

This chapter has 57 questions.
Scroll down to see and select individual questions or narrow the list using the checkboxes below.

Select0 questions at random andkeep in order

- ☐ Multiple Choice Questions - (45)
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1. The second law of thermodynamics says that the total amount of entropy, or randomness, in the universe cannot decrease. However, we see all around us objects that become more ordered—for example, the development of a biological organism or water that freezes. The decrease in entropy, or randomness, in such cases does not violate the second law because
- ☐ energy must be removed.

☐ energy must be added.

☒ there is always a greater increase in entropy somewhere else.

☐ water and living things do not have entropy.

Select

Multiple Choice Question

MC The second law of thermodynamics says that t...

2. Why couldn't you use an electric motor to turn an electrical generator that in turn provides the electrical energy for the motor?
- ☒ No energy converter is 100% efficient.

☐ Yes, you can do this!

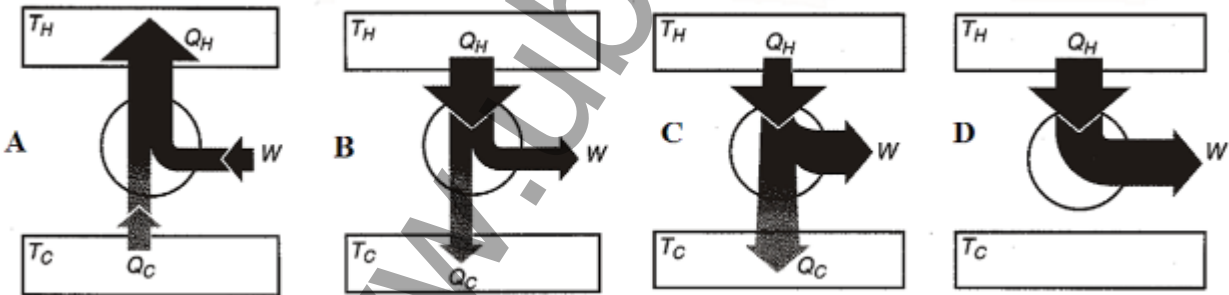
☐ Motors require AC and generators produce DC.

Select

Multiple Choice Question

MC Why couldn't you use an electric motor to tur...

3. Shown below are 4 figures that represent the heat flow in a heat engine. The thickness of the arrows represents the amount of heat flow. T_H is the high-temperature reservoir, T_C is the low-temperature reservoir, Q_H is heat to/from T_H , Q_C is heat to/from T_C , and W is work. Which figure best represents a real heat engine?



Select

- ☐ A
- ☒ B
- ☐ C
- ☐ D

Multiple Choice Question

MC Shown below are 4 figures that represent the...

4. Energy added to a cyclical heat engine
- ☐ is completely converted to external work.

☒ is converted to work and to waste heat.

☐ is used to generate work that is greater than the added energy.

☐ is converted to increased internal energy in the engine plus external work.

Select

Multiple Choice Question

MC Energy added to a cyclical heat engine

5. The primary function of any heat engine is to
- ☐ create a large amount of energy from a small amount of heat.

☐ create heat.

Select

Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: The second law of thermodynamics

Type: Conceptual

Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Perpetual motion and energy frauds

Type: Conceptual

Difficulty: Medium

Gradable: automatic

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

Type: Graphical

Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Heat engines

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

- ☐ convert heat into work.
☐ destroy energy and replace it with work.

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Heat engines
 Type: Conceptual
 Type: Definition

Multiple Choice Question

MC The primary function of any heat engine is t...

6. The work performed by a heat engine
- ☐ equals the heat energy exhausted from the engine.
 - ☐ equals the heat energy entering the engine.
 - ☐ equals the change in the internal energy of the engine.
 - ☐ equals the net heat flow into the engine.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Medium
 Gradable: automatic
 Topic: Heat engines
 Type: Conceptual

Multiple Choice Question

MC The work performed by a heat engine

7. The change in internal energy during one complete cycle of a heat engine
- ☐ equals zero.
 - ☐ equals the net heat flow into the engine.
 - ☐ equals the heat energy exhausted from the engine.
 - ☐ equals the heat energy entering the engine.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Heat engines
 Type: Conceptual

Multiple Choice Question

MC The change in internal energy during one com...

