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1. 1 atmospheric pressure is equal to
   A.1 kg/cm2 B.1.033 kg/cm2
   C.1.1 kg/cm2 D.1.133 kg/cm2
   E.14.7 kg/cm2
   Answer & Explanation

   Answer: Option **B**

   Explanation:

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2. The general gas equation is
   A.PV = RT B.PV = mRT
   C.PV = (RT)m D.PVn = constant
   E.PV = constant
   Answer & Explanation

   Answer: Option **B**

   Explanation:

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3. The slope of constant pressure line on temperature entropy diagrm is given by
   A.S/T B.T/S
   C.Cp/T D.T/Cp
   E.90?
   Answer & Explanation

   Answer: Option **D**

   Explanation:

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4. For water, boiling and melting point will concide at
   A.0? K B.100? K
   C.200? K D.2730.16? K
   E.216.73? K
   Answer & Explanation

   Answer: Option **D**

   Explanation:

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5. On a Mollier chart the flow through turbine is represented by
   A.Horizontal line B.Vertical line
   C.Curved line convex up D.Carved line convex down
   E.None of the above

Answer & Explanation

Answer: Option **B**

Explanation:

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6. In a steam turbine when steam expands, the entropy

A. Increases linearly
B. Decreases linearly
C. Increases exponentially
D. Decreases exponentially
E. Does not change

Answer & Explanation

Answer: Option **E**

Explanation:

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7. An isolated system

A. Is a specified regon where transfers of energy and/or mass takes place
B. Is a region of constant mass and only energy is allowed to cross the boundaries
C. Cannot transfer either energy or mass to or from the surroundings
D. Is one in which mass within the system is not necessarily constant
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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8. The fact that the product of pressure and volume of a fixed amount of gas is of approximately constant value is known as

A. Charle's law
B. Gay Lussac's law
C. Dalton's law
D. Lewis law
E. None of these

Answer & Explanation

Answer: Option **E**

Explanation:

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9. The statement that energy can be neigher created nor destroyed but only converted from one form to another, is known as

A. Kinetic theory of gases
B. Avogadro's hypothesis
C. Zerothlaw of thermodynamics
D. First law of theormodynamics
E. Second law of thermodynamics

Answer & Explanation

Answer: Option **D**

Explanation:

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10. The sequence of processes that eventually returns the working substance to its original state is known as

A. Event
B. Process
C. Thermodynamic property
D. Thermodynamic cycle
E. Zeroth law of thermodynamics

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11. If all the variables of a steam are in-dependent of time it is said to be in

A. Steady flow
B. Unsteady flow
C. Uniform flow
D. Closed flow
E. Constant flow

Answer & Explanation

Answer: Option **A**

Explanation:

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12. A control volume refers to

A. A fixed region in space
B. A specified mass
C. An isolated system
D. A reversible process only
E. A closed system

Answer & Explanation

Answer: Option **A**

Explanation:

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13. Internal energy of a perfect gas depends on

A. Temperature, specific heats and pressure
B. Temperature, specific heats and enthalpy
C. Temperature, specific heats and entropy
D. Temperature and specific heats
E. Temperature only

Answer & Explanation

Answer: Option **E**

Explanation:

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14. The vapour pressure of water at 30?C in pascals is

A. 0.44
B. 7.18
C. 223
D. 431.5
E. 4315

Answer & Explanation

Answer: Option **E**

Explanation:

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15. According to Charle's law

A. At constant pressure the volume of a gas is proportional to its temperature
B. At constant pressure the volume of a gas is proportional to its absolute temperature

C. At constant gauge pressure the molecular folume of a gas is proportional to its absolute temperature
D. At constant volume the absolute pressure is proportional to absolute temperature
E. None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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16. The perfect heat engine works on the Carnot cycle between 1000?C and 200?C. The efficiency of the engine will be
A. 80%
B. 60%
C. 62.80%
D. 37.20%
E. 68.20%
Answer & Explanation

Answer: Option **C**

Explanation:

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17. In a reversible polytropic process
A. Some heat transfer occurs
B. The entropy remains constant
C. The ethalpy remains constant
D. The internal energy remains constant
E. The temperature remains constant
Answer & Explanation

Answer: Option **B**

Explanation:

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18. The velocity potential exists
A. For all types of continuous flow
B. Only for rotational flow
C. Only for irrotational flow
D. Only for laminar flow
E. Only for unidirectional flow
Answer & Explanation

Answer: Option **C**

Explanation:

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19. An isentropic process is always
A. Irreversible and adiabatic
B. Reversible and isothermal
C. Frictionless and irreversible
D. Reversible and adiabatic
E. None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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20. An ordinary mercury thermometer can be used for temperatures about
A. 100?C
B. 200?C
C. 300?C
D. 400?C
E. 500?C
Answer & Explanation

Answer: Option **C**

Explanation:

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21. Isentropic flow is

A. Irreversible adiabatic flow
B. Perfect gas flow
C. Ideal fluid flow
D. Reversible adiabatic flow
E. Frictionaless reversible flow

Answer & Explanation

Answer: Option **D**

Explanation:

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22. Triple point temperature and pressure for water are

A. 100?C and 1 ata
B. 0?C 1 ata
C. 0?C and 0.1 ata
D. 0.1?C and 0.006028 ata
E. 0.01?C and 0.006028 ata

Answer & Explanation

Answer: Option **E**

Explanation:

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23. Avogadro's numbers is

A. 6.02486 x 1026 molecules/(k mol)
B. 60.2486 x 1026 molecules/(k mol)
C. 602.486 x 1026 molecules/(k mol)
D. 6024.86 x 1026 molecules/(k mol)
E. 60248.6 x 1026 molecules/(k mol)

Answer & Explanation

Answer: Option **A**

Explanation:

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24. The unit of universal gas constant is

A. erg/?K
B. kcal/?K
C. W/?K
D. dynes/?K
E. W/m?K

Answer & Explanation

Answer: Option **A**

Explanation:

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25. In the regenerative cycle

A. Steam is reheated after expansion and again used
B. Power is generated in two stages
C. Part of the steam is withdrawn from the turbine and is used in heating the steam being supplied to the turbine
D. Part of the steam is withdrawn from the turbine and is used in heating the feed water

E. Part of the steam is withdrawn from the turbine and is utilised in heating the exhaust steam

Answer & Explanation

Answer: Option **D**

Explanation:

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26. If a heat engine gives an output of 3 kW and input is 10,000 J/s the thermal efficiency of the engine will be

A. 30%
B. 33.30%
C. 66.60%
D. 70%
E. 100%

Answer & Explanation

Answer: Option **A**

Explanation:

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27. A reversible process requires that

A. There be no heat transfer
B. Newton's law of viscosity be satisfied
C. Temperature of system and surroundings be equal
D. There whould be no viscous or coulomb friction in the system
E. Heat transfer occurs from surrounding to system only

Answer & Explanation

Answer: Option **D**

Explanation:

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28. The critical pressure at which latent heat of vaporisation for water is zero is

A. 100 kg/cm2
B. 215.1 kg/cm2
C. 228.6 kg/cm2
D. 235.6 kg/cm2
E. 250.6 kg/cm2

Answer & Explanation

Answer: Option **C**

Explanation:

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29. 1 kgf/cm2 is equal to

A. 1 mm Hg
B. 100 mm Hg
C. 735.6 mm Hg
D. 760 mm Hg
E. 776 mm Hg

Answer & Explanation

Answer: Option **C**

Explanation:

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30. The first law of thermodynamics, for steady flow

A. Accounts for all energy entering and leaving a control volume
B. Is an energy balance for the specified mass of fluid
C. Is an expression of the conservation of linear momentum
D. Is primarily concerned with heat transfer
E. Is restricted in its application to perfect gases

Answer & Explanation

Answer: Option **A**

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31. The characteristic equation of gases pv = nRT holds good for
A.Monoatomic gases
B.Diatomic gases
C.Real gases
D.Ideal gases
E.Mixture of gases
Answer & Explanation

Answer: Option **C**

Explanation:

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32. A gas which obeys kinetic theory perfectly is known as
A.Monoatomic gas
B.Diatomic gas
C.Real gas
D.Pure gas
E.Perfect gas
Answer & Explanation

Answer: Option **E**

Explanation:

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33. If during a process, the entropy of the isolated system increases, the process is
A.Adiabatic
B.Isothermal
C.Ideal
D.Reversible
E.Irreversible
Answer & Explanation

Answer: Option **E**

Explanation:

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34. The statement that the entropy of a pure substance in complete theromodynamic equilibrium becomes zero at the absolute zero of temperature is known as
A.Law of entropy
B.Zeroth law of thermodynamics
C.First law of thermodynamics
D.Second law of thermodynamics
E.Third law of thermodynamics
Answer & Explanation

Answer: Option **E**

Explanation:

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35. Work done in a free expansion process is

A.Zero
B.Minimum
C.Maximum
D.Positive
E.Negative
Answer & Explanation

Answer: Option **A**

Explanation:

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36. Which of the following is not a property of the system
A.Temperature
B.Pressure
C.Specific volume
D.Heat
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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37. The statement that molecular weight of all gases occupy the same volume at NTP is known as
A.Dalton's law
B.Avogadro's hypothesis
C.First law of thermodynamics
D.Joule's law
E.Charle's law
Answer & Explanation

Answer: Option **B**

Explanation:

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38. For diatomic gas flowing through a nozzle the critical pressure ratio is given by
A.1
B.0.528
C.0.546
D.0.577
E.0.75
Answer & Explanation

Answer: Option **B**

Explanation:

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39. In the polytropic process equation pvn = constant, if the value of n is infinitely large the process is termed as
A.Constant volume
B.Constant pressure
C.Constant temperature
D.Adiabatic
E.Isothermal
Answer & Explanation

Answer: Option **A**

Explanation:

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40. In the polytropic process equation pvn Constant, if n = 0 the process is termed as
A.Constant volume
B.Constant pressure
C.Constant temperature
D.Adiabatic
E.Isothermal
Answer & Explanation

Answer: Option **B**

Explanation:

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41. In the polytropic process pvn = Constant if n = 1 the process is termed as
A. Constant volume
B. Constant pressure
C. Constant temperature
D. Adiabatic
E. Isothermal
Answer & Explanation

Answer: Option **C**

Explanation:

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42. A law which is applicable only to ideal vapours and liquids, that equates the equilibrium partial pressures of a solution component in the coexisting phases, is known as
A. Henry's law
B. Roult's law
C. Joule's law
D. Maxwell's equation
E. Fick's law
Answer & Explanation

Answer: Option **B**

Explanation:

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43. The molecular volume of any perfect gas at 600 x 103 N/m3 and 27?C will be
A. 2.085 m3/kg mol
B. 4.17 m3/kg mol
C. 41.7 m3/kg mol
D. 85.3 m3/kg mol
E. 47.7 m3/kg mol
Answer & Explanation

Answer: Option **B**

Explanation:

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44. An open system
A. Is a specified region where transfers of energy and/or mass take place
B. Is a region of constant mass and only energy is allowed to cross the boundaries
C. Cannot transfer either energy or mass to or from the surroundings
D. Has a mass transfer across its boundaries, and the mass within the system is not necessarily constant
E. None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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45. A system consisting of more than one phase is known as

A.Open system
B.Closed system
C.Isolated system
D.Non-uniform system
E.Heterogeneous system
Answer & Explanation

Answer: Option **E**

Explanation:

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46. Whenever a system undergoes either a change in state or an energy or mass transfer at a steady state, it is said to undergo
A.A change of state
B.A process
C.A steady state transfer
D.An equilibrium
E.A thermodynamic change
Answer & Explanation

Answer: Option **B**

Explanation:

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47. The processes or systems that do not involve heat are called
A.Isothermal processes
B.Equilibrium processes
C.Thermal processes
D.Steady processes
E.Adiabatic processes
Answer & Explanation

Answer: Option **E**

Explanation:

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48. Second law of theromodynamics defines
A.Heat
B.Work
C.Enthalpy
D.Entropy
E.Internal energy
Answer & Explanation

