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NPTEL

Unit 11 - Week 10

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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Score: 0

Accepted Answers:
c) Low head and high flow rate

4) ***1 point***

Which among the following gives the specific speed of a pump?

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 (μ_{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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