8. One important feature of the Carnot cycle is that it
- ☐ maximizes the entropy of a heat engine operating between two temperatures.
 - ☐ specifies the operating temperatures of any heat engine.
 - ☐ converts all of the heat flowing into an engine to work.
 - ☐ predicts the maximum efficiency of a heat engine operating between two temperatures.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: The second law of thermodynamics
 Type: Conceptual
 Type: Definition

Multiple Choice Question

MC One important feature of the Carnot cycle is...

9. The efficiency of an engine can be defined as the
- ☐ ratio of work done to energy input.
 - ☐ total amount of work performed.
 - ☐ ratio of work done to energy exhausted.
 - ☐ ratio of heat exhausted to heat intake.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Heat engines
 Type: Conceptual
 Type: Definition

Multiple Choice Question

MC The efficiency of an engine can be defined a...

10. If a Carnot heat engine is run in reverse, it becomes
- ☐ a heat engine with the smallest possible efficiency.
 - ☐ an engine that has a negative efficiency.
 - ☐ a refrigerator.
 - ☐ nothing. It can't be run in reverse because to do so would violate the second law of thermodynamics.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Refrigerators, heat pumps, and entropy
 Type: Conceptual
 Type: Definition

Multiple Choice Question

MC If a Carnot heat engine is run in reverse, i...

Select 

11. A correct statement of the Second Law of Thermodynamics is
- ☐ the random motion of gas molecules will be decreased if energy is added to a gas.
 - ☐ there is no process that can make heat flow from a cold object to a hot object.
 - ☐ no heat engine can have an efficiency greater than 30%.
 - ☐ heat will not flow spontaneously from a cold object to a hot object.

Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: The second law of thermodynamics

Type: Conceptual

Type: Definition

Multiple Choice Question

MC A correct statement of the Second Law of The...

12. The amount of disorder in a system is called

- ☐ density.
- ☐ entropy.
- ☐ temperature on the Kelvin scale.
- ☐ pressure.

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

Type: Definition

Multiple Choice Question

MC The amount of disorder in a system is called

13. The overall direction of change in the universe is toward

- ☐ a state of increased mass in the universe.
- ☐ increased energy content of the universe.
- ☐ a state of increased organization.
- ☐ a state of greater disorder.

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

Type: Definition

Multiple Choice Question

MC The overall direction of change in the unive...

14. An ideal heat engine is operating between high and low temperature reservoirs. Suppose that now the low temperature reservoir has its temperature lowered, but no other changes are made. This temperature change affects the engine efficiency in the following way:

- ☐ the efficiency decreases.
- ☐ the efficiency is unchanged.
- ☐ the efficiency increases.
- ☐ there is now no way to calculate the efficiency.

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Heat engines

Type: Conceptual

Multiple Choice Question

MC An ideal heat engine is operating between hi...

15. Some power plants extract energy from the warm ocean currents. A major disadvantage to these power plants is that

- ☐ the efficiency is quite low.
- ☐ there is no low temperature reservoir.
- ☐ the amount of heat released to the environment is unacceptable.
- ☐ the cost of warm ocean water is quite high.

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Thermal power plants and energy resources

Type: Conceptual

Multiple Choice Question

MC Some power plants extract energy from the wa...

16. In one cycle of any heat engine

- ☐ the net heat flow is zero.
- ☐ the internal energy of the engine does not change.
- ☐ more heat flows from the engine than enters the engine.
- ☐ the net work done is larger than the heat exhausted.

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Heat engines

Type: Conceptual

Multiple Choice Question

MC In one cycle of any heat engine

17. A Carnot engine is

- ☐ equivalent to the gasoline internal combustion engine.
- ☐ currently in production for the new generation of imported cars.
- ☐ a theoretical engine having the highest possible efficiency for the temperatures involved.
- ☐ one that would violate the second law of thermodynamics.