Answer: Option **D**

Explanation:

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49. In a thermal power plant thermodynamic cycle used is
A.Erricson
B.Brayton
C.Joule
D.Carnot
E.Rankine
Answer & Explanation

Answer: Option **E**

Explanation:

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50. For the same heat inpur and same compression ratio
A.Otto cycle and Diesel cycle are equally efficient
B.Otto cycle is less efficient than diesel cycle
C.Efficiency depends mainly on working substance
D.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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51. The internal energy of a substance depdnds on
A. Temperature
B. Pressure
C. Volume
D. Entropy
E. Velocity
Answer & Explanation

Answer: Option **A**

Explanation:

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52. At critical point the enthalpy of vaporisation is
A. Only dependent on temperature
B. Zero
C. Maximum
D. Minimum
E. None of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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53. The value of the product of molecular weight and the gas characteristic constant for all gases in kgf m/1 kg mol ?K is
A. 29.27
B. 30
C. 427
D. 770
E. 848
Answer & Explanation



Answer: Option **C**

Explanation:

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54. For a reversible adiabatic process the change in entropy is
A. Zero
B. Minimum
C. Maximum
D. Infinite
E. Unity
Answer & Explanation

Answer: Option **A**

Explanation:

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55. For any reversible process, the change in entropy of the system and surroundings is
A. Zero
B. Unity
C. Negative
D. Positive
E. Infinite

Answer & Explanation

Answer: Option **A**

Explanation:

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56. For any irreversible process the net entropy change is

A. Zero
B. Positive
C. Negative
D. Infinite
E. Unity

Answer & Explanation

Answer: Option **B**

Explanation:

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57. In the above problem work done is equal to

A. 180 kcal
B. 130 kcal
C. 150 kcal
D. 100 kcal
E. 80 kcal

Answer & Explanation

Answer: Option **E**

Explanation:

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58. The efficiency of cycle would be

A. 100 percent
B. 88.8 percent
C. 78.3 percent
D. 66.7 percent
E. 37.7 percent

Answer & Explanation

Answer: Option **D**

Explanation:

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59. In an isothermal process

A. Temperature increases gradually
B. Volume remains constant
C. Pressure remains constant
D. Enthalpy change is maximum
E. Change in internal energy is zero

Answer & Explanation

Answer: Option **E**

Explanation:

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60. Which of the following is incorrect?

A. The pressure of a mixture of gases is equal to the sum of the pressure of the individual components taken each at the temperature and volume of the mixture
B. The entropy of a mixture of gases is equal to the sum of the entropies of the individual components taken each at the temperature and volume of the mixture
C. The internal energy of a mixture of gases is equal to the sum f the internal energies of the indicudual components taken each at the temperature and the volume of the mixture
D. (B) and (C) above
E. None of the above

Answer & Explanation

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61. The efficiency of a Rankine cycle may be expected to
A. Increase with decreasing temperature of heat rejection
B. Decrease with decreasing temperature of heat rejection
C. Decrease with increasing temperature of heat rejection
D. Increase with increasing exhaust pressure
E. None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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62. A Rankine cycle working with saturated steam differs thermodynamically from a Carnot cycle only in the fact that
A. The Carnot cycle cannot be used for vapour
B. Steam is not the working substance for Carnot cycle
C. There are more than two sources of heat in Rankine cycle
D. Heat is supplied to the water at temperatures below the maximum temperature of the cycle
E. None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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63. Rankine cycle efficiency for a power plant is 29.6%. The Carnot cycle efficiency will be
A. Equal to Rankine cycle efficiency
B. More than Rankine cycle efficiency
C. Less than Rankine cycle efficiency
D. There is no comparison for the two
E. None of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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64. Triple point
A. Occurs in sublimation
B. Occurs in a mixture of two or more gases
C. Is the range of temperature within which three constituents simultaneously change phase
D. Is that point where three phases solid, liquid and gas exist together
E. None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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65. The triple point for carbondioxide is at about -56.7 C and about 5 atm, pressure. It means that

A. When solid CO2 is exposed to 1 atm pressure it begins to change directly to gas
B. When CO2 is exposed to a below 5 atmosphere pressure only solid and liquid phase exist together
C. Below 57.7 C CO2 exists only in liquid form
D. Above 56.7 C CO2 exists only as a liquid
E. Mass transfer at triple point is maximum
Answer & Explanation

Answer: Option **A**

Explanation:

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66. When a fluid is passed in steady, flow through a porous plug in a duct under such conditions that heat transfer, kinetic energy change and potential change is negligible, the process is called
A. Constant pressure compression
B. Isothermal compression
C. Frictionless compression
D. Throttling
E. Separation
Answer & Explanation

Answer: Option **D**

Explanation:

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67. During throttling process
A. Internal energy does not change
B. Pressure does not change
C. Entropy does not change
D. Enthalpy does not change
E. Volume change is negligible
Answer & Explanation

Answer: Option **D**

Explanation:

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68. If the dryness fraction of a sample by throttling calorimeter is 0.8 and that by separating calorimeter is also 0.8, then the actual dryness fraction of sample will be taken as
A. 0.8
B. 1
C. 0.64
D. 0.5
Answer & Explanation

Answer: Option **C**

Explanation:

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69. When a gas is to be stored, the type of compression that would be ideal is
A. Isothermal
B. Adiabatic
C. Polytropic
D. Constant volume
E. None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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70. The adiabatic horse power required to deliver 4 cu. M per minute of free air from 1 ata and 15?C to a received pressure at 7 ata would be in the range
A. 5 ? 7
B. 7 ? 10
C. 10 ? 15
D. 15 ? 20
E. 20 ? 25
Answer & Explanation

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71. In which case the work done per kg of air compressed from 1.05 ata, 15?C to 6.3 ata is minimum
A.Adiabatic
B.Isothermal
C.Polytropic pv1.3 = C
D.Polytropic pv1.35 = C
E.Polytropic pv1.4 = C
Answer & Explanation

Answer: Option **B**

Explanation:

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72. In which case the heat transferred from the air when compressed from 1.05 ata 15?C to 6.3 ata would be minimum?
A.Adiabatic
B.Isothermal
C.Polytropic pv1.3 = C
D.Polytropic pv1.31 = C
E.Polytropic pv1.35 = C
Answer & Explanation

Answer: Option **A**

Explanation:

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73. In which case the heat transferred from the air when compressed from 1 ata 15?C to 6 ata would be maximum
A.Adiabatic
B.Isothermal
C.Polytropic pv1.3 = C
D.Polytropic pv1.31 = C
E.Polytropic pv1.35 = C
Answer & Explanation

Answer: Option **A**

Explanation:

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74. The value of characteristic gas constant in kg metre per kg per deg C as
A.96
B.53.3
C.29.97
D.1554
E.848
Answer & Explanation

Answer: Option **C**

Explanation:

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75. The molecular volume of all the gases at 2 ata and 30?C is
A.1.0 cm-m
B.1.562 cu-m
C.8.48 cu-m
D.12.847 cu-m
E.25.794 cu-m

Answer & Explanation

Answer: Option **D**

Explanation:

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76. The value of characteristic gas constant for carbon dioxide would be

A.29.2 kg/metre/kg/?K
B.30.4 kg/metre/kg/?K
C.19.28 kg/metre/kg/?K
D.16.1 kg/metre/kg/?K
E.10.0 kg/metre/kg/?K
Answer & Explanation

Answer: Option **C**

Explanation:

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77. If the two specific heats of a gas are 0.237 and 0.169 respectively, the volume of 3 kg of air at 27?C under a pressure of 3 ata would be

A.0.204 cu-m
B.1 cu-m
C.1.5 cu-m
D.1.74 cu-m
E.2.5 cu-m
Answer & Explanation

Answer: Option **A**

Explanation:

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78. The weight of 1 cu-m of carbon dioxide at NTP if the characteristic gas constant is 19.28 kg metre/kg/?C, would be

A.1 kg
B.1.5 kg
C.1.962 kg
D.2.5 kg
E.3.924 kg
Answer & Explanation

Answer: Option **C**

Explanation:

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79. 1 cu-m of steam having dryness franction 0.85 at 12 ata mixes with 1.5 kg of water at 12?C at constant pressure. The dryness fraction of resulting steam would be

A.0.85
B.0.75
C.0.637
D.0.6
E.0.5
Answer & Explanation

Answer: Option **C**

Explanation:

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80. A Carnot refrigerator extracts 100 kcal of heat per minute from a cold room which is maintained at - 15?C and it is discharged to atmosphere at 30?C. The horse power required to run the unit would be

A.1
B.1.5 to 2
C.2 to 5
D.5 to 6
E.Mone than 6
Answer & Explanation

Answer: Option **B**

Explanation:



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81. The air standard efficiency of a turbine cycle is 57%. Which one of the following may be Carnot efficiency between the temperature limits of the cycle?

A.50% B.55%
C.57% D.64%
E.100%
Answer & Explanation

Answer: Option **D**

Explanation:

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82. The gas turbine works on

A.Rankine cycle B.Carnot cycle
C.Otto cycle D.Brayton cycle
E.Erricson cycle
Answer & Explanation

Answer: Option **D**

Explanation:

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83. Thermodynamic equilibrium is completely defined by the specifications of

A.Internal energy B.Enthalpy
C.Generalized displacements D.All the above together
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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84. A barn is

A.A unit of area B.A unit of length
C.A unit of time D.A unit of mass
E.None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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85. A sterling cycle consists of

A. Two isothermal and two adiabatic processes
B. Two adiabatic and two isentropic processes
C. Two adiabatic and two constant pressure processes
D. Two constant volume and two constant pressure processes
E. Two isothermal and two constant volume processes
Answer & Explanation

Answer: Option **E**

Explanation:

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86. The processes of a Carnot cycle are

A. Two adiabatic and two constant volume
B. One constant volume one constant pressure and two isentropics
C. Two adiabatics and two isothermals
D. Two constant volume and two isothermals
E. Two isothermals and two isentropics
Answer & Explanation

Answer: Option **E**

Explanation:

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87. Brayton cycles processes are

A. Two isentropics and two constant volume
B. Two isentropics and two constant pressure
C. One constant pressure, one constant volume, two adiabatics
D. Two isothermals constant volume a constant pressure
E. Two isothermals and two isentropics
Answer & Explanation

Answer: Option **B**

Explanation:

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88. Otto cycle consists of the set of processes as

A. Two isentropics and two constant volumes
B. Two isentropics and two constant pressure
C. Two adiabatic and two isothermal
D. Two isothermal and two constant volume
E. Two isothermal and two constant pressure
Answer & Explanation

Answer: Option **A**

Explanation:

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89. Diesel cycle processes are

A. Isentropic, isothermal, constant volume, constant pressure
B. Two constant volume, one constant pressure, one isothermal
C. Two isentropic, one constant volume one constant pressure
D. Two constant pressure, one constant volume, one isentropic
E. Two isentropic and two isothermal
Answer & Explanation

Answer: Option **C**

Explanation:

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90. Ericsson cycle processes are

A. Two isothermals and two constant pressures
B. Two isothermals and two constant volumes
C. Two isothermals and two isentropics
D. Two isothermals and two isentropics
E. Two adiabatic, constant volume and constant pressure

Answer & Explanation

Answer: Option **A**

Explanation:

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91. The number of processes in a Rankine cycle is

A. Two
B. Three
C. Four
D. Five
E. Six

Answer & Explanation

Answer: Option **C**

Explanation:

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92. If a process can be stopped at any stage and reversed so that the system and surroundings are exactly restored to their initial states, it is known as

A. Adiabatic process
B. Isothermal process
C. Reversible process
D. Thermodynamic process
E. Ideal process

Answer & Explanation

Answer: Option **C**

Explanation:

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93. A process which does not dissipate available energy is known as

A. Adiabatic process
B. Isothermal process
C. Ideal process
D. Frictionless process
E. Energyless process

Answer & Explanation

Answer: Option **C**

Explanation:

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94. Which is incorrect statement about the reversible process?

