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Courses » Upstream LNG Technology

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# Unit 11 - Week 10

## Course outline

[How to access the portal](#)[Week 1](#)[Week 2](#)[Week 3](#)[Week 4](#)[Week 5](#)[Week 6](#)[Week 7](#)[Week 8](#)[Week 9](#)**Week 10** Lecture 66 : Pumps in natural gas systems - III Lecture 67 : Tutorial on pumps -I Lecture 68 : Tutorial on pumps -II Lecture 69 : Crystalline

## Assignment 10

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-10-10, 23:59 IST.**

1) Which among the following, influence(s) pump performances? **1 point**

- a) Pump shape
- b) Pump size
- c) Type of fluid
- d) Operating conditions

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- a) Pump shape*
- b) Pump size*
- c) Type of fluid*
- d) Operating conditions*

2) Which among the following can be used for flow rate control in dynamic pump systems? **1 point**

- a) Valve throttling
- b) Speed control
- c) Movable inlet guide vanes
- d) All of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- d) All of the above*

3) Which among the following is TRUE for Axial flow pumps? **1 point**

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and liquefaction  
in natural gas  
systems - II

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refrigeration - I

Lecture 72 :  
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Lecture 73 :  
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**Score: 0**

**Accepted Answers:**

*c) Low head and high flow rate*

4) Which among the following gives the specific speed of a pump? **1 point**

a)  $N_s = \frac{(H)^{1/2}}{N^{1/3}\sqrt{Q}}$

b)  $N_s = \frac{N\sqrt{Q}}{(H)^{5/4}}$

c)  $N_s = \frac{N\sqrt{Q}}{(H)^{3/4}}$

d)  $N_s = \frac{(H)^{3/4}}{N\sqrt{Q}}$

a

b

c

d

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*c*

5) For a Carnot refrigerator operating between 330 K and 60 K, the coefficient of performance of the refrigerator is **1 point**

a) 0.222

b) 0.312

c) 0.546

d) 0.897

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*a) 0.222*

6) The minimum work requirement to remove 300 W from a region at 12.0 K for a sink temperature of 310 K, would be **1 point**

a) 5468 W

b) -7450 W

c) -5468 W

d) 54.68 kW

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*b) -7450 W*

7) Which among the following is true for adiabatic expansion? **0 points**

a) Will always result in cooling of gas after expansion

b) Will not produce external work

c) Cannot usually handle two-phase vapour-liquid system

- d) If the working fluid is ideal gas, the expansion results in the lowering of temperature

No, the answer is incorrect.

Score: 0

Accepted Answers:

b) Will not produce external work

- 8) Out of the following, which is/are true for Linde-Hampson refrigeration system? **1 point**

- a) Nitrogen is used as refrigerant to maintain the temperature between 66 and 115 K.
- b) Lowest temperature is limited by the triple point of the refrigerant at which the refrigerant would freeze.
- c) Highest temperature is dictated by the critical point of the refrigerant at which heat of vaporization becomes zero.
- d) Cooled gas is expanded through a Joule-Thomson valve to create two-phase mixture.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- a) Nitrogen is used as refrigerant to maintain the temperature between 66 and 115 K.
- b) Lowest temperature is limited by the triple point of the refrigerant at which the refrigerant would freeze.
- c) Highest temperature is dictated by the critical point of the refrigerant at which heat of vaporization becomes zero.
- d) Cooled gas is expanded through a Joule-Thomson valve to create two-phase mixture.

- 9) If a gas gets heated up during depressurization, its Joule-Thomson coefficient ( $\mu_{JT}$ ) of the gas is always **1 point**

- a) Greater than zero
- b) Equal to zero
- c) Less than zero
- d) None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

c) Less than zero

- 10) The source temperature for an ideal isobaric-source refrigerator varies from  $5K(T_1)$  to  $25K(T_2)$  while removing 2.5 kW of energy (Q) from the low temperature source, using an ideal gas as the working fluid. If the sink temperature ( $T_0$ ) is 305 K, the COP is **1 point**

- a. 0.0424
- b. 0.1056
- c. -0.0424
- d. -0.1056

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. 0.0424

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