Select



Multiple Choice Question
MC A Carnot engine is

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: The second law of thermodynamics
Type: Conceptual
Type: Definition

18. A Carnot engine

- ☐ consists of only isothermal processes.
- ☐ consists of only processes which do not involve heat flow.
- ☐ consists of constant temperature and constant volume processes.
- ☐ absorbs heat at a single high temperature and rejects heat at a single low temperature.
- ☐ consists of zero heat flow and constant pressure processes.

Select 

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: The second law of thermodynamics
Type: Conceptual
Type: Definition

Multiple Choice Question
MC A Carnot engine

19. A Carnot engine operating between reservoirs at 500°C and 300°C would have an efficiency of approximately

- ☐ 0.11.
- ☐ 0.30.
- ☐ 0.50.
- ☐ 0.67.
- ☐ 0.74.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: The second law of thermodynamics
Type: Numerical

Multiple Choice Question
MC A Carnot engine operating between reservoirs...

20. A heat engine having an efficiency of 0.20 takes in 2000 J of energy from the hot reservoir in one cycle. In the same time, how much work will it perform?

- ☐ 0 J
- ☐ 400 J
- ☐ 1000 J
- ☐ 120 J
- ☐ 33,333 J

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Heat engines
Type: Numerical

Multiple Choice Question
MC A heat engine having an efficiency of 0.06 t...

21. A heat engine takes in 500 J of energy from the hot reservoir in one cycle while performing 100 J of work. The amount of heat transferred to the cold reservoir in the same time is

- ☐ 500 J.
- ☐ 400 J.
- ☐ 300 J.
- ☐ 200 J.
- ☐ zero.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Heat engines
Type: Numerical

Multiple Choice Question
MC A heat engine takes in 500 J of energy from ...

22. A heat pump is capable of delivering more energy to the home than goes into the operation of the pump itself, when conditions are favorable. Which of the following statements is correct?

- ☐ A heat pump transfers some energy from the outdoors.
- ☐ A heat pump violates the second law of thermodynamics.
- ☐ A heat pump violates the first law of thermodynamics.
- ☐ A heat pump, like the Carnot engine, is a theoretical device that is not useful in practice.
- ☐ A heat pump is more efficient when the outside temperature is colder.

Select 

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: Refrigerators, heat pumps, and entropy
Type: Conceptual

Multiple Choice Question
MC A heat pump is capable of delivering more en...

23. A refrigerator transfers heat from a colder body to a hotter body while energy is used to operate the device. This is

- ☐ allowed only if the internal energy of the refrigerator increases.

Select 

- ☐ consistent with Clausius's statement of the second law.
- ☐ possible if entropy of the contents of the refrigerator increases.
- ☐ impossible unless the refrigerator uses a Carnot cycle.

Accessibility: Keyboard Navigation

Difficulty: Medium

Gradable: automatic

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

Multiple Choice Question

MC A refrigerator transfers heat from a colder ...

24. Entropy is

- ☐ another term for heat.
- ☐ a quantity that is conserved in any thermal process.
- ☐ a quantity that increases as the disorder of a system increases.
- ☐ something that never locally decreases in any process.

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

Type: Definition

Multiple Choice Question

MC Entropy is

25. An inventor has created a heat engine that extracts energy from geothermal hotspots and geysers like Old Faithful at Yellowstone National Park. She claims to turn all of the geothermal energy into work. Such a device is

- ☐ a violation of the first law of thermodynamics.
- ☐ consistent with Clausius's statement of the second law of thermodynamics.
- ☐ only possible for a Carnot cycle.
- ☐ a violation of Kelvin's statement of the second law of thermodynamics.

Select



Accessibility: Keyboard Navigation

Difficulty: Medium

Gradable: automatic

Topic: Perpetual motion and energy frauds

Type: Conceptual

Multiple Choice Question

MC An inventor has created a heat engine that e...

26. A heat engine that would take in 1000 J of heat from a reservoir at 500 K and exhaust 500 J to a reservoir at 300 K, converting the other 500 J of heat to work, is

- ☐ thermodynamically possible.
- ☐ possible only for a Carnot cycle.
- ☐ not thermodynamically possible.

Select



Accessibility: Keyboard Navigation

Difficulty: Medium

Gradable: automatic

Topic: Heat engines

Type: Numerical

Multiple Choice Question

MC A heat engine that would take in 1000 J of h...

