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Unit 4 - Week 3: Atomizers and their designs

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Course outline

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Week 1: Introduction to sprays and atomization

Week 2: Drop size and velocity distributions

Week 3: Atomizers and their designs

- Discussion on Interfacial tension
- Introduction to Atomizers and their design-1
- Introduction to Atomizers and their design-2
- Quiz : Assignment 3
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Week 4: Atomizers and their designs

Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2019-02-20, 23:59 IST.**

1) Which force is responsible for liquids to stay together as bulk? ***1 point***

- gravity
- viscous
- surface tension
- All the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
surface tension

2) Why liquid drops are in spherical shape in an equilibrium state or in a state of rest? ***1 point***

- to maintain low interfacial energy
- to maintain low surface area
- to become a stable drop
- All the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All the above

3) When a rain drop attains its terminal velocity, what are the forces that get balanced? ***1 point***

- viscous and surface tension
- viscous and gravity

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4) One milliliter of liquid droplet breaks into equal size of 10micron drops. What is the minimum amount of energy required to perform this atomization process? **1 point**

- 5.2 mJ
- 43.2 mJ
- 68.4 mJ
- 100.6 mJ

No, the answer is incorrect.
Score: 0

Accepted Answers:
43.2 mJ

5) One milliliter of liquid droplet breaks into multiple drops of different size. What is the mean surface area if D_{32} of spray is 50 micron? **1 point**

- 0.01 m^2
- 0.02 m^2
- 0.03 m^2
- 0.04 m^2

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.02 m^2

6) In the bifurcation of the work output from a spray nozzle, the major constituent of energy lies **1 point**

- to generating kinetic energy of drops
- to break the interfacial energy
- to heat the working liquid
- in equal distribution of above all

No, the answer is incorrect.
Score: 0

Accepted Answers:
to generating kinetic energy of drops

7) The tangential inlet in a simplex pressure swirl atomizer is to **1 point**

- transform K.E to swirl energy
- increase pressure drop in the inlet
- create unsteady flow inside the swirl chamber
- none of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
transform K.E to swirl energy

8) Which atomizer have high turn down ratio **1 point**

- solid cone simplex nozzle
- spill return nozzle
- plane orifice nozzle

- fan spray nozzle

No, the answer is incorrect.
Score: 0

Accepted Answers:
spill return nozzle

9) In the simplex pressure swirl atomizer, the liquid surface tension increases by two fold then the flow rate _____ for the same supply pressure. **1 point**

- increases
- decreases
- remains unaltered
- become double

No, the answer is incorrect.
Score: 0

Accepted Answers:
remains unaltered

10) Diesel injector exhibits **1 point**

- primary breakup only
- secondary breakup only
- both primary and secondary breakup
- none of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
both primary and secondary breakup

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