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NPTEL

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Courses » Spray Theory

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Unit 3 - Week 2: Drop size and velocity distributions

Register for Certification exam

Course outline

How to access the portal

Week 1: Introduction to sprays and atomization

Week 2: Drop size and velocity distributions

- Statistical measures on spray
- Discussion on pdf and moments
- Size velocity correlation
- Quiz : Assignment 2
- Week 2 Feedback Form

Week 3: Atomizers and their designs

Week 4: Atomizers and their designs

Week 5:

Assignment 2

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) Choose the following observation have infinitely many (i.e. real) outcomes ***1 point***

- Spray droplet size
- Spray cone angle
- Spray droplet velocity
- All the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All the above

2) If f(r) is the probability density function and dr is bin width then summation of f(r)dr is ***1 point***

- 1
- 0
- -1
- Infinity

No, the answer is incorrect.
Score: 0

Accepted Answers:
1

Click here to view the data sheet.

The data sheet has 10,000 droplets arrival time (s), size (μm) and velocity (m/s). The data was measured in the atomizer exit using PDPA equipment. Analyze the data and answer the following questions.

- 21.3

No, the answer is incorrect.
Score: 0

Accepted Answers:
46.8

4) What is the Area mean diameter, D_{20} (in μm) for the entire data set? ***1 point***

- 36.9
- 29.8
- 53.8
- 69.8

No, the answer is incorrect.
Score: 0

Accepted Answers:
53.8

5) What is the Sauter Mean Diameter, D_{32} (in μm) for the entire data set? ***1 point***

- 74.9
- 83.9
- 37.3
- 49.8

No, the answer is incorrect.
Score: 0

Accepted Answers:
83.9

6) What is the value of D_{43} for the entire data set? ***1 point***

- 111
- 132
- 100
- 110

No, the answer is incorrect.
Score: 0

Accepted Answers:
110

7) What is the probability of finding a drop in the range 30μm ≤D_i ≤40μm ? ***1 point***

- 0.39
- 0.29
- 0.11
- 0.40

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.29

8) What is the mean velocity (in m/s) of the drops in the range 10μm ≤D_i ≤20μm ? ***1 point***

- 1.27

- 6.45
- 7.62
- 5.41

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.27

9) If the total drops are divided into two halves: slower half $(V_i < 5.3m/s)$ and faster half $(V_i \geq 5.3m/s)$. The value of D_{10} and D_{32} (in μm) for the slower half are **1 point**

- 32.8 and 56.8
- 76.8 and 28.4
- 38.7 and 64.3
- 28.4 and 44.4

No, the answer is incorrect.
Score: 0

Accepted Answers:
38.7 and 64.3

10) For the above question, what are the values of D_{10} and D_{32} (in μm) for the faster half? **1 point**

- 38.7 and 64.3
- 71.1 and 101.8
- 28.4 and 44.4
- 28.4 and 76.8

No, the answer is incorrect.
Score: 0

Accepted Answers:
71.1 and 101.8

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