27. Which of these is characteristic of an ideal (Carnot) heat engine?

- ☐ It does not create waste heat.
- ☐ It cannot be used to cool a house.
- ☐ It creates more energy than it consumes.
- ☐ It causes no increase in entropy.

Select



Accessibility: Keyboard Navigation

Difficulty: Medium

Gradable: automatic

Topic: The second law of thermodynamics

Type: Conceptual

Multiple Choice Question

MC Which of these is characteristic of an ideal...

28. If, for an ideal heat engine, Q_H , Q_C , and W are, respectively, the heat absorbed, the heat exhausted, and the work done per cycle, which of these is true?

- ☐ Q_H cannot be more than W .
- ☐ Q_C cannot be more than Q_H .
- ☐ W cannot be more than Q_C .
- ☐ Q_H cannot be more than Q_C .

Select



Accessibility: Keyboard Navigation

Difficulty: Easy

Gradable: automatic

Topic: The second law of thermodynamics

Type: Conceptual

Multiple Choice Question

MC If, for an ideal heat engine, Q_H , Q_C , and W ...

29. Some people claim that the theory of evolution violates the second law of thermodynamics, since that theory holds that order develops out of disorder, corresponding to a decrease in entropy. This claim

- ☐ is incorrect; the second law says only that the total entropy in a closed system increases.
- ☐ is correct, thereby disproving the theory evolution.
- ☐ if incorrect, would mean that the theory of evolution must be true.

Select



☐ none of these.

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Refrigerators, heat pumps, and entropy
 Type: Conceptual

Multiple Choice Question
 MC Some people claim that the theory of evoluti...

30. Suppose 150 Joules of work is done on a system and that 300 Joules of heat are delivered to the system. Which of these is predicted by the first law of thermodynamics?
- ☐ The internal energy U of the system increases by 450 J, since $Q = +300$ and $W = -150$.
 - ☐ The internal energy U of the system decreases by 150 J, since $Q = -300$ and $W = +150$.
 - ☐ The internal energy U of the system increases by 150 J, since $Q = +300$ and $W = +150$.
 - ☐ The internal energy U of the system does not change.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Heat engines
 Type: Numerical

Multiple Choice Question
 MC Suppose 150 Joules of work is done on a syst...

31. Which of these is impossible, by the second law of thermodynamics?
- ☐ Using heat exhausted by a refrigerator to cook a meal.
 - ☐ An engine that generates electricity by extracting heat from cold water and dumping waste heat to warmer air.
 - ☐ Water evaporating from a lake and then condensing to form clouds.
 - ☐ A single match carelessly discarded causes 1500 acres of woodland to burn.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Perpetual motion and energy frauds
 Type: Conceptual

Multiple Choice Question
 MC Which of these is impossible, by the second ...

32. It is impossible to construct an engine that is more than 100% efficient. The physical law covering this case is
- ☐ the zeroth law of thermodynamics.
 - ☐ the first law of thermodynamics.
 - ☐ Clausius's statement of the second law of thermodynamics.
 - ☐ Kelvin's statement of the second law of thermodynamics.
 - ☐ the third law of thermodynamics.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Perpetual motion and energy frauds
 Type: Conceptual
 Type: Definition

Multiple Choice Question
 MC It is impossible to construct an engine that...

33. The efficiency of a Carnot engine would be increased if
- ☐ the high temperature were lowered by 100°C .
 - ☐ the low temperature were raised by 100°C .
 - ☐ the high and low temperatures were both raised by 100°C .
 - ☐ the high and low temperatures were both lowered by 100°C .

Select 

Accessibility: Keyboard Navigation
 Difficulty: Medium
 Gradable: automatic
 Topic: The second law of thermodynamics
 Type: Numerical

Multiple Choice Question
 MC The efficiency of a Carnot engine would be i...

34. An engine that decreases the total entropy in the universe is
- ☐ a refrigerator.
 - ☐ a Carnot engine.
 - ☐ a heat pump.
 - ☐ impossible.

Select 

Accessibility: Keyboard Navigation
 Difficulty: Easy
 Gradable: automatic
 Topic: Perpetual motion and energy frauds
 Type: Conceptual

Multiple Choice Question
 MC An engine that decreases the total entropy...

