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Unit 4 - Module 2

Course outline

New Unit

assignment zero

Module 1

Module 2

[Week 2 Lec 01]
Flow Regimes 2

[Week 2 Lec 02]
Taylor Flow 1

[Week 2 Lec 03]
Taylor Flow 2

Quiz :
Assignment 2

Module 3

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Assignment 2

The due date for submitting this assignment has passed. **Due on 2018-02-22, 13:29 IST.**

Submitted assignment

1) A Taylor bubble always have liquid film surrounding it. 1 point

- True
 False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True

2) The Taylor bubble moves _____ than the average liquid velocity. 1 point

- Slower
 Faster
 Equal
 None

No, the answer is incorrect.

Score: 0

Accepted Answers:

Faster

3) According to Bretherton's correlation, the thickness of the liquid film surrounding the Taylor bubble is a function of _____. 1 point

- Capillary number
 Reynolds number
 Weber number
 All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Capillary number

4) Homogeneous volume fraction is equal to the gas hold-up or void fraction 1 point

- When there is no slip between the two phases
 Bubbly flow regime
 Annular flow regime
 Taylor flow regime

No, the answer is incorrect.

Score: 0

Accepted Answers:

When there is no slip between the two phases

5) In an annular flow configuration, superficial gas velocity would be _____ than the actual gas velocity. **1 point**

- Same
- More
- Less
- No relation between the two

No, the answer is incorrect.

Score: 0

Accepted Answers:

Less

6) In bubble frame of reference, Taylor flow appears to be steady. **1 point**

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True

7) The velocity profile in the liquid slug in the laboratory frame of reference is **1 point**

- Plug type
- Close to parabolic
- Has positive and negative velocities (corresponding to internal recirculations)
- None

No, the answer is incorrect.

Score: 0

Accepted Answers:

Close to parabolic

8) The A&Q correlation can be obtained by Bretherton's analysis when we consider (R = tube radius, R_{Front} = Radius of bubble front, b = film thickness surrounding the bubble) **1 point**

- $R = R_{Front}$
- $R = R_{front} + b$
- $R = R_{front} - b$
- $R = b$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$R = R_{front} + b$

9) In lubrication approximation **1 point**

- Cartesian coordinates can be considered
- Inertial term can be neglected
- Inertial term should be considered
-
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Cartesian coordinates can be considered

10 Curvature of a sphere of radius R is

1 point

- Zero
- Infinite
- 1/R
- 2/R

No, the answer is incorrect.

Score: 0

Accepted Answers:

2/R

11 Curvature of a cylinder of radius R is

1 point

- Zero
- Infinite
- 1/R
- 2/R

No, the answer is incorrect.

Score: 0

Accepted Answers:

1/R

12 The shape of the Taylor bubble at the front and back for air-water flow is

1 point

- Same
- Bubble rear is flat than the front
- Small undulations at the rear are observed
- Both B and C

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both B and C

13 Rivulet flow can be expected when

1 point

- Gas velocity is very low
- Gas velocity is high and channel wall is of hydrophobic material
- Liquid velocity is very high
- None

No, the answer is incorrect.

Score: 0

Accepted Answers:

Gas velocity is high and channel wall is of hydrophobic material

14 As the size of the channel decreases, the area occupied by slug flow on the flow regime map

1 point

- Remains unaffected
- Increases
- Decreases
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Increases

15 Annular flow occurs

1 point

- When gas inertia is negligible to that of the liquid
- When liquid inertia is negligible to that of the gas
- When gas inertia is comparable to that of the liquid
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

When gas inertia is comparable to that of the liquid

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