A. A reversible process is ideal
B. A reversible process must pass through a continuous series of equilibrium states
C. A reversible process when undone, will leave no history of the events in the surroundings
D. A reversible process must pass through the same states on the reversed path as were initially visited on the forward path
E. None of the above

Answer & Explanation

Answer: Option **E**

Explanation:

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95. Brayton cycle cannot be used in reciprocating engines even for same adiabatic compression ratio and work output because

A. Otto cycle is more efficient
B. Brayton cycle is less efficient
C. Brayton cycle is for slow speed engines
D. Brayton cycle requires large air-fuel ratio
E. Large volume of low pressure air cannot be efficiently handled in reciprocating engines

Answer & Explanation

Answer: Option **E**

Explanation:

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96. The cycle generally used for gas turbines is

A. Otto cycle
B. Dual cycle
C. Carnot cycle
D. Rankine cycle
E. Brayton cycle

Answer & Explanation

Answer: Option **E**

Explanation:

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97. The number of degrees of freedom in case of triatomic gases is

A. 2
B. 3
C. 4
D. 5
E. 6

Answer & Explanation

Answer: Option **E**

Explanation:

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98. In case of ideal triatomic gas, the ratio of specific heats Cp/Cv would be

A. 1
B. 1.33
C. 1.4
D. 1.41
E. 1.67

Answer & Explanation

Answer: Option **B**

Explanation:

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99. If a closed circuit is made of two dissimilar metals, an electric current flows in the circuit whdn the two junctions are maintained at different temperatures. This phenomenon is known as

A. Peltier effect
B. Seeback effect
C. Thomson effect
D. Maxwell's effect
E. Faraday's effect

Answer & Explanation

Answer: Option **B**

Explanation:

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100. Antifreeze chemicals are

A. Same as refrigerants
B. Those which are added to refrigerants for better performance
C. Those which lower down the freezing points of liquids
D. Those which do not freeze at all
E. Always in liquid state even at low temperatures

Answer & Explanation

Answer: Option **C**

Explanation:

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101. Clog point of an oil is

A. The point of maximum contamination of oil
B. The level of impurities beyond which oil ceases to flow
C. The temperature at which oil solidifies
D. The temperature at which paraffin and waxes in oil start precipitating
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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102. According to kinetic theory of heat

A. Temperature should rise during boiling
B. Temperature should fall during freezing
C. At low temperatures all bodies are in solid state
D. At absolute zero there is absolute no vibration of molecules
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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103. The efficiency of a Carnot engine is given as 0.75. If the cycle direction is reversed, what will be the value of COP of reversed Carnot cycle

A. 0.75
B. 1.33
C. 0.33
D. 0.25
E. 4

Answer & Explanation

Answer: Option **C**

Explanation:

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104. When a direct current is passed through a junction of two dissimilar metals, the junction becomes either cold or hot. The phenomenon is known as

A. Peltier's effect
B. Seeback's effect
C. Thompson effect
D. Maxwell's effect
E. Faraday's law

Answer & Explanation

Answer: Option **A**

Explanation:

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105. The process that follows the equation pvn = constant, is called

A. Constant volume process
B. Constant pressure process
C. Constant temperature process
D. Adiabatic process
E. Polytropic process

Answer & Explanation

Answer: Option **E**

Explanation:

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106. The statement that the volume of a mixture of ideal gases is equal to the span of the partial volumes which the constituent gases would occupy if each existed alone at the pressure and temperature of the mixture, is known as

A. Maxwell's law
B. Leduc's law
C. Daltons law
D. Clapeyrons law
E. Clausius law

Answer & Explanation

Answer: Option **B**

Explanation:

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107. The relation of the vapour pressure to the enthalpy of vaporization is expressed in

A. Energy equation
B. Van der Waal's equation
C. Gas equation
D. Maxwell's equation
E. Clausius Clapeyron equation

Answer & Explanation

Answer: Option **E**

Explanation:

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108. The solubility of a gas in a liquid at small concentration is represented by

A. Henry's law
B. Roults law
C. Claperyon equation
D. Van der Waal's equation
E. Joules equation

Answer & Explanation

Answer: Option **A**

Explanation:

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109. The number of degrees of freedom in case of diatomic gases is

A. 2
B. 3
C. 4
D. 5
E. 6

Answer & Explanation

Answer: Option **D**

Explanation:

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110. In case of ideal monoatomic gas, the ratio of specific heats Cp/Cv would be

A. 1
B. 1.33
C. 1.4
D. 1.41
E. 1.67

Answer & Explanation

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111. A system

A. Is a specified region, not necessarily of constant volume, where transfer of energy and/or mass are to be studied
B. Is a region of constant mass and only energy is allowed to cross the boundaries
C. Cannot transfer either energy or mass to or from the surroundings
D. Has a mass transfer across its boundaries and the mass within the system is not constant
E. None of the above

Answer & Explanation

Answer: Option **A**

Explanation:

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112. A system comprising a single phase is called a

A. Closed system
B. Open system
C. Isolated system
D. Homogeneous system
E. Heterogeneous system

Answer & Explanation

Answer: Option **D**

Explanation:

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113. Which one of the following is heterogeneous system

A. The cooling fluid in the radiator
B. Atmospheric air
C. Cooking gas in a cylinder
D. A mixture of hydrogen and oxygen
E. A mixture of ice, water and system.

Answer & Explanation

Answer: Option **E**

Explanation:

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114. Identify the incorrect statement

A. The temperature scale is independent of the properties of any substance
B. The size of a unit of temperature, the degree, has a rational interpretation
C. A region of coldest temperature, an absolute zero, is well defined
D. All of the above
E. None of the above

Answer & Explanation

Answer: Option **E**

Explanation:

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115. The internal energy of an ideal gas is

A. A function of temperature alone
B. A function of pressure
C. A function of volume
D. (a) and (b) only
E. All the above

Answer & Explanation

Answer: Option **A**

Explanation:

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116. In an automobile the gear box is fitted between

A. Engine and clutch
B. Clutch and differential
C. Differential and wheels
D. Clutch and wheels
E. Engine and flywheels

Answer & Explanation

Answer: Option **B**

Explanation:

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117. A fusible plug is utilised when

A. Steam generation rate is high
B. Water level is too low
C. Water level is too high
D. Impurities in water are excessive
E. Firing rate is high

Answer & Explanation

Answer: Option **B**

Explanation:

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118. A safety valve is used on boilers to

A. Check the level of water
B. Check the level of steam
C. Check the temperature of steam
D. To release excess pressure
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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119. A choke is applied in a car

A. For increasing speed
B. For fuel economy
C. For starting in cold weather
D. For starting in hot weather
E. For reduction of speed

Answer & Explanation

Answer: Option **C**

Explanation:

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120. The shape of the lid of manhole in a boiler is

A. Elliptical
B. Square
C. Rectangular
D. Circular
E. Special contour

Answer & Explanation

Answer: Option **A**

Explanation:

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121. The charge in a Diesel engine consists of
A. Air + diesel + lubricating oil
B. Air + diesel
C. Air + lubricating oil
D. Diesel + lubricating oil
E. Air
Answer & Explanation

Answer: Option **E**

Explanation:

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122. In a 2 stroke engine we get one power stroke in
A. 180? of crank rotation
B. 270? of crank rotation
C. 360? of crank rotation
D. 540? of crank rotation
E. 720? of crank rotation
Answer & Explanation

Answer: Option **C**

Explanation:

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123. A carburettor is used to supply
A. Diesel + air + lubricating oil
B. Petrol + air + lubricating oil
C. Petrol + lubricating oil
D. Air + lubricating oil
E. Petrol + air
Answer & Explanation

Answer: Option **E**

Explanation:

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124. The function of a distributor is
A. To distribute power
B. To distribute fuel
C. To distribute spark
D. To time the spark
E. To generate the spark
Answer & Explanation

Answer: Option **D**

Explanation:

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125. By applying chike in an automobile we get
A. Stoichiometric mixture
B. Chemically correct mixture
C. Lean mixture
D. Rich mixture
E. Weak mixture

Answer & Explanation

Answer: Option **D**

Explanation:

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126. In automobiles clutch is mounted between

A. Engine and flywheel
B. Flywheel and gear box
C. Gear box and differential
D. Engine and differential
E. Differential and wheels

Answer & Explanation

Answer: Option **B**

Explanation:

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127. The function of a clutch in automobiles

A. To disengage power from engine to flywheel
B. To disengage power from engine to gear box
C. To disengage power from engine to wheels
D. To disengage power from wheels to engine
E. To absorb power

Answer & Explanation

Answer: Option **B**

Explanation:

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128. In six stage compression of air set for minimum work conditions

A. Pressure rise per stage will be equal
B. Work done in successive stages will be in geometrical progression
C. Cylinder volumes will be same
D. Temperature rise in the cylinders will be the same
E. The discharge pressure will be six times suction pressure

Answer & Explanation

Answer: Option **D**

Explanation:

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129. Free piston engines find application in

A. Compression air supply
B. Mining installation
C. Gas turbines
D. supercharging reciprocating engines
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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130. For maximum specific output of a constant volume cycle

A. The working fluid should be air
B. The speed should be high
C. Suction temperature should be high
D. Exhaust pressure should be high
E. Temperature of the working fluid at the end of compression and expansion should be equal

Answer & Explanation

Answer: Option **E**

Explanation:

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131. Cut of ratio in a steam engine is the ratio of

A. Pressure at cut off to supply pressure
B. Pressure at cut off to exhaust pressure
C. Pressure at cut off to mean effective pressure
D. Fraction of piston stroke which the piston has travelled when cut off occurs
E. Work done by piston after cut off to total work done per cylinder

Answer & Explanation

Answer: Option **D**

Explanation:

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132. The rate of heat flow from a 50 mm thick wall of material having thermal conductivity of 40 W/m?C for a temperature difference of 10?C will be

A. 80 kcal/m2 hr
B. 800 kcal/m2 hr
C. 8000 kcal/m2 hr
D. 80000 kcal/m2 hr
E. 2000 kcal/m2 hr

Answer & Explanation

Answer: Option **D**

Explanation:

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133. The ratio of heat flow QA/QB from two walls of same thickness having thermal conductivity kA = 2 kB, for the same temperature difference will be

A. 1
D. 0.5
C. 2
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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134. A wall 50 mm thick (thermal conductivity k = 40 W/m?C) has temperature difference on two surfaces of 100?C. What could probably change if the temperature difference of this wall drops to 100?C

A. Thermal conductivity changes to 400 W/?C
B. Area of heat transfer increases 10 times
C. Thickness of wall increases to 500 mm
D. Thickness of wall reduces to 5 mm
E. Rate of heat flow drops to one tenth of the original

Answer & Explanation

Answer: Option **E**

Explanation:

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135. If the rate of heat flow in aboves case remains constant, the ratio of temperature difference (?t1) (?t2) would be

A.1 ; 4
B.1 ; 8
C.8 ; 1
D.16 ; 1
E.1 ; 16
Answer & Explanation

Answer: Option **D**

Explanation:

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136. Steady state heat transfer occurs when

A.The flow of heat is negligible
B.The flow of heat is uniform
C.The flow of heat is independent of time
D.The flow of heat is uniformly increasing
E.The flow of heat is uniformly decreasing
Answer & Explanation

Answer: Option **C**

Explanation:

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137. Pipes are insulated so that

A.They may not break under pressure
B.There is minimum corrosion
C.Capacity to withstand pressure is increased
D.Heat loss from the surface is minimized
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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138. Identify the correct statement

A.Thermal conductivity increases with molecular weight
B.Thermal conductivity increases with time
C.Thermal conductivity increases as the rate of heat flow increases
D.Thermal conductivity is independent of temperature
E.Thermal conductivity varies with temperature
Answer & Explanation

Answer: Option **E**

Explanation:

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139. In unsteady state, heat transfer occurs when

A.The body through which heat flow is in motion
B.The source of heat is in motion
C.The heat flow changes with change in temperature
D.The heat flow changes with time
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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140. Out of the following materials which may be expected to have higher value of thermal conductivity?

