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THE SUPPLIED HEAT TO A SYSTEM IS EQUAL TO THE SUM OF THE INTERNAL ABSORBED HEAT AS WELL AS THE EXTERNAL WORK DONE HEAT

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ABSTRACT :

Heat is something, which flows from a body at higher temperature to another body at lower temperature, when the two are in contact. Heat is an energy that is transferred from one body to another body owing to a difference in temperatures of the two bodies .

The energy is the ability of a body to do the work .The work done is the measure of the kinetic energy of the body .The kinetic energy of a body is the energy possessed by the body by virtue of its motion .The work is said to be done by a force acting on a body such that the body is displaced actually in any direction except in a direction perpendicular to the direction of force. Work is energy that is transferred from one body to another body owing to some force that acts between them. Work = Force * displacement = Energy

This law is applicable equally to all three phases of matter i.e. solid, liquid and gas .It is impossible to get work from any machine without absorption of some amount of energy to the machine .The law of conservation of energy applies to every process in nature.

Rotation is motion and vice versa. **If a force is applied on a wheel and that force simultaneously converts to the centripetal force as well as the centrifugal force then the wheel moves forward. So every point of the wheel moves vertically on a curved path to cover horizontally on a straight line path.**

The following laws are derived from the above facts as follows ,

LAW OF MOTION ---------- Nrusingh's 1st law

(a) INERTIA OF REST : A body is at rest, until the applied force on it , converts to the centripetal force as well as the centrifugal force

(b) INERTIA OF MOTION : A body is at motion, as long as the applied force on it , converts to the centripetal force as well as the centrifugal force

The following law is derived from Nrusingh's 1st law

THE FORCE OF ACTION IS ALWAYS EQUAL TO THE SUM OF OPPOSITE REACTION AND ABSORPTION ---------- Nrusingh's 2nd law

This implies that, **14 PARTS ACTION = 11 PARTS REACTION + 3 PARTS ABSORPTION**

So **1 part action = (11/14) part reaction + (3/14) part absorption**

The following laws are derived from Nrusingh's 2nd law

FORCE = (11/14) MASS * ACCELERATION ----- Nrusingh's 3rd law

ENERGY = MASS (VELOCITY OF LIGHT)^2 ---- Nrusingh's 4th law

PRESSURE * VOLUME = (11/14) TEMPERATURE ---- Nrusingh's 5th law

PRESSURE = (11/14) FORCE/AREA ---- Nrusingh's 6th law

Energy = (11/14) frequency ---- Nrusingh's 7th law

WORK = (11/14) FORCE * DISTANCE ---- Nrusingh's 8th law

THE ACCELERATION DUE TO GRAVITY OF AN OBJECT IS 11m/s²

ON THE EARTH - --- - --- Nrusingh's 9th law

THE GRAVITATIONAL FORCE OF THE HEAVIER BODY IS DIRECTLY PROPORTIONAL TO THE PRODUCT OF THE MASS AND ACCELERATION OF THE LIGHTER BODY

=> **GRAVITATIONAL FORCE = (11/14) MASS * ACCELERATION - --- Nrusingh's 10th law**

Heat works in a system just like the wheel moves on the road by a force . Energy is derived from the force as WORK = (11/14) FORCE * DISTANCE = ENERGY and Action = Reaction + Absorption

This implies that,

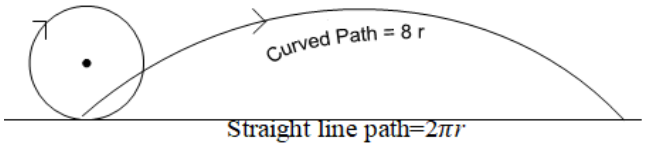
THE SUPPLIED HEAT TO A SYSTEM IS EQUAL TO THE SUM OF THE INTERNAL ABSORBED HEAT AS WELL AS THE EXTERNAL WORK DONE HEAT

KEY WORDS :

Heat, Energy, Supplied heat, Absorbed heat, Worked heat, Constant of proportionality, Absorption, Action, Reaction, Centripetal force, Centrifugal force, Cycloid path, Straight line path

INTRODUCTION :

If a force is applied to a wheel so that the force is converted to the centripetal force as well as the centrifugal force then every point of the wheel moves vertically **8r length** in a cycloid path by the centripetal force and simultaneously, the same point covers **$2\pi r$ length** horizontally on a straight line path by the centrifugal force . **The cycloid is a curved path, which is traced out by a point on a circle that rolls on a straight line .**



Suppose s_1= length of the cycloid path and s_2 = length of the straight line path

So $s_1 = 8$ r and $s_2 = 2\pi$ r

Hence $\mathbf{8r > 2\pi r \Rightarrow s_1 > s_2}$

Here $\frac{ds_1}{dt} = v_1$ = Velocity of any point on the cycloid path,

And $\frac{ds_2}{dt} = v_2$ = Velocity of the same point on the straight line path

