving through water filled circular tube becomes asymmetric *1 point*

- With inclination
- With insertion of a rod concentrically in the flow passage
- With insertion of a rod eccentrically in a flow passage
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

3) Which of the following statement is correct for Probability Density Function Analysis (PDF)? *1 point*

- The time interval over which the signal is recorded should be sufficiently large
- The time interval over which the signal is recorded should be small
- Measurement interval should be less than the time period of signal fluctuations
- Nature of PDF is not influenced by the time interval over which the signal is recorded

No, the answer is incorrect.
Score: 0

Accepted Answers:
The time interval over which the signal is recorded should be sufficiently large

4) Quick closing valve technique cannot be used to measure void fractions in microsystems because **1 point**

- Valves cannot be installed in the flow passage
- Two phases will not separate under gravity in reduced dimensions
- Microvalves are not available
- Leakage occurs

No, the answer is incorrect.
Score: 0

Accepted Answers:
Two phases will not separate under gravity in reduced dimensions

5) Which of the following is wrong about void fraction estimation in microchannels? **1 point**

- Impedance techniques require prior knowledge about flow patterns
- Radiation – scattering technique is undesirable as the attenuation caused by the two phase mixture is very small
- High intensity radiations are preferable for radiation-scattering technique
- Photographic image analysis is the most commonly used method

No, the answer is incorrect.
Score: 0

Accepted Answers:
High intensity radiations are preferable for radiation-scattering technique

6) How is falling film flow differentiated from annular flow during gas-liquid downflow through vertical conduits? **1 point**

- Annular flow occurs for air-water flows, whereas falling film flow occurs for liquid-liquid flows
- Annular flow is characterized by wavy interface with droplet entrainment, whereas falling film flow is associated with smooth interface
- Annular flow occurs for low liquid velocities, whereas falling film flow occurs for high liquid velocities
- Annular flow occurs for hydrophilic conduits, whereas falling film flow occurs for hydrophobic conduits

No, the answer is incorrect.
Score: 0

Accepted Answers:
Annular flow is characterized by wavy interface with droplet entrainment, whereas falling film flow is associated with smooth interface

7) Which of the following is not true about flow in hydrophobic tubes? **1 point**

- Rivulet and multirivulet flow exist
- Dry zones develop in liquid film region and liquid droplets stick to dry zones
- Dispersed bubbly flow pattern exists with a number of equally shaped spherical bubbles
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Dispersed bubbly flow pattern exists with a number of equally shaped spherical bubbles

8) Pick the correct statement **1 point**

- Mass transfer rate in square shaped monolith channel (catalyst) was found to be greater than that in circular shaped channel
- Mass transfer rate in square shaped monolith channel (catalyst) was found to be lower than that in circular shaped channel
- Mass transfer rate in square shaped monolith channel (catalyst) was found to be same as that in circular shaped channel
- Mass transfer rate was found to be independent of channel shape

No, the answer is incorrect.
Score: 0

Accepted Answers:
Mass transfer rate in square shaped monolith channel (catalyst) was found to be lower than that in circula shaped channel

9) Pick the correct statement (for a circular channel as the inclination is changed from horizontal to vertical upflow) ***1 point***

- The bubble rise velocity increases continuously
- The bubble rise velocity decreases continuously
- The bubble rise velocity increases till it reaches a maximum and then it decreases
- The bubble rise velocity remained same

No, the answer is incorrect.
Score: 0

Accepted Answers:
The bubble rise velocity increases till it reaches a maximum and then it decreases

10) Find out the Taylor bubble rise velocity (in m/s) through a liquid filled annular conduit for an inertia dominant system. Given, the outer and inner diameters of annular region are 20 cm and 10 cm respectively. Use the equiperiphery diameter as the characteristic dimension of an annulus. ***1 po***

- 0.55
- 1.23
- 0.35
- 0.12

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.55

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