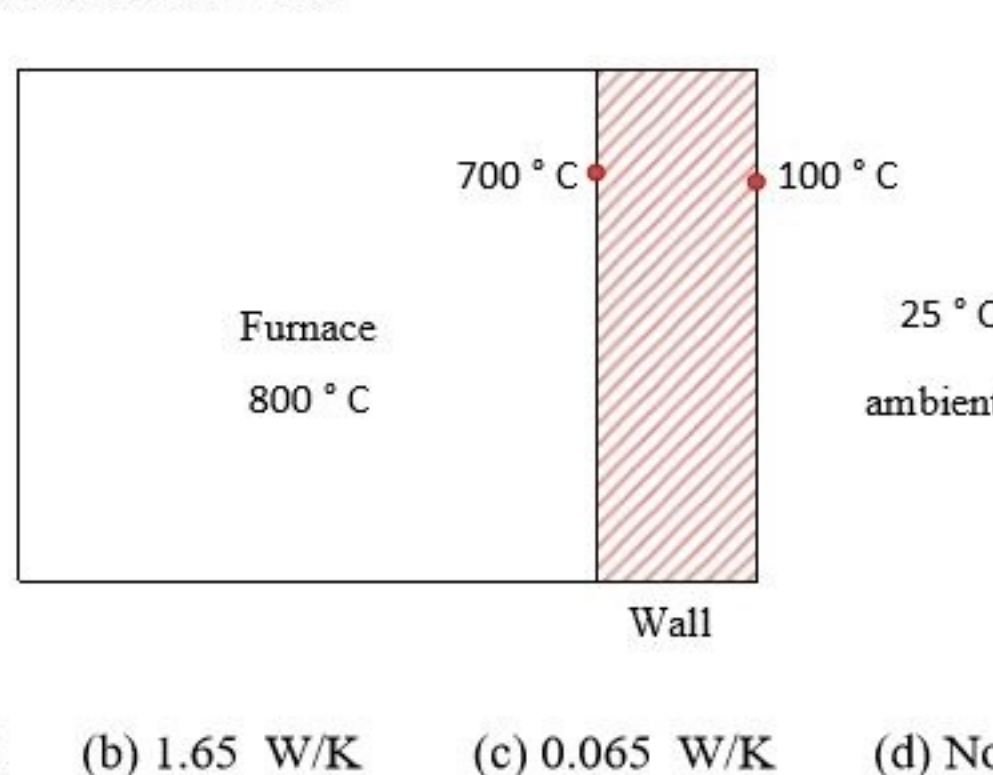


Unit 4 - Week 2

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Assignment 2

 The due date for submitting this assignment has passed. **Due on 2019-08-21, 23:59 IST.**
 As per our records you have not submitted this assignment.

- 1) Entropy is
- (a) an intensive property
(b) an extensive property
(c) path function
(d) none of the above
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: b
- 2) For a closed system undergoing an irreversible process, the entropy of the system
- (a) always increase
(b) always decrease
(c) remain constant
(d) can increase, decrease or remain constant
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: d
- 3) What is the correct expression for a system undergoing a reversible cycle?
- (a) $\oint \frac{\delta Q}{T} > 0$
(b) $\oint \frac{\delta Q}{T} < 0$
(c) $\oint \frac{\delta Q}{T} = 0$
(d) None of the above
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: c
- 4) Quality of the waste heat
- (a) depends on its temperature only
(b) depends on its chemical composition only
(c) does not depend on both temperature and chemical composition
(d) depends on both temperature and chemical composition
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: d
- 5) The maximum useful work obtainable as a system goes to dead state
- (a) is the pdv work
(b) is the entropy
(c) is the availability
(d) none of the above
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: c
- 6) The quality of energy utilization is determined by
- (a) First law efficiency
(b) Second law efficiency
(c) Using both efficiencies
(d) None of the above
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: b
- 7) Second law efficiency of a refrigerator is equal to
- (a) $\frac{COP_{reversible}}{COP}$
(b) $\frac{W_{reversible}}{W_{actual}}$
(c) $\frac{W_{actual}}{W_{reversible}}$
(d) $\frac{Q_{in}}{W_{actual}}$
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: b
- 8) Availability of the system during a process
- (a) remains constant
(b) always increases
(c) destroys due to irreversibility
(d) None of the above
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: c
- 9) Figure of merit of a heat pump
- (a) always less than 1
(b) always greater than 1
(c) between 0 to 1
(d) remains constant at 1
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: b
- 10) The correct statements regarding irreversibility
- (a) Irreversibility is not caused by free expansion
(b) Flow of heat from high temperature to low temperature can take place without any irreversibility
(c) Irreversibility decreases the work done in a heat engine
(d) Irreversibility is equal to $T_0 S_{gen}$
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: c
d
- 11) In an industry waste heat source having an amount of 300 kW is available at 600 °C. The ambient temperature is 25 °C. The exergy of the waste heat source is
- (a) 197.6 kW (b) 287.5 kW (c) 150 kW (d) 300 kW
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: a
- 12) The waste heat from the source given in the above example (problem 11) is used to heat a product, initially at ambient temperature. Only 65% of waste heat could be transferred to the product, rest is lost. The product temperature is raised to 150 °C. What is the exergetic efficiency of the process
- (a) 25% (b) 29% (c) 58% (d) 64%
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: b
- 13) There are two cyclic heat engine, engine A receives 500 kJ of heat from an 800 K source and rejects 300 kJ to a 400 K sink. Engine B receives 650 kJ of heat from a 1000 K source and rejects 300 kJ to a 298 K sink. Which statement is correct?
- (a) Engines A and B are reversible
(b) Engine A is reversible but B is irreversible
(c) Engine A is irreversible but B is reversible
(d) Both engines are irreversible
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: d
- 14) Heat transfer occurs steadily from a furnace to the surrounding across its wall at the rate of 1 kW as shown below. The temperatures of the inner and outer surfaces of the wall are 700 °C and 100 °C, respectively. Find the rate of entropy generation in the wall?
- 
- (a) 0.65 W/K (b) 1.65 W/K (c) 0.065 W/K (d) None of the above
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: b
- 15) For the above problem (problem 14), find the rate of total entropy generation for the heat transfer process if the furnace is maintained at 800 °C and ambient is at 25 °C?
- (a) 0.42 W/K (b) 1.42 W/K (c) 2.42 W/K (d) Insufficient data
- a
 b
 c
 d
- No, the answer is incorrect.
Score: 0
Accepted Answers: c