A.Clay
B.Wood
C.Asbestos
D.Refractory brick
E.Nichrome
Answer & Explanation

Answer: Option **E**

Explanation:

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141. The rate of radiant energy, which is emitted by a surface at any temperature and in small wavelengths is found from the known rate of energy, which under the same conditions would be emitted from a black surface, by multiplying with the absorptivity. Above enunciation is known as

A. Planck's law
B. Kirchhoff's law
C. Stefan Bolzmann's law
D. Lambart's rule
E. None of the above

Answer & Explanation

Answer: Option **B**

Explanation:

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142. A surface which diffusely reflects and emits tha same amount of energy which it receives by radiation, is known as

A. A perfect surface
B. A perfect grey surface
C. A perfect white surface
D. A perfect radiating surface
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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143. 1 micron is equivalent to

A. 10-2 cm
B. 10-3 cm
C. 10-4 cm
D. 10-6 cm
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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144. Planck's law of radiation is applicable to

A. Radiation of any kind
B. Temperature radiation
C. Monochromatic radiation
D. Thermal radiation
E. None of the above

Answer & Explanation

Answer: Option **E**

Explanation:

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145. Which rays have the least wavelength?

A. Infra-red
B. Ultraviolet
C. Radio
D. X-rays
E. Cosmic rays
Answer & Explanation

Answer: Option **E**

Explanation:

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146. The total radiant energy emitted by a plane surface per unit area and unit time is called
A. Radiant flux density
B. Total absorptivity
C. Radiant energy
D. Radiant intensity
E. None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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147. A perfect black body is
A. Black in colour
B. One which absorbs total radiant energy
C. One which does not reflect the radiant energy
D. One through which radiant energy is not transmitted
E. One which absorbs all radiant energy at all wavelengths
Answer & Explanation

Answer: Option **E**

Explanation:

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148. Identify the correct statement
A. Bodies black in colour are known as black bodies in radiation
B. Only some substances emit radiation
C. Quality and quantity of radiation depends on the properties of the material only
D. A substance will emit radiation at a particular wavelength only
E. All substances emit radiation the quality and quantity depends on the absolute temperature and properties of the material composing the radiating body
Answer & Explanation

Answer: Option **E**

Explanation:

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149. Wavelength is generally measured in
A. km
B. m
C. cm
D. mm
E. microns
Answer & Explanation

Answer: Option **E**

Explanation:

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150. A liquid flowing through a tube is turbulent. In which case will the maximum change in heat transfer coefficient occur?
A. Diameter of the tube is increased 2 times maintaining the velocity of flow constant
B. Diameter of the tube is increased 2 times maintaining the rate of liquid flow constant

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151. By doubling the temperature the radiant heat will increase
A.2 times
B.4 times
C.8 times
D.16 times
Answer & Explanation

Answer: Option **D**

Explanation:

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152. The heat flows through solids only by
A.Conduction
B.Convection
C.Radiation
Answer & Explanation

Answer: Option **A**

Explanation:

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153. Highly polished surfaces of a thermosflask prevent heat by
A.Conduction
B.Convection
C.Radiation
Answer & Explanation

Answer: Option **C**

Explanation:

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154. If the roof of a house is replaced by a shiny metallic surface the temperature inside will
A.Increase
B.Remain unaltered
C.Decrease
Answer & Explanation

Answer: Option **C**

Explanation:

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155. The concept of black body in heat transfers applies to
A.Objects which are black in colour
B.Objects which are good conductors of heat
C.Objects that completely absorb impinging radiation
D.Objects well insulated from surroundings
Answer & Explanation

Answer: Option **C**

Explanation:

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156. The rate of diffusion along a column of certain cross-sectional area is proportional to the concentration gradient. Above statement is known as

A. Thompson's law
B. Law of diffusion
C. Kirchhoff's law
D. Fick's law
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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157. Heat is transferred from an insulated steam pipe to the surrounding still air by

A. Conduction
B. Free convection
C. Forced convection
D. Radiation
E. All the above together

Answer & Explanation

Answer: Option **B**

Explanation:

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158. Non-dimensional numbers generally involved in case of heat transfer from horizontal cylinders by natural convection are

A. Reynolds number
B. Nusselt number
C. Prandtl number
D. Grashof number
E. (B), (C) and (D) above

Answer & Explanation

Answer: Option **E**

Explanation:

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159. Transformer oil having kinematic viscosity of 3.66 x 10-6 m2/s flows through a tube 8 mm diameter at velocity of 0.6 m/s. The value of Reynolds number of flow would be

A. 1000
B. 1310
C. 1415
D. 1510
E. 1600

Answer & Explanation

Answer: Option **B**

Explanation:

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160. In case of a four cylinder diesel engine, the heat carried away by exhaust gases will be

A. 5 to 7 percent
B. 7 to 10 percent
C. 10 to 20 percent
D. 25 to 35 percent
E. 50 to 70 percent

Answer & Explanation

Answer: Option **D**

Explanation:

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161. Thermal efficiency of most of the internal combustion engines lies in the range
A.90 to 100 percent
B.75 to 90 percent
C.50 to 75 percent
D.35 to 50 percent
E.20 to 35 percent
Answer & Explanation

Answer: Option **E**

Explanation:

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162. A gas which obeys kinetic theory perfectly is known as
A.Monoatomic gas
B.Diatomic gas
C.Real gas
D.Pure gas
E.Perfect gas
Answer & Explanation

Answer: Option **E**

Explanation:

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163. In a reversible polytropic process
A.Some heat transfer occurs
B.The entropy remains constant
C.Enthalpy remains constant
D.Internal energy remains constant
E.Temperature remains constant
Answer & Explanation

Answer: Option **A**

Explanation:

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164. Which of the following is conserved across a shock wave?
A.Temperature
B.Pressure
C.Momentum
D.All of the above
Answer & Explanation

Answer: Option **C**

Explanation:

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165. Within the boiler, the temperature of steam is highest in
A.Water drum
B.Water tubes
C.Water walls
D.Super heater
Answer & Explanation

Answer: Option **D**

Explanation:

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166. Which of the following is not a property of the system?
A.Temperature B.Pressure
C.Specific volume D.Work
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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167. Heat exchanger used in a steam condenser of a thermal power plant is
A.Direct contact type B.Recuperator type
C.Regenerator type D.Any one of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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168. The rate of discharge through the nozzle
A.remains same B.decreases
C.increases
Answer & Explanation

Answer: Option **C**

Explanation:

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169. When a gas is to be stored, the type of compression that would be ideal is
A.Isothermal B.Adiabatic
C.Polytropic D.Constant pressure
Answer & Explanation

Answer: Option **A**

Explanation:

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170. A process which does not dissipate available energy is known as
A.Adiabatic process B.Isothermal process
C.Ideal process D.Frictionless process
E.Energyless process
Answer & Explanation

Answer: Option **C**

Explanation:

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171. Which of the following turbines cannot be set below the maximum tail race level
A.Pelton
B.Francis
C.Kaplan
D.Propeller
Answer & Explanation

Answer: Option **C**

Explanation:

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172. If during a process, the entropy of the isolated system increases, the process is
A.Adiabatic
B.Isothermal
C.Reversible
D.Irreversible
E.Ideal
Answer & Explanation

Answer: Option **D**

Explanation:

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173. Isentropic flow is
A.Irreversible adiabatic flow
B.Ideal fluid flow
C.Perfect gas flow
D.Frictionless reversible flow
E.Change in entropy is zero
Answer & Explanation

Answer: Option **E**

Explanation:

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174. The unit of Universal Gas constant is
A.erg/?K
B.kcal/?K
C.Dynes/?K
D.W/m?K
E.It is dimensionless
Answer & Explanation

Answer: Option **A**

Explanation:

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175. Thermodynamic equilibrium is completely defined by the specifications of
A.Internal energy
B.Generalized displacement
C.All the above together
D.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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176. In which case the work done per kg of air compressed from 1.05 ata, 15?C to 6.3 ata is minimum

A. Adiabatic
B. Polytropic with index n = 1.3
C. Polytropic with index n = 1.35
D. Polytropic with index n = 1.40
E. Isothermal

Answer & Explanation

Answer: Option **E**

Explanation:

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177. Draught ensures supply of

A. Feed water
B. Air for combustion
C. Superheated steam
D. Coad to the boiler

Answer & Explanation

Answer: Option **B**

Explanation:

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178. Exhaust gases from a engine possess

A. Potential energy
B. Kinetic energy
C. Chemical energy
D. Solar energy
E. Stored energy

Answer & Explanation

Answer: Option **B**

Explanation:

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179. The extension and compression of a helical spring is an example of

A. Thermodynamic cycle
B. Adiabatic process
C. Isothermal process
D. Irreversible process
E. Reversible process

Answer & Explanation

Answer: Option **E**

Explanation:

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180. Diffusion is

A. Mixing of two portions of fluid
B. Mixing of a gas in two containers at different pressures
C. Mixing of two portions of a fluid at different temperatures
D. Mixing of unlike fluids
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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181. At critical point the latent enthalpy of vaporisation is
A.Only depends on temperature
B.Zero
C.Maximum
D.Minimum
E.None of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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182. Economiser in the boiler heats the
A.Steam
B.Air
C.Feed water
D.Coal
Answer & Explanation

Answer: Option **C**

Explanation:

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183. Least value of specific heat
A.Water
B.Ice
C.Stream
D.Air
E.Alcohol
Answer & Explanation

Answer: Option **D**

Explanation:

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184. The process during which external work done is not zero, is
A.Constant volume process
B.Constant pressure process
C.Throttling
D.Free expansion
E.All of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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185. Which of the following relations is not applicable to free expansion process?
A.Heat supplied = Zero
B.Heat rejected = Zero
C.Work done = Zero
D.Change in temperature = Zero
E.Change in internal energy = Zero
Answer & Explanation

Answer: Option **D**

Explanation:

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186. Which of the following relations is not valid during throttling process?

A. Total heat = Constant
B. Pressure drop = Zero
C. External work done = Zero
D. Change in internal energy = Zero
E. Change in enthalpy = Zero

Answer & Explanation

Answer: Option **B**

Explanation:

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187. The specific heat of water

A. Increases with rise of temperature
B. Decreases with rise of temperature
C. Does not change with temperature
D. First decreases, reaches a minimum value and then increases
E. First increases, reaches a maximum value and then decreases.