35. A reversible engine is one that
- ☐ does no net work.
 - ☐ causes no increase in net entropy.
 - ☐ generates no net heat.
 - ☐ acts as a refrigerator.

Select 

Multiple Choice Question
MC A reversible engine is one that

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: The second law of thermodynamics
Type: Conceptual

36. What method does not directly use heat for generating electricity?

- ☐ Nuclear power plants
- ☐ Hydroelectric dams
- ☐ Natural gas
- ☐ Geothermal power
- ☐ All of these methods use heat to generate electricity.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Thermal power plants and energy resources
Type: Conceptual

Multiple Choice Question
MC What method does not directly use heat for g...

37. Electric heaters can operate at efficiencies very close to 100%. This does not contradict the fact that Carnot engines are the most efficient heat engines because

- ☐ electric heaters have very low temperature exhaust.
- ☐ electric heaters reduce the total entropy of a room.
- ☐ Carnot engines cannot be used to heat things.
- ☐ electric heaters are not heat engines.

Select 

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: The second law of thermodynamics
Type: Conceptual

Multiple Choice Question
MC Electric heaters can operate at efficiencies...

38. An amount of water forms a single hexagonally symmetric snowflake. Elsewhere the same amount of water is a droplet of liquid water. Which state has higher entropy?

- ☐ Their entropy levels are the same, since they are actually the same amount of H₂O, just different phases.
- ☐ The droplet of liquid water, since it is more unruly and can adopt almost any shape.
- ☐ The solid water, since it has a tight restriction to hexagonal symmetry.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Refrigerators, heat pumps, and entropy
Type: Conceptual

Multiple Choice Question
MC An amount of water forms a single hexagonall...

39. Entropy and temperature measure different properties of a sample of a substance, because temperature gauges average kinetic energy of molecules or atoms, but

- ☐ entropy is the inverse of temperature, due to conservation of momentum.
- ☐ low entropy substances cannot have a temperature.
- ☐ entropy of an isolated system cannot decrease.
- ☐ entropy measures disorderliness or unruliness.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Refrigerators, heat pumps, and entropy
Type: Conceptual
Type: Definition

Multiple Choice Question
MC Entropy and temperature measure different pr...

40. It is an advantage for an automobile engine to run at a high temperature because

- ☐ its efficiency is higher, since the temperature difference is what dictates efficiency.
- ☐ gasoline only ignites under high temperature conditions.
- ☐ a high operating temperature cools off the fuel before ignition.
- ☐ it allows the use of lighter engine components made from aluminum.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Heat engines
Type: Conceptual

Multiple Choice Question
MC It is an advantage for an automobile engine ...

Select 

41. Nuclear power stations have thermal electric generation that

- ☐ converts uranium into natural gas, and then ignites the natural gas.
- ☐ converts the nucleus of uranium atoms into electrons.
- ☐ generates heat first, then steam which drives a spinning turbine connected to a generator.
- ☐ are reversible heat engines.

Multiple Choice Question
MC Nuclear power stations have thermal electric...

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic

Topic: Thermal power plants and energy resources
Type: Conceptual

42. Oceanic thermal generation operates from a relatively inexhaustible source of energy in the oceans that have heat energy from
- ☐ the energy in sunlight.
 - ☐ subatomic heat.
 - ☐ the decay of carbon in the rock formations underlying Earth's oceans.
 - ☐ carbon dioxide in the ozone layer.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic

Multiple Choice Question
MC Oceanic thermal generation operates from a r...

Topic: Thermal power plants and energy resources
Type: Conceptual

43. An example of a reversible process would be
- ☐ firing a bullet from a gun.
 - ☐ quickly pouring hot water into colder water.
 - ☐ striking a match.
 - ☐ slowly pouring hot water into cold while allowing the beakers to achieve ambient temperature levels.
 - ☐ None of these.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic

Multiple Choice Question
MC An example of a reversible process would be

Topic: The second law of thermodynamics
Type: Conceptual

44. According to the kinetic theory of gases, the molecules in the air in a particular room must have some kinetic energy which depends on the temperature in the room. In order to extract this energy to do mechanical work I would need for the object receiving this energy to be at a much colder temperature. This is best explained by
- ☐ Conservation of energy.
 - ☐ The law of gravity.
 - ☐ The Second Law of Thermodynamics.
 - ☐ Newton's laws of motion.

