

Unit 4 - Week 1 :

Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-14, 23:59 IST.

1) The temperature of water is increased from -10°C to 110°C keeping the pressure constant at 0.5 kPa. Which among the following statements regarding the phase of water in this process is TRUE?

1 point

- (a) Ice sublimates directly from the solid to the vapour phase.
(b) Ice melts first into a liquid and then subsequently evaporates.
(c) Ice melts into a liquid and remains as a liquid till the temperature reaches 110°C .
(d) None of the above

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
a

2) The temperature of water is increased from -10°C to 50°C keeping the pressure constant at 10 kPa. Which among the following statements regarding the phase of water in this process is TRUE?

1 point

- (a) Ice sublimates directly from the solid to the vapour phase.
(b) Ice melts into a liquid and remains as a liquid till the temperature reaches 50°C .
(c) Ice melts first into a liquid and then subsequently evaporates.
(d) None of the above

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

3) Determine the phase of water for each of the following states.

1 point

- (1) 100°C , 90 kPa
(2) 100°C , 110 kPa
(3) 100°C , $1\text{ m}^3/\text{kg}$
(a) (1) Superheated vapour, (2) Subcooled liquid, (3) Saturated liquid-vapour mixture
(b) (1) Subcooled liquid, (2) Superheated vapour, (3) Superheated vapour
(c) (1) Subcooled liquid, (2) Superheated vapour, (3) Saturated liquid-vapour mixture
(d) (1) Superheated vapour, (2) Superheated vapour (3) Subcooled liquid

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
a

4) A pressure cooker has the lid screwed on tight. A small opening with $A = 6\text{ mm}^2$ is covered with a petcock that can be lifted to let steam escape. How much mass should the petcock have to allow boiling at 130°C with an outside atmosphere at 100 kPa? Assume $g = 10\text{ m/s}^2$.

1 point

- (a) 60 grams
(b) 102 grams
(c) 162 grams
(d) 222 grams

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
b

5) Common data for Question 5 to 7:
Determine the missing properties for water.

1 point

$T\text{ [}^{\circ}\text{C]}$	$P\text{ [kPa]}$	$v\text{ [m}^3/\text{kg]}$	x (if applicable)	Phase description
50	P_1	7.72	x_1	Phase 1

The value of P_1 (in kPa) is

- (a) 7.384
(b) 12.350
(c) 19.941
(d) 101.3

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
b

6) The value of x_1 is

1 point

- (a) 0.24
(b) 0.34
(c) 0.44
(d) 0.64

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
d

7) Phase 1 is

1 point

- (a) Compressed liquid
(b) Superheated vapour
(c) Saturated liquid-vapour mixture
(d) Cannot be determined

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

8) Common data for Question 8 and 9:
Determine the missing properties for water.

1 point

$T\text{ [}^{\circ}\text{C]}$	$P\text{ [kPa]}$	$v\text{ [m}^3/\text{kg]}$	Phase description
250	400	v_2	Phase 2

The value of v_2 (in m^3/kg) is

- (a) 0.595
(b) 0.773
(c) 1.01
(d) 1.24

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
a

9) Phase 2 is

1 point

- (a) Compressed liquid
(b) Superheated vapour
(c) Saturated liquid-vapour mixture
(d) Cannot be determined

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
b

10) Common data for Question 10 and 11:
Determine the missing properties for water.

1 point

$T\text{ [}^{\circ}\text{C]}$	$P\text{ [kPa]}$	$v\text{ [m}^3/\text{kg]}$	Phase description
140	500	v_3	Phase 3

The value of v_3 (in m^3/kg) is

- (a) 0.509
(b) 0.306
(c) 0.217
(d) 0.001

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
d

11) Phase 3 is

1 point

- (a) Superheated vapour
(b) Saturated liquid-vapour mixture
(c) Compressed liquid
(d) Cannot be determined

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

12) Common data for Question 12 to 13:
Determine the missing properties for water.

1 point

$T\text{ [}^{\circ}\text{C]}$	$P\text{ [kPa]}$	$v\text{ [m}^3/\text{kg]}$	x
T_4	1000	v_4	0.75

The value of T_4 (in $^{\circ}\text{C}$) is

- (a) 151.86
(b) 179.91
(c) 198.32
(d) 212.42

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
b

13) The value of v_4 (in m^3/kg) is

1 point

- (a) 0.0011
(b) 0.0978
(c) 0.1461
(d) 0.1933

- ☐ a
☐ b
☐ c
☐ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
c

Course outline

How to access the portal

Data Attachment

Week 0 Assignment 0

Week 1 :

- ☐ Lecture 01 :
Introductory Concepts
☐ Lecture 02 :
Properties of Pure Substances
☐ Lecture 03 :
Properties of Pure Substances (contd.)
☐ Lecture 04 :
Introduction to Property Tables
☐ Lecture 05 :
Properties of Pure Substances: Example problems (contd.)

Quiz : Assignment 1

Feedback for Week 1

Week 2 :

Week 3 :

Week 4 :

Week 5 :

Week 6 :

Week 7 :

Week 8 :

Week 9 :

Week 10 :

Week 11 :

Week 12 :

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Assignment Solution

Text Transcripts