Answer & Explanation

Answer: Option **D**

Explanation:

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188. A substance above critical temperature exists as

A. Solid
B. Liquid
C. Gas
D. Unsaturated vapour
E. Any of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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189. Isothermals are curves obtained by drawing

A. P against T
B. PV against T
C. P against V
D. PV against V
E. V against T

Answer & Explanation

Answer: Option **C**

Explanation:

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190. In any process the maximum amount of mechanical energy that can be converted to heat

A. Depends upon the amount of friction
B. Depends upon the intake and exhaust temperature
C. Depends upon whether kinetic energy is involved
D. Is 50%
E. Is 100%

Answer & Explanation

Answer: Option **E**

Explanation:

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191. In all irreversible processes, the entropy of the system
A. Increases
B. Reduces to zero
C. Remains constant
D. Sometimes increases and sometimes decreases
E. Depends on medium
Answer & Explanation

Answer: Option **A**

Explanation:

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192. In a Carnot engine, when the working substance gives heat to the sink
A. The temperature of the sink increases
B. The temperature of the sink remains the same
C. The temperature of the source decreases
D. The temperature of both the sink and the source decreases
E. Changes depend on the operating conditions
Answer & Explanation

Answer: Option **B**

Explanation:

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193. If the temperature of the source is increased, the efficiency of the Carnot engine
A. Decreases
B. Increases
C. Does not change
D. Will be equal to the efficiency of a practical engine
E. Depends on their factors
Answer & Explanation

Answer: Option **B**

Explanation:

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194. The efficiency of an ideal (Carnot engine) depends on
A. Working substance
B. On the temperature of the source only
C. On the temperature of the sink only
D. On the temperature of both the source and the sink
E. On the construction of engine
Answer & Explanation

Answer: Option **D**

Explanation:

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195. If molar Cp = 4.97 then
A. Cv = 2.97
B. Cv = 1.97
C. Cv = 5.97
D. Cv = 0.97
E. Cv = 0.597

Answer & Explanation

Answer: Option **A**

Explanation:

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196. In an isothermal process change in internal energy

A. Decreases
B. Increases
C. Remains constant
D. Becomes zero
E. Depends on the friction and other factors

Answer & Explanation

Answer: Option **C**

Explanation:

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197. In an isothermal expansion of gases

A. Temperature is lowered
B. Temperature is raised
C. Temperature is unaltered
D. Temperature becomes zero
E. Temperature shows the extent of expansion

Answer & Explanation

Answer: Option **C**

Explanation:

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198. The triple point of a substance is the temperature and pressure at which

A. The solid and liquid phases are in equilibrium
B. The liquid and gaseous phases are in equilibrium
C. The solid, liquid and the gaseous phases are in equilibrium
D. The solid does not melt, the liquid does not boil and the gas does not condense

Answer & Explanation

Answer: Option **C**

Explanation:

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199. A heat engine works on a Carnot cycle with a heat sink at a temperature of 27?C. The efficiency of the engine is 10%, the temperature of the heat source is

A. 30?C
B. 270?C
C. 60?C
D. 10?C

Answer & Explanation

Answer: Option **C**

Explanation:

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200. Food can be cooked quicker in a pressure cooker because

A. Less heat is lost
B. High pressure steam has high temperature
C. Steam remains within the cooker
D. It is made of a metal
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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201. In an isothermal process
A. Temperature remains constant
B. Pressure remains constant
C. Volume remains constant
D. Kinetic energy remains constant
E. Inter-molecular energy remain constant
Answer & Explanation

Answer: Option **A**

Explanation:

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202. A thermistor is a
A. Thermocouple
B. Thermometer
C. Thermos flask
D. Miniature resistance
E. None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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203. The difference between two specific heats of a gas is equal to universal gas constant
A. When 1 gm of gas is heated
B. When 1 molecule of gas is heated
C. When 1 gm molecule heated
D. When 1 gm molecule heated
E. When any amount of gas is heated
Answer & Explanation

Answer: Option **C**

Explanation:

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204. During an adiabatic expansion the increase in volume is associated with
A. Decrease in pressure and decrease in temperature
B. Increase in pressure and decrease in temperature
C. Increase in pressure and increase in temperature
D. Decrease in pressure and increase in temperature
E. Depends on other factors
Answer & Explanation

Answer: Option **A**

Explanation:

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205. In an adiabatic change the system
A. Takes heat from the surroundings
B. Gives heat to the surrounding
C. Exchanges no heat with the surroundings
D. Partly takes heat and partly leaves to the surroundings

E. Heat taken from surroundings is exactly equal to heat rejected to surroundings

Answer & Explanation

Answer: Option **C**

Explanation:

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206. The process in which no heat enters or leaves the system is called

A. Isobaric
B. Isothermal
C. Isentropic
D. Isochoric
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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207. The ratio of the rise in temperature of a gas when compressed adiabatically to that when compressed isothermally to the same extent is

A. More than 1
B. Less than 1
C. Equal to 1
D. Depends on the gas

Answer & Explanation

Answer: Option **A**

Explanation:

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208. Work done by an expanding gas under adiabatic condition results in

A. No change in temperature
B. Temperature increase
C. Temperature decrease
D. Temperature decreases first and then increase
E. Temperature increase first and then decrease

Answer & Explanation

Answer: Option **C**

Explanation:

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209. An amount of heat given to a gas under isothermal conditions will be

A. For a temperature rise
B. For doing external work
C. For doing external work and also for a temperature rise
D. For increasing the internal energy of the gas
E. None of the above

Answer & Explanation

Answer: Option **B**

Explanation:

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210. In an adiabatic compression the decrease in volume is associated with

A. Decrease in temperature and increase in pressure
B. Decrease in temperature and decrease in pressure
C. Increase in temperature and decrease in temperature
D. Increase in temperature and increase in pressure

Answer & Explanation

Answer: Option **D**

Explanation:

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211. Balanced draft incorporates
A.Forced draft
B.Induced draft
C.Forced and induced draft
D.Chimney draft only
Answer & Explanation

Answer: Option **C**

Explanation:

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212. During an adiabatic process the change in entropy is
A.Positive
B.Negative
C.Zero
D.Positive or Negative
E.Approximately zero
Answer & Explanation

Answer: Option **C**

Explanation:

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213. Entropy of the universe tends to
A.A minimum
B.Zero
C.A maximum
D.No particular value as it remains constant
Answer & Explanation

Answer: Option **C**

Explanation:

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214. In a reversible cycle, the entropy of the system
A.Increases
B.Decreases
C.Does not change
D.First increases and then decreases
E.Depends on the properties of working substance
Answer & Explanation

Answer: Option **C**

Explanation:

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215. A frictionless heat engine can be 100% efficient only if its exhaust temperature is
A.Equal to its input temperature
B.Less than its input temperature
C.0?C
D.0?K
E.?100?C
Answer & Explanation

Answer: Option **D**

Explanation:

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216. Joule Thomson coefficient for an ideal gas having equation pv = RT is

A. Unity
B. 0.5
C. Zero

Answer & Explanation

Answer: Option **C**

Explanation:

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217. Which of the following gas has the highest values for the adiabatic index?

A. Helium
B. Oxygen
C. Methane
D. Air
E. Nitrogen

Answer & Explanation

Answer: Option **A**

Explanation:

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218. The percentage of carbondioxide in the exhaust gases from a diesel engine cannot exceed

A. 55%
B. 50.50%
C. 40%
D. 36%
E. 29%

Answer & Explanation

Answer: Option **E**

Explanation:

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219. Which of the following statement is incorrect?

A. Total heat of steam is less than the total weight of dry and super saturated steam
B. Total heat of super heated steam is more than the total heat of wet steam
C. Latent heat of steam at critical pressure is zero
D. Latent heat per kg of steam decreases as the pressure of steam increases
E. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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220. Which of the following relation is not valid for throttling process?

A. Enthalpy before expansion = Enthalpy after expansion
B. Pressure before expansion = pressure after expansion
C. External work done = Zero
D. Mass before expansion = mass after expansion
E. None of the above

Answer & Explanation

Answer: Option **B**

Explanation:

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221. Which of the following changes during throttling process?

A. Pressure
B. Temperature
C. Internal energy
D. Pressure x Volume
E. All of the above

Answer & Explanation

Answer: Option **A**

Explanation:

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222. For an ideal gas the value of Joule Kelvin coefficient is

A. Zero
B. 0.5
C. Unity
D. Infinite
E. Negative

Answer & Explanation

Answer: Option **A**

Explanation:

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223. A gas can never be liquid

A. Above room temperature
B. When it is impure
C. When it is diatomic
D. When it is reactive with any other gas
E. Above critical temperature

Answer & Explanation

Answer: Option **E**

Explanation:

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224. The term "pre-whirl" is associated with

A. Reciprocating air compressors
B. Gas turbines
C. Super-charged diesel engines
D. Centrifugal air compressors
E. Sliding vane type air compressors

Answer & Explanation

Answer: Option **D**

Explanation:

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225. In an optimum four stage compressor system the first and third stage pressure are 1 kg/cm2 and 9 kg/cm2 respectively what will be the fourth stage delivery pressure?

A.3 kg/cm2
B.6 kg/cm2
C.9 kg/cm2
D.27 kg/cm2
E.81 kg/cm2
Answer & Explanation

Answer: Option **E**

Explanation:

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226. According to Lussac's law for perfect gases, the absolute pressure of given mass varies directly as
A.Temperature
B.Absolute temperature
C.Absolute temperature in case the volume remains constant
D.The product of volume and absolute temperature
E.None of the above
Answer & Explanation

Answer: Option **C**

Explanation:

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227. Gas laws are applicable to
A.Gases only
B.Gases and wet vapours
C.Gases and dry vapours
D.Gases and dry and wet vapours
E.Gases and dry, wet and super-heated vapours
Answer & Explanation

Answer: Option **A**

Explanation:

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228. The behaviour of which of the following vapour is closer to that of a gas?
A.Wet vapour
B.Dry vapour
C.Superheated vapour
D.Wet and dry vapour
E.Wet and superheated vapours
Answer & Explanation

Answer: Option **C**

Explanation:

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229. According to Kinetic theory of gases, at absolute zero
A.Specific heat of molecules will reduce to zero
B.Mass of gas will reduce to zero
C.Volume of gas will reduce to zero
D.Pressure of gas will reduce to zero
E.Kinetic energy of gas molecules will reduce to zero
Answer & Explanation

Answer: Option **E**

Explanation:

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230. According to the Kinetic theory of gases the collision between the molecules are assumed to be
A.Perfectly elastic
B.Perfectly inelastic
C.50% elastic
D.Partly elastic
E.Partly inelastic
Answer & Explanation

Answer: Option **A**

Explanation:

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231. "The internal energy of a gas is a function of temperature". Which of the following name is associated with the above law?

A.Joule
B.Charle
C.Boyle
D.Regnault
E.Dalton

Answer & Explanation

Answer: Option **A**

Explanation:

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232. "The molecular weights of all the perfect gases occupy the same volume under same conditions of pressure and temperature".

A.Avogadro's hypothesis
B.Gay Lussac's law
C.Boyle's law
D.Balton's law
E.Regnault's law

Answer & Explanation

Answer: Option **A**

Explanation:

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233. Which of the following is not a path function?

A.Work
B.Heat
C.Kinetic energy
D.Thermal conductivity
E.All of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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234. A mixture of liquid and vapour Freon in a vessel is an example of

A.Closed system
B.Transient system
C.Isolated system
D.Open system
E.Heterogeneous system

Answer & Explanation

Answer: Option **E**

Explanation:

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235. During the boiling of a liquid, which of the following parameter increases?

A.Temperature
B.Free energy
C.Entropy
D.Heat of vaporisation
E.None of the above
Answer & Explanation

Answer: Option **C**

Explanation:

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236. "Heat flows from hot substance to cold substance unaided". The name associated with the above statement is
A.Clausius
B.Joule
C.Gay Lussac
D.Kelvin
E.Planck
Answer & Explanation

Answer: Option **A**

Explanation:

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237. A machine that continuously creates its own energy is known as
A.Reversible machine
B.100% efficient machine
C.Self-propelled machine
D.Perpetual motion machine of first kind
E.Perpetual motion machine of second kind
Answer & Explanation

Answer: Option **D**

Explanation:

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238. On a temperature-entropy diagram the slope of constant pressure line is given by
A.T/S
B.S/T
C.T/Cp
D.Cv/T
E.T/Cv
Answer & Explanation

Answer: Option **C**

Explanation:

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239. When a gas expands in a closed vessel, the maximum work will be done when the process is at constant
A.Volume
B.Temperature
C.Pressure
D.Enthalpy
E.Entropy
Answer & Explanation

Answer: Option **C**

Explanation:

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240. In a closed system, the change in enthalpy will be equal to the heat transferred when a reversible process takes place at constant
A.Volume
B.Pressure
C.Temperature
D.Entropy
E.Internal energy
Answer & Explanation

Answer: Option **B**

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241. "Heat can flow from cold substance to hot substance with the aid of external work". Which of the following name is associated with the above statement?

A.Clausius
B.Joule
C.Kelvin
D.Planck
E.Gay Lussac
Answer & Explanation

Answer: Option **A**

Explanation:

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242. For water which of the following will be reduced to zero at critical pressure?