As $s_1 > s_2 \Rightarrow \frac{ds_1}{dt} > \frac{ds_2}{dt}$

So $v_1 > v_2 \Rightarrow mv_1 > mv_2 \Rightarrow m\frac{dv_1}{dt} > m\frac{dv_2}{dt} \Rightarrow ma_1 > ma_2$

where $\frac{dv_1}{dt} = a_1$ = Acceleration of any point on the cycloid path

And $\frac{dv_2}{dt} = a_2$ = Acceleration of the same point on the straight line path

Hence $ma_1 > ma_2 \Rightarrow \mathbf{F_1 > F_2}$

Here $F_1 = ma_1$ and $F_2 = ma_2$

But **the magnitude of the centripetal force is equal to the magnitude of the centrifugal force.**

It is obtained that $\mathbf{F_1 > F_2}$

$\Rightarrow \mathbf{F_1 - F_2 =}$ **SOME ABSORBED FORCE**

$\Rightarrow \mathbf{F_1 = F_2 +}$ **SOME ABSORBED FORCE**

Here $\mathbf{F_1}$**= CENTRIPETAL FORCE**

= **ACTION FORCE**

and $\mathbf{F_2}$ = **REACTION FORCE**

Hence **CENTRIFUGAL FORCE** = $\mathbf{F_2}$ + **SOME ABSORBED FORCE**

= **REACTION FORCE**

+ **SOME ABSORBED FORCE**

So **ACTION FORCE** = **REACTION FORCE + ABSORPTION FORCE**

$\Rightarrow$ **ACTION** = **REACTION + ABSORPTION**

This implies that, when

ACTION = **REACTION + ABSORPTION**

When the absorption is greater than zero then the body moves.

Here **ABSORPTION = (3/14) ACTION**

and **REACTION = (11/14) ACTION**

This implies that,

A body is at motion, as long as the applied force on it , converts to the centripetal force as well as the centrifugal force .

It is obtained that ,

ACTION = REACTION + ABSORPTION

But when **ABSORPTION = 0**

Then **ACTION = REACTION + 0**

= REACTION

=> ACTION = REACTION

This implies, when there is no absorption of force then there is no motion.

So **A body is at rest, until the applied force on it, converts to the centripetal force as well as the centrifugal force .**

SUBJECT MATTER :

Rotation is motion and vice versa.

When a force is applied to a wheel and that force simultaneously converts to the centripetal force as well as the centrifugal force then the wheel rotates and moves in a curved path to cover a straight line path.

Both the vertical cycloid path as we[[as the horizontal straight line path of a point make the wave.

The length of the vertical cycloid path of the wave is **8r** and the length of the horizontal straight line path of the same wave is $2\pi\mathbf{r}$.

Every point of a wheel moves **8r length** on the cycloid path by the centripetal force and simultaneously the same point of the wheel covers $2\pi\mathbf{r}$ **length** on the straight line path by the Centrifugal force.

Hence $F_1 : F_2$ =

ACTION OF CENTRIPETAL FORCE :

REACTION OF CENTRIFUGAL FORCE

So $F_1 : F_2 = 8r : 2\pi r = 8r : (2 * 22/7)r$

$=> F_1 : F_2 = (8 * 7/7) : (2 * 22/7)$

$= (56/7) : (44/7) = 56 : 44 = 42 : 33$

$= 28 : 22 = 14 : 11 = (14/2) : (11/2)$

$= (14/3) : (11/3) = (14/4) : (11/4)$

and so on .

As $F_1 : F_2 = 14 : 11$,

So $F_1 : F_2$ is free from the radius of the wheel .

This implies that, whatever small or big size may be the wheel but the ratio is always $F_1 : F_2 = 14 : 11$

" TO EVERY 14 PARTS OF ACTION , THERE IS 11 PARTS OF REACTION "

But **the magnitude of the centripetal force is equal to the magnitude of the centrifugal force.**

So each one of the centripetal force as well as the centrifugal force must do equal amount of work .

But here the centripetal force does more work than the centrifugal force, This implies that some amount of the centrifugal force is absorbed on the road for which,

It could not do equal amount of work with the centripetal force.

Hence 14 PARTS ACTION – 11 PARTS REACTION = 3 PARTS ABSORPTION

This implies that ,

To every 14 parts of action, there is 11 parts of reaction and 3 parts of absorption .

This implies that ,

14 PARTS ACTION = 11 PARTS REACTION + 3 PARTS ABSORPTION

=> **1 PART ACTION = (11/14) PART REACTION + (3/14) PART ABSORPTION**

This implies that ,

1 part of the centripetal force = 1 part of the centrifugal force

But **1 part of the centrifugal force = (3/14) part absorbed centrifugal force + (11/14) part reacted centrifugal force**

Hence **1 part of the centripetal force = (3/14) part absorbed centrifugal force + (11/14) part reacted centrifugal force**

This implies that,

1 part centripetal force for action = (11/14) part centrifugal force used for motion + (3/14) part of the centrifugal force used for absorption.

