Multiple Choice Questions

Unit 1

Basics of Thermodynamics and its First Law

1. A change in the state of gas during which the pressure of the gas remains constant is called …………….change.

   A) Adiabatic
   B) isothermal
   C) isobaric
   D) isochoric

2. A change in the state of gas during which the pressure of gas remain constant is called…………..change.

   A Adiabatic
   B   isothermal
   C isobaric
   D isochoric

3. The energy store in the substance or system is known as it's ………….energy

   A internal
   B potential
   C kinetic
   D pressure

4. A change in the state of gas during which the volume of gas remains constant is called ……….change.

   A Adiabatic
   B   isothermal
   C isobaric
   D isochoric

5. When there is no temperature difference between the part of system or between the system and it's surrounding then it is said to be in a state of…………

A electrical equilibrium
B thermal equilibrium
C chemical equilibrium
D mechanical equilibrium

6. If two system are separately in thermal equilibrium with the third system then they themselves are in the thermal equilibrium with each other. This is …………

A first law of thermodynamics
B second law of thermodynamics
C law of equilibrium
D Zeroth law of thermodynamics

7. when there is no unbalanced force acting on any part of the system for the system as a whole it is said to be in state of…………

A electrical equilibrium
B thermal equilibrium
C chemical equilibrium
D mechanical equilibrium

8. A system which exchange both mass and energy with and its surrounding is called………..

A closed system
B open system
C isolated system
D equilibrium system

9 . All natural processes are………..

A reversible
B isothermal
C irreversible
D none of the above

10. Isothermal change for a perfect gas takes place at

A constant pressure
B constant volume
C none of these
D constant temperature

11. A system which neither exchange energy nor matter with its surrounding is known as………….

A open system
B isolated system
C closed system
D none of the above

12. The adiabatic relation between pressure and temperature of gas is
A $P^{\gamma-1} T^{\gamma} = CONST$
B $P\ V^{\gamma} = CONST$
C $P^{\gamma} T^{\gamma-1} = CONST$
D $T^{\gamma} / P^{\gamma-1} = CONST$

13. The adiabatic relation between Volume and temperature of gas is

A $T^{\gamma-1} V^{\gamma} = CONST$
B $T V^{\gamma} = CONST$
C $T V^{\gamma-1} = CONST$
D $T^{\gamma} / V^{\gamma-1} = CONST$

14. The first law of thermodynamics is

A $PdV = RdT$
B $Cp-Cv = R$
C $P\ V^{\gamma} = CONST$
D dQ= dU+dW

Unit 2

Second and Third Law of Thermodynamics and Entropy

1. Carnot cycle is a reversible cycle

A true
B both are correct
C false
D both are incorrect

2. A reversible cycle has following processes

A 4 isothermal processes
B 4 adiabatic process

C 2 isothermal and   2 adiabatic processes

D none of the mentioned

3. The correct sequence of the processes taking place in a carnot cycle is…….

A adiabatic- adiabatic- isothermal- isothermal
B adiabatic- isothermal- adiabatic_ isothermal
C isothermal-isothermal adiabatic -adiabatic
D isothermal -adiabatic isothermal-adiabatic.

4. The reversed heat engine takes hit from a………. temperature body then discharges it to a…………. temperature body and …………….an inward flow of network.

A high, low, receives
B low, high, receives
C high,low,gives
D low , high , gives

5. Example of reverse heat engine is………….

A heat pump
B refrigerator
C both of the mentioned
D none of the mentioned

6. The efficiency of all reversible heat engines operating between the same heat reservoirs is…….

A Same
B independent of the nature of the working substance
C independent of the amount of working substance
D all of this

7. Efficiency of reversible heat engine is…..

A $1-(T1/T2)$ **B) $1-(T2/T1)$** C) $(T1/T2)-1$ D) $(T2/T1)-1$

8. Integral of DQ/T of a reversible heat engine is given by…

A Si-Sf
B Sf-Si
C Si+ Sf
D -Si-Sf

9. Entropy is a……….

A path function, intensive property
B path function, extensive property
C point function intensive property
D point function extensive property

10. For reversible process,
A dS=dQ/T
B dS>dQ/T
C dS<dQ/T
D none of the mentioned

11. For irreversible process,
A dS=dQ/T
B dS>dQ/T
C dS<dQ/T
D none of the mentioned

12. The entropy of an isolated system can never,

A increase
B decrease
C be zero
D none of the mentioned

13. The enthalpy of a substance is defined as

A H=U-PV
B H= U+PV
C H=-U+PV
D H=-U-PV

14. In a constant volume process, internal energy change is equal to

A heat transferred
B work done
C zero
D none of the mentioned

15. Enthalpy is an intensive property of a system.

A True
B both are correct

C false

D both are incorrect

16. For an Ideal gas , Enthalpy becomes………….

   A) H=U-RT   B) H=-U-RT   **C) H=U+RT**   D) H=-U+RT

17. heat transferred at constant pressure ………….the enthalpy of a system

A decreases
B increases
C first decreases then increases
D first increases then decreases

18. The enthalpy and internal energy are the function of temperature for

A all gases
B steam
C water
D ideal gas

20. In Carnots heat engine……………. is used as working substance.

A petrol
B ideal gas
C diesel
D ammonia

21. The enthalpy of a substance is defined as

A H=U-PV
B H= U+PV
C H=-U+PV
D H=-U-PV

22. Efficiency of carnot s ideal heat engine is always

A zero
B equal to 1
C greater than 1
D less than 1

23. In an atto engine heat is observed by the working substance at constant…………

A pressure
B volume
C temperature
D entropy

24. Entropy of the system always………… in a reversible system

A increases
B decreases
C remains constant
D zero

25. Entropy of a system always …………in an irreversible system

A increases
B decreases
C remains constant
D zero

26. All the natural processes occurring in the universe are

A irreversible
B reversible
C both (a) and (b)
D none of this

27. The entropy of the universe is always tending towards

A Minimum
B zero
C maximum
D none of this

Unit 3

Heat Engines

1. Efficiency of carnot s heat engine is always…………

A less than 1
B greater than 1
C equal to 1
D zero

2. The working substance is atto engine is………..

A petrol vapour and air
B petrol
C oil and air
D oil

3. Otto cycle is perfectly………

A Irreversible and reversible
B Reversible
C irreversible
D none of the above

4. In atto engine working substance is

A Air
B oxygen 1
C oil vapour
D none of this

5. In atto engine……….. vapour is used as a fuel

A heavy oil
B ethanol
C petrol
D oil

6. The working substance in a diesel engine is

A Air
B petrol
C oil and air
D oil

7. The practical efficiency of diesel engine is about

A 55 %
B 45 %
C 50%
D none of the above

8. The diesel engine heat is observed by the working substance at

A constant volume
B constant pressure
C constant temperature
D none of the above

Unit 4

Kinetic Theory of gases

1. Viscosity of gas due to transport of……

A momentum
B energy
C mass
D none of this

2. In diffusion the transport of the following occurs

A momentum
B energy
C mass
D none of this

3. At very low temperature the coefficient of viscosity of a gas

A decreases with decrease of pressure
B increases with increase of pressure
C is independent of pressure
D is equal to pressure

4. The mean free path of a gas molecule is inversely proportional to

A square of the diameter of the molecule
B square root of the diameter of the molecule
C molecular diameter
D 4th power of molecule diameter

5. In Zartman Ko experiment distance from the plate is a measure of…………

A electron speed
B molecular speed
C density of molecules
D electron density