A.Specific volume
B.Enthalpy
C.Internal energy
D.Latent heat of vaporisation
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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243. Heating wet steam at constant temperature is same as heating at

A.Constant pressure
B.Constant volume
C.Constant enthalpy
D.Constant entropy
E.None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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244. A gs which satisfies the Kinetic theory of gases is known as

A.Manoatomic gas
B.Diatomic gas
C.Real gas
D.Perfect gas
E.None of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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245. If during a process the entropy of a isolated system increases, the process is

A.Ideal
B.Reversible
C.Irreversible
D.Polytropic
E.None of the above
Answer & Explanation

Answer: Option **C**

Explanation:

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246. Which of the following is a reversible process?
A.Free expansion
B.Throttling
C.Combustion
D.Diffusion
E.Extension and compression of a spring
Answer & Explanation

Answer: Option **E**

Explanation:

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247. If a system neither exchange mass nor energy with the surroundings, it is known as
A.Segregated system
B.Semi-closed system
C.Closed system
D.Isolated system
E.Inactive system
Answer & Explanation

Answer: Option **D**

Explanation:

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248. Thermei is
A.A unit of temperature measurement
B.A unit of latent heat
C.A semi-conductor
D.An impurity added to a semi-conductor
E.Quantity of heat required to raise temperature of one tonne of water from 14.5?C to 15.5?C
Answer & Explanation

Answer: Option **E**

Explanation:

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249. In a reversible polytropic process
A.Some heat transfer occurs
B.Entropy remains constant
C.Enthalpy remains constant
D.Internal energy remains constant
E.None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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250. One bar pressure is the same as
A.1 N/m2
B.100 N/m2
C.1000 N/m2
D.100,000 N/m2
E.1000,000 N/m2
Answer & Explanation

Answer: Option **D**

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251. One watt is the same as
A.1 Nm/s
B.1 Nm/min
C.10 Nm/min
D.10 Nm/s
E. 100 Nm/s
Answer & Explanation

Answer: Option **A**

Explanation:

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252. The value of universal gas constant in S.I. units is
A.8314 J/kg mole/?k
B.831.4 J/kg mole/?k
C.83.14 J/kg mole/?k
D.8.314 J/kg mole/?k
E. 0.8314 J/kg mole/?k
Answer & Explanation

Answer: Option **A**

Explanation:

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253. 287 J/kg/?k is the value of
A.Gas constant in MKS units
B.Gas constant in S.I. units
C.Universal gas constant in MKS units
D.Universal gas constant in S.I. units
E. None of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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254. One kg of water is evaporated from 6 kg of sea water containing 4% salt. The percentage of salt in the remaining solution will be
A.1%
B.3.33%
C.4%
D.4.80%
E. 6%
Answer & Explanation

Answer: Option **D**

Explanation:

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255. Air leaking from a punctured tube is an example of

A.Throttling
B.Adiabatic expansion
C.Isothermal expansion
D.Constant volume expansion
E.Constant pressure expansion
Answer & Explanation

Answer: Option **A**

Explanation:

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256. An adlabatic wall permits
A.Conduction heat flow only
B.Convective heat flow only
C.Radiation heat flow only
D.Heat exchange by all the three modes of heat transfer
E.No heat exchange
Answer & Explanation

Answer: Option **E**

Explanation:

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257. A diathermic wall permits
A.Conduction heat flow only
B.Convective heat flow only
C.Radiation heat flow only
D.Heat exchange by all the three modes of heat transfer
E.No heat exchange
Answer & Explanation

Answer: Option **D**

Explanation:

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258. 1 bar pressure is nearly equal to
A.1 mm Hg
B.13.4 mm Hg
C.100 mm Hg
D.735 mm Hg
E.750 mm Hg
Answer & Explanation

Answer: Option **E**

Explanation:

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259. Which of the following is not a reversible cycle?
A.Carnot cycle
B.Stirling cycle
C.Ericsson cycle
D.Otto cycle
E.All of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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260. Which of the following cycle consists of two constant pressure and two adiabatic processes?
A.Carnot cycle
B.Joule cycle
C.Dual cycle
D.Diesel cycle
E.Otto cycle
Answer & Explanation

Answer: Option **B**

Explanation:

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261. A Brayton cycle is also a reversed
A. Carnot cycle
B. Rankine cycle
C. Joule cycle
D. Otto cycle
E. Dual cycle
Answer & Explanation

Answer: Option **C**

Explanation:

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262. Which of the following cycle is less efficient as compared to the remaining?
A. Carnot cycle
B. Stirling cycle
C. Ericsson cycle
D. Otto cycle
E. All have identical efficiency
Answer & Explanation

Answer: Option **D**

Explanation:

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263. The efficiency of a dicsel cycle will be maximum when
A. Speed is high
B. Injection pressure is high
C. Cylinder is water cooled
D. Cut off is zero
E. Engine is super-charged
Answer & Explanation

Answer: Option **D**

Explanation:

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264. Which of the following is a non-petroleum fuel?
A. Diesel oil
B. Petrol
C. Naphtha
D. Alcohol
E. All of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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265. In which of the following case the process of sublimation can occur?
A. Solid carbondioxide
B. Solid oxygen
C. Solid nitrogen
D. Liquid air
E. Sodium

Answer & Explanation

Answer: Option **A**

Explanation:

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266. The RMS velocity of hydrogen gas at N.T.P. is nearly

A.839 m/s
B.1839 m/s
C.2839 m/s
D.3839 m/s
E.4839 m/s

Answer & Explanation

Answer: Option **B**

Explanation:

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267. Which of the following cycle consists of two isothemal and two constant volume processes?

A.Stirling cycle
B.Joule cycle
C.Diesel cycle
D.Rankine cycle
E.Otto cycle

Answer & Explanation

Answer: Option **A**

Explanation:

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268. Which of the following cycle consists of two isothermal and constant volume processes?

A.Joule cycle
B.Diesel cycle
C.Rankine cycle
D.Otto cycle
E.Ericsson cycle

Answer & Explanation

Answer: Option **E**

Explanation:

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269. "It is impossible to construct a heat engine which operates in a cycle and receives a given amount of heat from a high temperature body and does equal amount of work". Which of the following name is associated with the above statement?

A.Gay Lussac
B.Kinetic theory
C.Kelvin-planck
D.Joule-thomson
E.None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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270. "What two dissimilar metals are heated at one end cooled at the other c.m.f. is developed proportional to difference of temperatures at two ends". Which of the following name is associated with the above statement?

A.Kelvin-planck
B.Gay-Lussac
C.Euler
D.Peltier-Thomson
E.Faraday

Answer & Explanation

Answer: Option **D**

Explanation:

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271. When a bicycle pump is operated slowly the process of compression will be nearly
A. Isothermal process
B. Constant volume process
C. Constant pressure process
D. Throttling process
E. Free compression
Answer & Explanation

Answer: Option **A**

Explanation:

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272. Which of the following does not change during an-ideal throttling process?
A. Enthalpy
B. Enthalpy and temperature
C. Temperature and pressure
D. Pressure and volume
E. Pressure, volume and temperature
Answer & Explanation

Answer: Option **A**

Explanation:

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273. In a Carnot cycle the heat is rejected at
A. Constant volume
B. Constant pressure
C. Constant temperature
D. Constant enthalpy
E. Constant entropy
Answer & Explanation

Answer: Option **C**

Explanation:

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274. In a Joule cycle, the heat is rejected at
A. Constant volume
B. Constant pressure
C. Constant temperature
D. Constant enthalpy
E. Constant entropy
Answer & Explanation

Answer: Option **B**

Explanation:

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275. The area of pv diagram for a Carnot cycle represents
A. Work done
B. Temperature drop
C. Enthalpy drop
D. Total heat supplied
E. Volume and pressure ratios.

Answer & Explanation

Answer: Option **A**

Explanation:

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276. Maxwell's thermodynamic relations are valid for

A. Closed system only
B. All processes
C. Only reversible processes
D. A thermodynamic system in equilibrium
E. Transient conditions only

Answer & Explanation

Answer: Option **D**

Explanation:

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277. In case the thermal efficiency of an engine becomes 100% it will violate

A. Zeroth law of thermodynamics
B. First law of thermodynamics
C. Second law of thermodynamics
D. Third law of thermodynamics
E. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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278. In case of six stage compression of air for minimum work conditions

A. Pressure rise per stage will be equal
B. Work done in successive stages will be in geometrical progression
C. Cylinder volumes will be identical
D. Piston diameters will be identical
E. Temperature rise in the cylinders will be the same

Answer & Explanation

Answer: Option **B**

Explanation:

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279. The mixture formation in a carburettor is based on the principle of

A. Law of vapours
B. Daltons law
C. Pascal's law
D. Newtons law of motion
E. Venturi principle

Answer & Explanation

Answer: Option **E**

Explanation:

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280. In case of centrifugal compressors the phenomenon of fixed mass flow rate in compressor regardless of pressure ratio is known as

A. Surging
B. Stalling
C. Choking
D. Regeneration
E. Recirculation

Answer & Explanation

Answer: Option **C**

Explanation:

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281. In case of centrifugal compressors, the phenomenon of air stream not able to follow the blade contour of an axial compressor is known as

A. Surging
B. Stalling
C. Regeneration
D. Recirculation
E. Feedback

Answer & Explanation

Answer: Option **B**

Explanation:

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282. In centrifugal compressors, the ratio of outlet whirl velocity to blade velocity at outlet is known as

A. Slip factor
B. Gauge factor
C. Feedback factor
D. Velocity factor
E. Reheat factor

Answer & Explanation

Answer: Option **A**

Explanation:

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283. Which of the following is not a positive displacement compressor?

A. Centrifugal compressor?
B. Single stage reciprocating compressor
C. Double acting reciprocating compressor
D. Roots blower
E. Vane type compressor

Answer & Explanation

Answer: Option **A**

Explanation:

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284. The ratio of enthalpy rise in rotor of a centrifugal compressor to the enthalpy rise in stage is called

A. Volumetric efficiency
B. Adiabatic efficiency
C. Degree of reaction
D. Static pressure ratio
E. Dynamic pressure ratio

Answer & Explanation

Answer: Option **C**

Explanation:

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285. In case of axial flow compressors for minimum fluid driction and blade tip clearance losses, the blades of an axial flow compressor are disigned for

A.90% reaction
B.75% reaction
C.60% reaction
D.53% reaction
E. Less than 50% reaction
Answer & Explanation

Answer: Option **D**

Explanation:

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286. In axial flow compressors, the phenomenon of stalling of blades occurs when
A.Blades vibrate violently
B.Blades fail due to creep
C.Air stream is not able to follow the blade contour
D.Air stream blocks the passage
E. Air stream flows with sonic velocity
Answer & Explanation

Answer: Option **C**

Explanation:

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287. In case of centrifugal compressors the phenomenon of unsteady, periodic and reversed flow is known as
A.Surging
B.Stalling
C.Choking
D.Either of above
E. None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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288. Which one of the following is an indirect reaction device?
A.Turbojet
B.Ramjet
C.Pulsejet
D.Propeller
E. All of the above
Answer & Explanation

Answer: Option **D**

Explanation:

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289. Which of the following does not use ambient air for propulsion?
A.Turbojet
B.Turboprop
C.Rocket
D.Pulsojet
E. Propellor
Answer & Explanation

Answer: Option **C**

Explanation:

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290. Which of the engine is used for fighter bombers?
A.Turbo prop
B.Turbojet
C.Ramjet
D.Rockets
E. Pulsejet
Answer & Explanation

Answer: Option **B**

Explanation:

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291. Which of the following is the best fuel for diesel engines?

A.Olefins B.Paraffins
C.Naphthenes D.Aromatics
Answer & Explanation

Answer: Option **B**

Explanation:

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292. The ability of gasoline to resist detonation during combustion is given by

A.Octane number B.Cetane number
C.iso-octane number D.heptane number
Answer & Explanation

Answer: Option **A**

Explanation:

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293. In a diesel engine fuel is injected

A.at the beginning of compression stroke B.before the end of compression stroke
C.at the end of compression stroke D.after the end of compression stroke
Answer & Explanation

Answer: Option **B**

Explanation:

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294. Cetane number of a diesel fuel is a measure of its

A.volatility B.viscosity
C.ignition quality D.delay period
Answer & Explanation

Answer: Option **C**

Explanation:

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295. Carburetted water gas is obtained by

A.Passing alternately steam and air through while hot carbon B.Burning oil
C. spraying oil into a carburettor filled with hot brick elieckar work through which the gases pass D.heating water at high temperature in a copper vessel
Answer & Explanation

Answer: Option **A**

Explanation:

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296. Which of the following is the best fuel for S.I. engines?