Select 

Accessibility: Keyboard Navigation
Difficulty: Hard
Gradable: automatic

Multiple Choice Question
MC According to the kinetic theory of gases, th...

Topic: The second law of thermodynamics
Type: Conceptual

45. The actual source of wind energy is
- ☐ solar energy.
 - ☐ the daily rotation of the Earth on its axis.
 - ☐ the tides.
 - ☐ the lunar cycle.

Select 

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic

Multiple Choice Question
MC The actual source of wind energy is

Topic: Thermal power plants and energy resources
Type: Conceptual

46. A process carried out at constant temperature is known as a(n) _____ process.
- isothermal

Select 

Fill-in-the-Blank Question
FB A process carried out at constant temperatur...

Gradable: automatic
Topic: The second law of thermodynamics

47. Heat is extracted from a hot reservoir during a(n) _____ expansion in a Carnot cycle.
- isothermal

Select 

Difficulty: Easy
Gradable: automatic
Topic: The second law of thermodynamics
Type: Conceptual
Type: Definition

Fill-in-the-Blank Question
FB Heat is extracted from a hot reservoir durin...

48. In an ideal reversible process such as a Carnot cycle the entropy of the universe _____ (increases, decreases, is unchanged).
- is unchanged

Select 

Difficulty: Easy
Gradable: automatic
Topic: The second law of thermodynamics
Type: Conceptual
Type: Definition

Fill-in-the-Blank Question
FB In an ideal reversible process such as a Car...

49. A refrigerator that would transfer heat from a cold body to a hotter body without work being done would violate _____ statement of the second law of thermodynamics.

Select 

Clausius's

Fill-in-the-Blank Question

FB A refrigerator that would transfer heat from...

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

50. In any process, the total _____ in all parts of the universe increases or remains constant.

entropy

Select

Fill-in-the-Blank Question

FB In any process, the total _____ i...

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

Type: Definition

51. A refrigerator is actually a _____ (two words) running in reverse.

heat engine

Select

Fill-in-the-Blank Question

FB A refrigerator is actually a _____ (two w...

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

52. When one kilogram of ice at 0°C is converted to the same amount of water at 0°C by adding heat, the change in entropy is _____ (positive, negative, zero).

positive

Select

Fill-in-the-Blank Question

FB When one kilogram of ice at 0°C is conve...

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

53. If a refrigerator door is left open while the refrigerator is on, the temperature of a house will _____ (increase, decrease, not change).

increase

Select

Fill-in-the-Blank Question

FB If a refrigerator door is left open while th...

Topic: Refrigerators, heat pumps, and entropy

Type: Conceptual

54. An automobile engine operates between a high temperature set by the burning of gasoline and the low temperature of the outside environment. If the engine has been running for some time, the engine is most efficient on _____ (hot or cold) days.

cold

Select

Fill-in-the-Blank Question

FB An automobile engine operates between a high...

Difficulty: Easy

Gradable: automatic

Topic: Heat engines

Type: Conceptual

55. A Carnot heat engine could have an efficiency of 100% only if the temperature of the exhaust were at _____.

0 K

Select

Fill-in-the-Blank Question

FB A Carnot heat engine could have an efficienc...

Topic: The second law of thermodynamics

Type: Conceptual

56. A heat engine that converts all the heat taken in from a single temperature source to work would be in violation of what natural law? _____ (more than one word).

second law of thermodynamics

Select

Fill-in-the-Blank Question

FB A heat engine that converts all the heat tak...

Topic: The second law of thermodynamics

Type: Conceptual

57. A good conductor of electricity is generally a good conductor of heat. True or False? _____

true

Select

Fill-in-the-Blank Question

FB A good conductor of electricity is generally...

Topic: Thermal power plants and energy resources

Type: Conceptual

Difficulty: Easy

Gradable: automatic