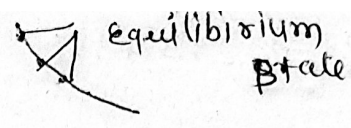


21 July 2014



Quasi static process is infinitely slow process. Quasi static processes without is known as Reversible process.
 It is curve which is occurred by joining by different equilibrium state.

Thermometric properties: A property which are used to find the temp. of substance is known as thermometric properties.

m.m.p	Different thermometer	Thermometric property
1.	Constant volume thermometer	pressure (p)
2.	Constant pressure thermometer	Volume
3.	Electro-magnetic thermometer (Electrical resistance thermometer)	Resistance
4.	Thermocouple	EMF
5.	Ordinary thermometer	1. Length length etc 2. Volume length etc

pure substance :-

A substance which has constant chemical composition throughout its volume, with respect to its phase.

Ex. water, steam, ice etc.

Gibbs phase Rule :-

$$m \cdot \text{imp} \quad \boxed{P + F = C + 2}$$

P = phase

F = Degree of freedom

C = No. of components
(H_2O)[↑]

Degree of freedom means is the total no. of independent variables are require to locate or fix the state any system completely.

Case-1 Single component - single phase system

liquid water, ice, steam etc.

$$P + F = C + 2$$

$$1 + F = 1 + 2$$

$$\boxed{F = 2}$$

Case-2 Single component two phase system:

(Water + ice), (Water + steam)

$$P + F = C + 2$$
~~$$2 + F = 1 + 2$$

$$F = 1$$~~

$$P + F = C + 2$$

$$2 + F = 1 + 2$$

$$F = 1$$

Case 3

Single component three ~~two~~ phase

$$P + F = C + 2$$

(triple point)

$$3 + F = 1 + 2$$

$$F = 0$$

Such a state $F=0$ is a unique state, it is known as triple point of water.

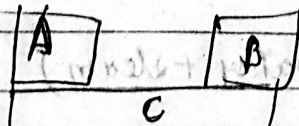
Temp Measurement Scale :-

Ideal gas thermometer: It is the only thermometer material of construction which is independent of

Zeroth law of thermodynamics :-

(R.K. Funder) 1931

Acc to this law is body A is in thermal equilibrium with body B, and B is in thermal equilibrium with body C separately. Body A and Body C are said to be in thermal equilibrium with each other.



Thermodynamic equilibrium:- said

A system is to be in thermodynamic equil. only when it is in thermal equilibrium, mechanical equilibrium & chemical equilibrium.

Thermal equilibrium means equality in temp.

Chemical equil. means equality in chemical composition.

Mechanical equil. means equality in physical force

The thermodynamic equilibrium condition is satisfied above these equilibrium

$T \rightarrow K$, $t \rightarrow ^\circ C$
--

IES
$273.16 K = 0^\circ C$
$273 = 0^\circ C$

Point function:

Variables which are not depending upon a path followed by a process is known as point function.

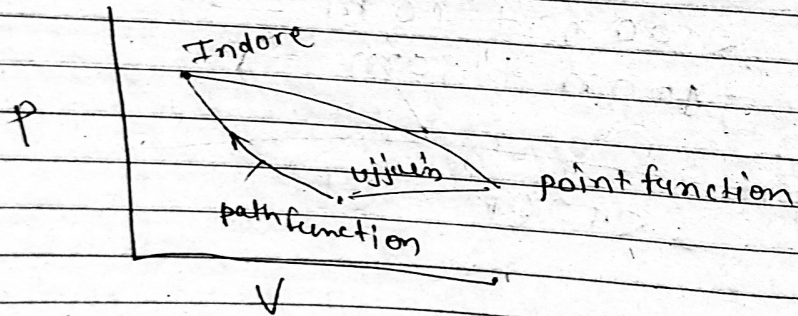
All the properties are point function.

Path function:

which depend upon path

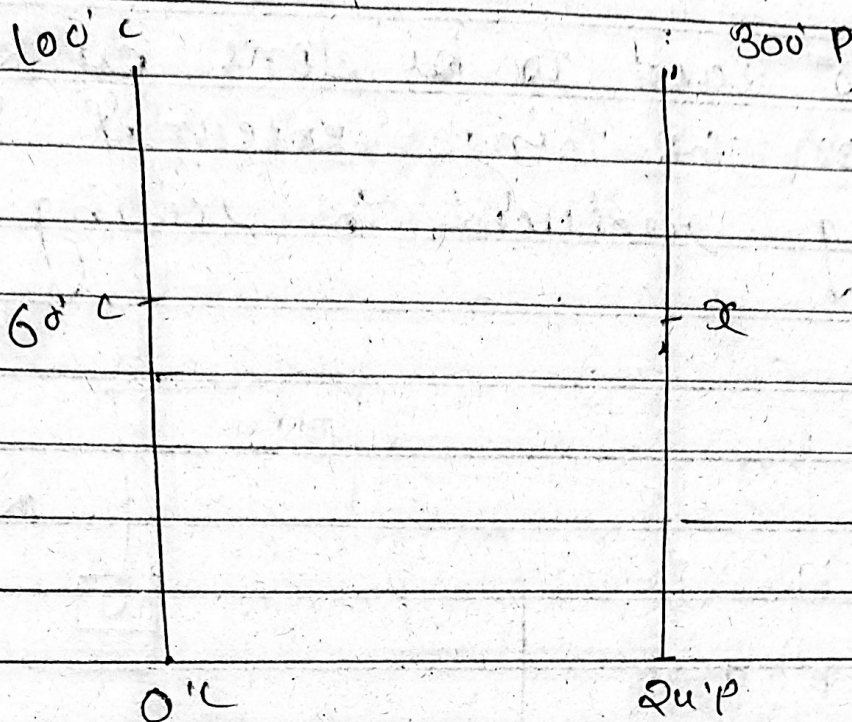
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Heat & Work are path function.



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Temperature Scale



$$\frac{0-100}{0-60} = \frac{24-300}{24-x}$$

$$-1.66 = \frac{276}{24-x}$$

$$24-x = \frac{276}{1.66}$$

$$24-x = 165.66$$

$$x = 189.666^{\circ}\text{C}$$