A.Aromatics B.Naphthenes
C.Paraffins D.Olefins
Answer & Explanation

Answer: Option **A**

Explanation:

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297. A petrol engine fuel that knocks at a low speed

A.has a high octane rating B.may not knock at high speed
C.will always knock at high speed D.will have low fire point
Answer & Explanation

Answer: Option **C**

Explanation:

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298. The mean free path of a gas molecule increases with

A.increase in temperature B.decrease in temperature
C.increase in density D.increase in pressure
Answer & Explanation

Answer: Option **A**

Explanation:

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299. The critical temperature of carbondioside is 31.1?C. If the room temperature is 34.7?C, then carbondioxide at room temperature is

A.gas B.wet vapour
C.vapour D.superheated vapour
Answer & Explanation

Answer: Option **A**

Explanation:

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300. The average pressure on the walls of a vessel will be doubled if the

A.average velocity of the molecules in it is doubled B.the number of molecules in the vessel is doubled
C.the mass of each molecule is doubled D.the mass of each molecule is halved
Answer & Explanation

Answer: Option **B**

Explanation:

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301. In adiabatic compression the decrease in volume is associated with
A.increase in temperature and increase in pressure
B.increase in temperature and decrease in pressure
C.decrease in temperature and decrease in pressure
D.decrease in temperature and increase in pressure
Answer & Explanation

Answer: Option **A**

Explanation:

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302. The dimensions of 'a' will be
A.ML2T
B.ML3T-2
C.ML5T-2
D.ML6T-2
Answer & Explanation

Answer: Option **C**

Explanation:

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303. The energy required to heat 1 gm of water from 0?F to 0?C will be nearly
A.zero
B.32 cal
C.32 J
D.74.6 J
Answer & Explanation

Answer: Option **D**

Explanation:

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304. A carnot cycle engine operating between temperature range of 50?C and 100?C will have the efficiency of nearly
A.50%
B.40%
C.26.80%
D.13.40%
Answer & Explanation

Answer: Option **D**

Explanation:

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305. A constant volume gas thermometer closely follows:
A.Boyle's law
B.Charle's law
C.Gay Lussac's law
D.None of the above
Answer & Explanation

Answer: Option **B**

Explanation:

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306. Two vessels of volume 5 litres and 3 litres contain air at a pressure of 3 atmospheres and 5 atmospheres respectively. When the two vessels are connected together by a small tube (at constant temperature) the reusltant pressure will be

A.3.75 atm
B.4.0 atm
C.4.5 atm
D.5.0 atm

Answer & Explanation

Answer: Option **A**

Explanation:

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307. Which of the following is a path function quantity?

A.Enthalpy
B.Temperature
C.Work done
D.Pressure

Answer & Explanation

Answer: Option **C**

Explanation:

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308. During adiabatic expansion which of the following remains constant:

A.Internal energy
B.Temperature
C.Entropy
D.None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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309. Kelvin's law deals with

A.conservation of heat
B.conservation of work
C.conversion of heat into work
D.conversion of work into heat

Answer & Explanation

Answer: Option **C**

Explanation:

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310. The process in which the change in internal energy of a gas is equal to the work done is known as

A.isochoric process
B.isobaric process
C.isothermal process
D.adiabatic process

Answer & Explanation

Answer: Option **D**

Explanation:

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311. During constant pressure heating of a gas the following does not increase?
A.Temperature B.Entropy
C.Volume D.Pressure
Answer & Explanation

Answer: Option **D**

Explanation:

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312. The temperature, in degrees celsius, at which the colsius scale reading is numerically half the Fahrenheit scale reading is
A.20?C B.42?C
C.80?C D.160?C
Answer & Explanation

Answer: Option **D**

Explanation:

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313. In case the temperature of a hot body is increased by 50%, the amount of radiation emitted by it would increase by nearly
A.50% B.125%
C.250% D.500%
Answer & Explanation

Answer: Option **D**

Explanation:

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314. If the door of a refrigerator in a room is left open, the temperature of the room will
A.decrease B.increase
C.remain unaltered
Answer & Explanation

Answer: Option **B**

Explanation:

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315. A piece of paper wrapped tightly on a copper rod will get charred relatively slowly when held over a flame as compared to a piece of paper wrapped tightly on any of the following rod except:
A.brass rod B.silver rod
C.wooden rod D.iron rod
Answer & Explanation

Answer: Option **B**

Explanation:

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316. The number of degrees of freedom for a diatomic molecule is

A.3 B.4
C.5 D.6
Answer & Explanation

Answer: Option **C**

Explanation:

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317. Which of the following remains constant during an adiabatic process?

A.internal energy B.enthalpy
C.entropy D.All of the above
Answer & Explanation

Answer: Option **C**

Explanation:

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318. During isothermal process

A.rejection of heat is accompanied by decrease in volume B.supply of heat is accompanied by rise in temperature
C.drop in pressure is accompanied by drop in volume D.rise in entropy is accompanied by rise in temperature
Answer & Explanation

Answer: Option **A**

Explanation:

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319. The difference between two specific heats of a gas is equal to universal constant when

A.1 gm of gas is heated B.1 gm molecule of gas is heated
C.1 mole of gas is heated D.any amount of gas is heated
Answer & Explanation

Answer: Option **B**

Explanation:

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320. A cycle which consists of two adiabatic and two constant volume processes is known as

A.Otto cycle B.Stirling cycle
C.Diesel cycle D.Carnot cycle
Answer & Explanation

Answer: Option **A**

Explanation:

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321. Which two cycles have one constant volume, one constant pressure and two adiabatic processes each?
A.Diesel and Dual cycles
B.Brayton and Joules cycle
C.Sterling and Diesel cycles
D.Otto and Carnot cycles
Answer & Explanation

Answer: Option **C**

Explanation:

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322. A scavenging pump is used in
A.four stroke compression ignition engines
B.steam engines
C.two stroke spark ignition engines
D.vapour compression cycles
Answer & Explanation

Answer: Option **C**

Explanation:

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323. During an adiabatic expansion, the increase in volume is associated with
A.Decrease in pressure and decrease in temperature
B.decrease in pressure and increase in temperature
C.increase in pressure and decrease in temperature
D.increase in pressure and increase in temperature
Answer & Explanation

Answer: Option **A**

Explanation:

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324. According to Boyle's law PV = C when the temperature is constant. In this relation the magnitude of C depends upon
A.quantity of the gas involved
B.molecular weight of the gas
C.atomicity of the gas
D.atmospheric pressure
Answer & Explanation

Answer: Option **A**

Explanation:

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325. A gas (inversion temperature Ti) undergoing Joule Thomson expansion at temperature T will produce cooling effect only when
A.Ti = T
B.Ti > T
C.Ti < T
Answer & Explanation

Answer: Option **C**

Explanation:

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326. If the sun becomes twice as hot

A. its output of radiation energy will fall
B. it will disintegrate into fragments
C. it will radiate predominantly in infra-red
D. it will radiate predominantly ultraviolet

Answer & Explanation

Answer: Option **D**

Explanation:

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327. Which of the following is not a characteristic of liquid air?

A. It has no surface tension
B. It will freeze mercury and ammonia
C. It will cause rubber to become brittle
D. It will separate out lead from solder

Answer & Explanation

Answer: Option **B**

Explanation:

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328. Theoretically in a petrol engine during which stroke both suction as well as exhaust valves will remain closed?

A. Suction stroke
B. Exhaust stroke
C. Both suction and exhaust strokes
D. None of the above

Answer & Explanation

Answer: Option **D**

Explanation:

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329. The area inside the PV diagram for a diesel engine represents

A. heat supplied
B. work supplied
C. work done
D. change in entropy

Answer & Explanation

Answer: Option **C**

Explanation:

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330. Three engines A, B and C operating on Carnot cycle use working substances as oxygen, hydrogen and air. Which engine will have higher efficiency?

A. Angine A
B. Engine B
C. Engine C
D. All will have the same efficiency

Answer & Explanation

Answer: Option **D**

Explanation:

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331. The specific heat of a perfect gas is a function of
A.temperature only
B.temperature and pressure only
C.temperature and entropy only
D.temperature, pressure and entropy only
Answer & Explanation

Answer: Option **A**

Explanation:

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332. All of the following are intensive properties EXCEPT:
A.Mass
B.Density
C.Viscosity
D.Temperature
Answer & Explanation

Answer: Option **A**

Explanation:

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333. Which of the following is an extensive property?
A.Surface tension
B.Heat capacity
C.Refractive index
D.Viscosity
Answer & Explanation

Answer: Option **B**

Explanation:

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334. The temperature of a gas is a measure of
A.the average kinetic energy of the gaseous molecules
B.the average distance between the molecules of the gas
C.The average potential energy of the molecules
D.None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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335. Which of the following gas will satisfy, Boyle's law over a wider range of temperatures and pressures?
A.Oxygen
B.Hydrogen
C.Helium
D.Carbon monoxide
Answer & Explanation

Answer: Option **C**

Explanation:

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336. Line's liquifer is based on the principle of

A.adiabatic expansion
B.Joule-Thomson effect
C.adiabatic magnetisation
D.adiabatic demagnetisation

Answer & Explanation

Answer: Option **A**

Explanation:

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337. The melting point of ice

A.is independent of atmospheric pressure
B.increases with increase in atmospheric pressure
C.decreases with increase in atmospheric pressure

Answer & Explanation

Answer: Option **C**

Explanation:

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338. As we go up in air the temperature of air decreases because

A.winds help in heat transfer by convection
B.oxygen content of air decreases sharply
C.of low pressure of air
D.heating effect due to infra red radiations from the surface of the earth is reduced

Answer & Explanation

Answer: Option **D**

Explanation:

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339. Two gases X and Y having the same temperature T, the same pressure P and the same volume V are mixed. If the mxiture has the volume V and temperature T, then the pressure of the mixture must be

A.4P
B.P
C.2P

Answer & Explanation

Answer: Option **C**

Explanation:

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340. In Porous plug experiment the change in temperature of a gas depends upon

A.its molecular weight
B.its specific heat
C.pressure gradient on either side
D.All of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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341. The mean free path of a gas least depends on
A.viscosity of gas
B.pressure of gas
C.density of gas
D.volume of gas
Answer & Explanation

Answer: Option **D**

Explanation:

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342. Most of gases exhibit drop in temperature upon expansion. However, this may not be true in case of
A.Carbondioxide
B.Oxygen
C.Hydrogen
D.Helium
Answer & Explanation

Answer: Option **C**

Explanation:

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343. For a gas the difference between the values of Cp and Cv aceounts for
A.external work done
B.increased kinetic energy of molecules
C.increase in volume is more rapid as compared to that of pressure
D.None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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344. A gas having adiabatic index y = 1.4 and atmic weight A will have molecular weight
A.A
B.3A
C.2A
Answer & Explanation

Answer: Option **C**

Explanation:

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345. If a surface is elastically hit by N balls each of mass M, moving with same velocity V, the force on the surface will be
A.MNV
B.2 MNV
C.2 MNV2
D.4 MNV
Answer & Explanation

Answer: Option **B**

Explanation:

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346. The specific heat at constant volume of solids obeys Deby's T3 law

A.at high pressures
B.at low pressures
C.at low temperatures
D.at all temperatures

Answer & Explanation

Answer: Option **D**

Explanation:

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347. One litre of gas A and two litres of gas B. both having same temperature 100?C and same pressure 2.5 bar will have the ratio of kinetic energies of their molecules as

A.1 ; 1
B.1 ; 2
C.1 ; 4
D.4 ; 1

Answer & Explanation

Answer: Option **A**

Explanation:

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348. The fastest moving gas molecules are those of

A.Nitrogen
B.Oxygen
C.Chlorine
D.Hydrogen

Answer & Explanation

Answer: Option **D**

Explanation:

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349. The external work donw is zero all the following cases EXCEPT:

A.Isothermal
B.Constant volume
C.Free expansiton
D.Throttling

Answer & Explanation

Answer: Option **A**

Explanation:

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350. Which of the following relation does not hold good for a throttling process?

