TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From K/A catalogs, rev. 3 draft)
QID: P7769 (B7769)

For which of the following ideal processes, if any, is the steam inlet enthalpy equal to the steam outlet enthalpy? (Assume horizontal flow in each process.)

(A) Dry saturated steam flowing through a pressure reducing valve.
(B) Dry saturated steam flowing through a fixed convergent nozzle.

A. (A) only

B. (B) only

C. Both (A) and (B)

D. Neither (A) nor (B)

ANSWER: A.

TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From K/A catalogs, rev. 3 draft)
QID: P7779 (B7779)

Refer to the drawing of a section of 6-inch diameter pipe containing subcooled water flowing from left to right at 100 gpm (see figure below). The pipe is frictionless and no heat transfer is occurring. Point B is 10 feet higher in elevation than point A.

How does the enthalpy of the water at point A compare to point B?

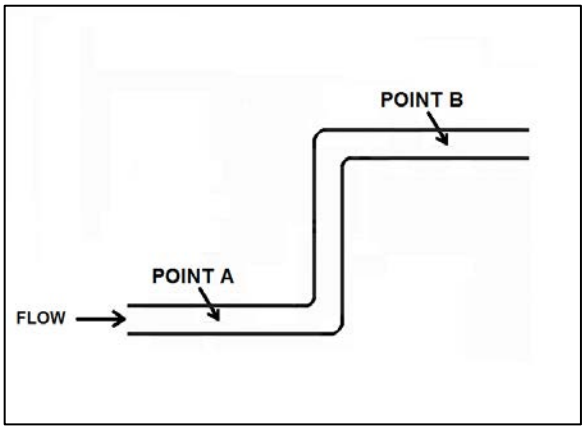
A. The enthalpy of the water at point A is smaller, because some of the water's kinetic energy is converted to enthalpy as it flows to point B.

B. The enthalpy of the water at point A is greater, because some of the water's enthalpy is converted to potential energy as it flows to point B.

C. The enthalpy of the water at points A and B is the same, because the pipe is frictionless and no heat transfer is occurring.

D. The enthalpy of the water at points A and B is the same, because the total energy of the water does not change from point A to point B.

ANSWER: B.



TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From K/A catalogs, rev. 3 draft)
QID: P7799 (B7799)

For which of the following ideal processes, if any, is the fluid outlet enthalpy greater than the fluid inlet enthalpy? (Assume horizontal fluid flow in each process.)

(A) Cooling water flowing through a fixed convergent nozzle.
(B) Cooling water flowing through an operating lube oil heat exchanger.

A. (A) only

B. (B) only

C. Both (A) and (B)

D. Neither (A) nor (B)

ANSWER: B.

TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From Nureg-1122/3, Rev 3)
QID: P7809 (B7809)

Given the following steam parameters:

Pressure = 1,000 psia
Quality = 98 percent

The specific enthalpy of the steam would be greater if the pressure of the steam was 100 psia _____ at the same quality; or if the quality of the steam was 1 percent _____ at the same pressure.

A. higher; higher

B. higher; lower

C. lower; higher

D. lower; lower

ANSWER: C.

TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From PWR K/A Catalog, r3.)
QID: P7829 (B7829)

Consider a stationary steam nozzle in the first stage of a main turbine. Assume the steam nozzle is frictionless, with no heat gain or loss.

Compared to the enthalpy of the steam entering the nozzle, the enthalpy of the steam exiting the nozzle is _____, because the nozzle converts _____.

A. lower; enthalpy into kinetic energy.

B. lower; enthalpy into flow energy.

C. the same; flow energy into kinetic energy.

D. the same; kinetic energy into flow energy.

ANSWER: A.

TOPIC: 193002
KNOWLEDGE: K1.06 [2.6/2.6] (From K/A catalogs, rev. 3 draft)
QID: P7789 (B7789)

Refer to the drawing of a simple Rankine cycle shown on a Temperature-Entropy (T-S) diagram (see figure below). The starting point for the numbers on the diagram was chosen at random.

Note: A simple Rankine cycle does not include condensate/feedwater heating, turbine exhaust moisture removal, or steam reheat.

The sequence of numbers that represents the total heat added in the steam generators is _____; and the sequence of numbers that represents the total heat rejected in the main condenser is _____.

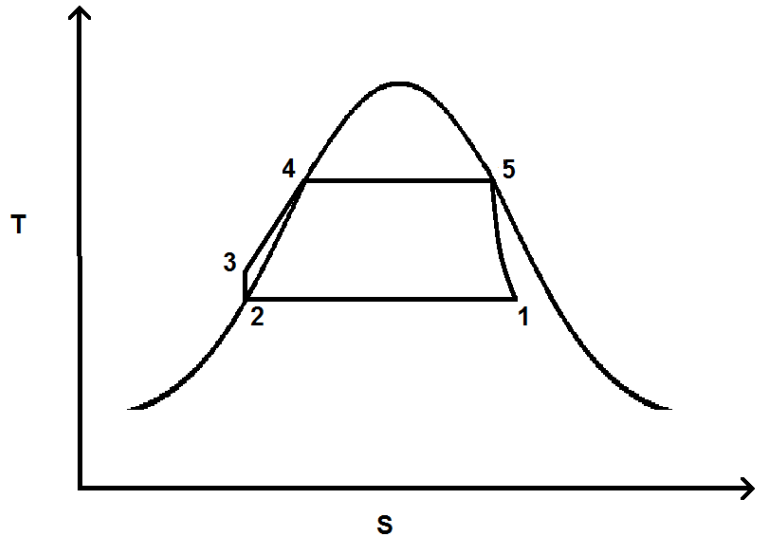
A. 2 → 3 → 4; 1 → 2

B. 3 → 4 → 5; 1 → 2

C. 2 → 3 → 4; 5 → 1

D. 3 → 4 → 5; 5 → 1

ANSWER: B.



TOPIC: 193002
KNOWLEDGE: K1.06 [2.6/2.6] (From K/A catalogs, rev. 3 draft)
QID: P7819 (B7819)

Refer to the drawing of a simple Rankine cycle shown on a Temperature-Entropy (T-S) diagram (see figure below). The order of the numbers on the diagram was randomly chosen.

Note: A simple Rankine cycle does not include condensate/feedwater heating, turbine exhaust moisture removal, or turbine exhaust reheat.

The point that represents the water in the main condenser hotwell is number _____; and the point that represents the steam at the outlet of a steam generator is number _____.

A. 3; 1

B. 3; 2

C. 5; 1

D. 5; 2

ANSWER: A.