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Courses » Spray Theory

Announcements

Course

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Unit 2 - Week 1: Introduction to sprays and atomization

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Course outline

How to access
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Week 1: Introduction to sprays and atomization

- Introduction to sprays and their applications
- Spatial versus Temporal Sampling
- Spatial Vs Temporal Sampling example problem
- Steady vs unsteady spray
- Week - 1 Feedback Form
- Quiz : Assignment 1

Week 2: Drop size and velocity distributions

Week 3: Atomizers and their designs

Assignment 1

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-02-13, 23:59 IST.**

1) The evaporation rate of liquid _____ by increasing the surface area of the liquid. **1 point**

- increases
- decreases
- remains constant
- become zero

No, the answer is incorrect.

Score: 0

Accepted Answers:
increases

2) The initial diameter of the liquid droplet is 1mm and it breaks into _____ number of monodispersed droplets of size 10 micron. **1 point**

- 10^2
- 10^3
- 10^6
- 10^9

No, the answer is incorrect.

Score: 0

Accepted Answers:
 10^6

3) For the above question, what is the order of increase in surface area? **1 point**

- 10
- 100

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theory		
Week 6: Atomization theory		
Week 7: Spray theory		
Week 8: Spray theory		
Week 9: Practical aspects of atomizer fabrication and manufacturing		
Week 10: Multiphase flow models of sprays		
Week 11: Multiphase flow models of sprays		
Week 12: Spray evaporation and combustion		
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4) The properties of the spray are considered to be _____ when the time stamp of instantaneous spray image is indistinguishable. **1 point**

unsteady
 steady
 uniform
 non-uniform

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

5) what are the scalar properties of the spray **1 point**

drop size and velocity
 drop size and temperature
 velocity and concentration
 none of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
drop size and temperature

6) Among the following which are microscopic measure of a spray? **1 point**

Rate of evaporation and penetration length
 Velocity distribution and spray angle
 Size and velocity distribution
 mass flow rate and spray (width or spread)

No, the answer is incorrect.
Score: 0
Accepted Answers:
Size and velocity distribution

7) Consider a semi-infinite pipe with the entry to the pipe located at $x=0$. Into this pipe, three classes of drops are being injected: $10\mu\text{m}$ drops are being injected at 100 drops per second with a velocity 1m/s , $20\mu\text{m}$ drops are being injected at 200 drops per second with a velocity 0.2m/s and $50\mu\text{m}$ drops are being injected at 500 drop per second with a velocity 0.5m/s . If the drops are sampled temporally for a time of 1 second, what is the arithmetic mean diameter of the sample? **1 point**

$36.5\mu\text{m}$
 $37.5\mu\text{m}$
 $38.5\mu\text{m}$
 $39.5\mu\text{m}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $37.5\mu\text{m}$

8) For the above question, if the drops are sampled spatially with the frame containing 1m of the pipe, what will be the sample mean diameter? **1 point**

- 33.8 μm
- 21.2 μm
- 46.5 μm
- 12.8 μm

No, the answer is incorrect.

Score: 0

Accepted Answers:

33.8 μm

9) For the above question, the sampling frame increased to 5m then the mean diameter_____.

1 point

- Increases 5 times
- Increases 25 times
- remains same
- decreases 5 times

No, the answer is incorrect.

Score: 0

Accepted Answers:

remains same

10) At what condition the spatial and temporal sampling will be same?

1 point

- The velocity of the droplets are all same
- The production rates of droplets are all same
- The size of the droplets are all same
- None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

None of the above.

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