A.dW = 0
B.dQ = 0
C.dH = 0
D.dS = 0

Answer & Explanation

Answer: Option **D**

Explanation:

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351. Which of the following is a boiler accessory?
A.Fusible plug
B.Water level indicator
C.Economiser
D.Stop valve
Answer & Explanation

Answer: Option **C**

Explanation:

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352. In a boiler a fusible plug is located at the
A.bottom of fire tubes
B.bottom of drum
C.top of superheater
D.inlet to stop valve
Answer & Explanation

Answer: Option **A**

Explanation:

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0.5-35t Steam Boiler

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353. Which of the following valve is installed between the boiler and the feed pump?
A.Steam stop valve
B.Flow of cock
C.Feed check valve
D.Throttle valve
Answer & Explanation

Answer: Option **C**

Explanation:

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354. A jar contains a mixture of oxygen and hydrogen gas in the ratio 1 : 5. The ratio of mean knetic energies of hydrogen and oxygen molecules is
A.1 ; 1
B.1 ; 4
C.1 ; 5
D.1 ; 16
Answer & Explanation

Answer: Option **A**

Explanation:

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355. Three Carnot engines A, B and C having source temperature of 750?K, 700?K and 650?K have sink temperatures respectively 400?k, 350?k and 300?k. Which engine is the least efficient?
A.Engine A
B.Engine B
C.Engine C
D.All being Carnot engine have identical efficiencies
Answer & Explanation

Answer: Option **A**

Explanation:

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356. The ratio of the rise in temperature of a gas when compressed adiabatically to that when compressed isothermally to the same extent is

A.More than 1 B.less than 1
C.Equal to 1 D.Depends on the gas
Answer & Explanation

Answer: Option **A**

Explanation:

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357. If the temperature of the sink is decreased, the efficiency of a Carnot engine

A.decreases B.increases
C.remain unaffected D.first increased and then decreases
Answer & Explanation

Answer: Option **B**

Explanation:

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358. COP of the engine is

A.2.33 B.3.33
C.4.33 D.5.33
Answer & Explanation

Answer: Option **C**

Explanation:

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359. Power required for the engine is

A.6.60 kW B.7.75 kW
C.8.88 kW D.9.23 kW
Answer & Explanation

Answer: Option **D**

Explanation:

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360. A 500 litre tank contains a saturated mixture of steam and water at 300?C. If the mass of steam and water within the tank is equal, it can be concluded that

A.Volume of steam will be less than the volume of water B.volume of steam will be less than the volume of water
C.Steam will be nearly dry and saturated D.Dryness fraction of steam will be closer to 0.5
Answer & Explanation

Answer: Option **A**

Explanation:

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361. Five people must be lifted in an elevator to a distance of 100 m. The work is found to be 341.2 kJ and the gravitational acceleration is 9.75 m/s2. The average mass per person is

A.65 kg
B.72 kg
C.70 kg
D.67.5 kg

Answer & Explanation

Answer: Option **C**

Explanation:

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362. An elastic sphere of 0.5 m diameter contains a gas at 115 k Pa. Heating of the sphere causes it to increase to 0.62 m and during the process the pressure is proportional to the sphere diameter. The work done by the gas will be

A.7.7 kJ
B.9.9 kJ
C.11 kJ
D.15 kJ

Answer & Explanation

Answer: Option **A**

Explanation:

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363. The dew point temperature of humid air is

A.always higher than the wet bulb temperature
B.never lower than the wet bulb temperature
C.the temperature of air obtained on cooling it till saturation at constant pressure
D.the temperature of air obtained on cooling it till saturation at constant volume

Answer & Explanation

Answer: Option **C**

Explanation:

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364. When two gases are not under the same conditions of temperature and pressure, upon mixing there will be

A.loss of entropy to the surroundings
B.exchange of entropy between the two gases
C.increase in available heat but decrease in unavailable heat
D.None of the above

Answer & Explanation

Answer: Option **B**

Explanation:

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365. According to Amagat's law

A.the sum of the volume friction is unity
B.there would be no volume change if the components are mixed while holding the temperature and pressure constant

C. all diatomic gases occupy double the volume of monoatomic gases for identical masses
D. None of the above

Answer & Explanation

Answer: Option **A**

Explanation:

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366. In which of the following energy conversion takes place at ambient temperature?

A. Magnetohydrodynamic conversion
B. Thermionic generator
C. Battery producing electrical energy
D. Solar radiation

Answer & Explanation

Answer: Option **C**

Explanation:

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367. Entropy of mixing is always

A. Zero
B. positive
C. Negative

Answer & Explanation

Answer: Option **B**

Explanation:

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368. The mixing process of two fluids is always considered as

A. reversible
B. irreversible
C. reversible or irreversible depending upon the gases involved

Answer & Explanation

Answer: Option **B**

Explanation:

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369. For a closed system, the difference between the heat added to the system and the work done by the system is equal to the change in

A. enthalpy
B. entropy
C. temperature
D. internal energy

Answer & Explanation

Answer: Option **D**

Explanation:

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370. Reduced pressure is

A. always less than atmospheric pressure
B. always unity
C. an index of molecular position of gas
D. dimensionless

Answer & Explanation

Answer: Option **D**

Explanation:

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371. which of the following set of quantities contains intensive variables?
A.Pressure, temperature and density
B.Work, energy and weight
C.Mass, volume and area
D.Kinetic energy, potential energy and internal energy
Answer & Explanation

Answer: Option **A**

Explanation:

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372. Which of the following statement about Vanc der Waal's equation is valid?
A.It is valid for all pressures and temperatures
B.It represents a straight line on pv versus v plot
C.It has three roots of identical value at the critical point
D.The equation is valid for diatomic gases only
Answer & Explanation

Answer: Option **C**

Explanation:

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373. Which of the following statement is correct?
A.Systems never possess heat but work can be
B.Both heat and work are path functions
C.While work is a boundary phenomenon heat is not
D.Both heat and work are inexact differentials
Answer & Explanation

Answer: Option **B**

Explanation:

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374. An automobile heats up while lying in a parking 10 ton a sunny day. The process can be assumed to be
A.isothermal
B.isobaric
C.isometric
D.isentropic
Answer & Explanation

Answer: Option **B**

Explanation:

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375. In steam tables, the entropy is shown as zero for
A.saturated vapours at atmospheric pressure
B.saturated liquid at atmospheric pressure
C.saturated vapour at 0?C
D.saturated liquid at 0?C
Answer & Explanation

Answer: Option **D**

Explanation:

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376. The characteristics of a control volume are

A. The volume, shape and position with respect to an observer are fixed
B. The volume, shape and position with respect to an observer may change
C. There is no material flow across the boundary

Answer & Explanation

Answer: Option **A**

Explanation:

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377. A body of weight 100 N falls freely through a distance of 10 m against an atmospheric drag force of 5 N. Considering the body as the system, the work interaction is

A. 1000 Nm
B. 1050 Nm
C. 250 Nm
D. 50 Nm

Answer & Explanation

Answer: Option **D**

Explanation:

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378. For a pure substance at its triple point, the number of degrees of freedom is

A. 0
B. 1
C. 2
D. None of the above

Answer & Explanation

Answer: Option **A**

Explanation:

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379. Sadi Carnot was a

A. German engineer
B. French engineer
C. British engineer
D. Russian engineer

Answer & Explanation

Answer: Option **B**

Explanation:

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380. In a Carnot cycle the process which must be carried out at extremely slow speed is

A. adiabatic compression
B. adiabatic expansion
C. isothermal compression
D. None of the above

Answer & Explanation

Answer: Option **C**

Explanation:

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381. All of the following cycles consist of two isentropic processes EXCEPT:
A.Otto cycle
B.Carnot cycle
C.Stirling cycle
D.Diesel cycle
Answer & Explanation

Answer: Option **C**

Explanation:

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382. Which of the following cycle is less efficient than the remaining?
A.Ericsson cycle
B.Carnot cycle
C.Stirling cycle
D.Otto cycle
Answer & Explanation

Answer: Option **D**

Explanation:

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383. All of the following cycles consists of two isothermal processes EXCEPT:
A.Stirling cycle
B.Carnot cycle
C.Ericsson cycle
D.Brayton cycle
Answer & Explanation

Answer: Option **D**

Explanation:

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384. Which of the following introduces irreversibility in the actual Carnot engine operation?
A.Friction between moving parts
B.Higher operating speeds
C.Losses from working fluid in transit
D.Changes in pressure and temperature during the cycle
Answer & Explanation

Answer: Option **C**

Explanation:

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385. In a Carnot cycle if isothermal compression process is continued bit longer than the normal, then the adiabatic compression will cause the steam to arrive at the inner dead center at a temperature
A.lower than the normal temperature
B.higher than the normal temperature
C.which is the normal temperature
Answer & Explanation

Answer: Option **A**

Explanation:

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386. One of the most efficient engines ever developed operates between 2100 k and 700 k. Its actual efficiency is 40%. What percentage of its maximum possible efficiency is this?

A.40% B.60%
C.66.67% D.33.30%
Answer & Explanation

Answer: Option **B**

Explanation:

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387. Two ideal engines A and B have their sources at 600 k and 400 k and their sinks at 300 k and 250 k respectively. What inference can be drawn about their efficiency

A.A is more efficient than B B.A is less efficient than B
C.Both are equally efficient D.The information given is incomplete
Answer & Explanation

Answer: Option **A**

Explanation:

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388. Other factors remaining constant, if the temperature of source is increased, the efficiency of Carnot engine will

A.increase B.decrease
C.will not change D.increase or decrease depending upon temperature ratio
Answer & Explanation

Answer: Option **A**

Explanation:

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389. Other factors remaining constant, if the temperature of sink is increased, the efficiency of the Carnot engine will

A.increase B.decrease
C.will not change D.increase or decrease depending upon temperature ratio
Answer & Explanation

Answer: Option **B**

Explanation:

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390. The characteristics of a control volume are

A. The volume shape and position with respect to an observer are fixed B. The volume shape and position with respect to an observer may change
C.There is material flow across the boundary D.There is no material flow across the boundary
Answer & Explanation

Answer: Option **C**

Explanation:

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391. A body of weight 100 N falls freely through a distance of 10 m against an atmospheric drag force of 5 N. Considering the body as the system, the work interaction is

A.1000 Nm
B.1050 Nm
C.950 Nm
D.50 Nm
Answer & Explanation

Answer: Option **D**

Explanation:

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392. For a pure substance at its triple point, the number of degrees of freedom is

A.0
B.1
C.2
D.None of the above
Answer & Explanation

Answer: Option **A**

Explanation:

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393. Maxwells relations are valid for

A.all substances solid, liquid or gas
B.compressible substances
C.systems of fixed chemical compositions
D.homogeneous as well as heterogeneous systems
Answer & Explanation

Answer: Option **B**

Explanation:

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394. Gibbs free energy G is given by

A.G = H + Ts
B.G = H/Ts
C.G = H - Ts
D.G = T . H . s.
Answer & Explanation

Answer: Option **C**

Explanation:

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395. In case of real gases, Cp will be equal to Cv

A.at critical temperature
B.above critical temperature
C.at triple point
D.at absolute zero
Answer & Explanation

Answer: Option **D**

Explanation:

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396. Adiabatic bulk modulus is Y times the isothermal bulk modulus

A.for real gases only
B.for perfect gases only
C.for liquids only
D.for all fluids

Answer & Explanation

Answer: Option **D**

Explanation:

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397. Of the following first law statements, choose the one that is wrong

A.the net heat transfer equals the network for a cycle
B.the heat transfer cannot exceed the work done
C.the heat transfer equals the work plus the energy change
D.the energy of an isolated system remains constant

Answer & Explanation

Answer: Option **B**

Explanation:

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398. A solar cell system is to suppmy 1050 kWh/month. The average output is 15 percent of the rated power. The rated power must be

A.3 kW
B.4.5 kW
C.9.7 kW
D.14.4 kW

Answer & Explanation

Answer: Option **C**

Explanation:

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