This implies that ,

1 part acting force = (3/14) part absorbing force + (11/14) part working force

This implies that,

In every 1 part of acting force there is (11/14) part of working force and (3/14) part of absorbing force .

This implies that,

When 11 parts of force is applied to a wheel then simultaneously 3 parts of force is absorbed by the wheel and the rest 11 parts of force works for motion purpose.

This implies that ,

If 1 part of the force is applied to a wheel then simultaneously (3/14) part of the force is absorbed by the wheel , and the wheel moves a certain distance by the rest (11/14) part of the force .

It is obtained that ,

1 part acting force = (3/14) part absorbing force + (11/14) part working force ----------(1)

So multiplying both sides of the equation (1) by a factor = **distance**

It is obtained that ,

[1 part acting force] distance = [(3/14) part absorbing force] distance +[(11/14) part working force] distance

=> 1 part [acting force * distance] = (3/14) part [absorbing force * distance] +(11/14) part[working force * distance]

=> 1 part acting energy = (3/14) part absorbing energy + (11/14) part working energy

Since **(force* distance) = work = energy**

It is obtained that,

14 PARTS ACTION = 11 PARTS REACTION + 3 PARTS ABSORPTION

=> **1 PART ACTION**

= (11/14) PART REACTION

+ (3/14) PART ABSORPTION

=> **1 PART ACTION FORCE**

= (11/14) PART REACTION FORCE

+ (3/14) PART ABSORPTION FORCE

=> **1 part acting energy**

= (3/14) part absorbing energy

+ (11/14) part working energy

=> **1 part acting heat energy**

= (3/14) part absorbing heat energy

+ (11/14) part working heat energy

This implies that,

Since heat is an energy and every energy works in the similar way. Heat is the amount of energy in the body. Temperature is something that measures the intensity of heat. Heat measures the both kinetic and potential energy contained by molecules in an object. Temperature measures average kinetic energy of molecules in substance.

Heat works in a system just like the wheel moves on the road by a force. Energy is derived from the force as

WORK = (11/14) FORCE * DISTANCE = ENERGY

It is obtained that,

=> **1 PART ACTION = (11/14) PART REACTION + (3/14) PART ABSORPTION**

=> **1 part acting heat energy**

= (3/14) part absorbing heat energy

+ (11/14) part working heat energy

The law of heat implies that,

" **The quantity of the applied heat to the system is equal to the sum of the absorbed heat due to the rise in temperature and the external work done by the rest heat "**

The rise in temperature in the system is due to the absorbed heat which is equal to the increase in the internal energy .

So **1 part acting heat energy =**

(3/14) part absorbing heat energy

+ (11/14) part working heat energy

This implies that,

Q = (3/14) U + (11/14) W

=> **APPLIED HEAT = (3/14) ABSORBED HEAT + (11/14) WORK DONE HEAT**

where Q = quantity of heat supplied to the system

U = absorbed heat in the system

= increase in the internal energy due to the rise in temperature of the system

W = work done by the heat

This implies that,

THE SUPPLIED HEAT TO A SYSTEM IS EQUAL TO THE SUM OF THE INTERNAL ABSORBED HEAT AS WELL AS THE EXTERNAL WORKED HEAT

CONCLUSION :

When a force is applied to a wheel and that force simultaneously converts to the centripetal force as well as the centrifugal force then the wheel rotates and moves in a curved path to cover a straight line path.

This implies that,

$$\textbf{1 PART ACTION} = \left(\frac{11}{14}\right)\textbf{PART REACTION} + \left(\frac{3}{14}\right)\textbf{PART ABSORPTION}$$

=> **1 part acting heat energy = (3/14) part absorbing heat energy + (11/14) part working heat energy**

This implies that, the absorbing of heat and the working by heat in the system run **simultaneously**.

When 1 part of heat is supplied to a machine then simultaneously $\left(\frac{3}{14}\right)$ part of heat absorbs in it and the rest $\left(\frac{11}{14}\right)$ part of heat works by the machine.

So If $\left(\frac{3}{14}\right)$ part of the heat does not absorb in the machine then the rest $\left(\frac{11}{14}\right)$ part of the heat would not work by the machine

REFERENCES :

The followings are the published papers of the IJSER journal and GSJ journal

1) Nrusingh's 1st law
IJSER , volume-10 , issue-12
December-2019 , ISSN 2229-5518

2) Nrusingh's 2nd law
IJSER , volume-6 , issue -7
July-2015 , ISSN 2229-5518

3) Nrusingh's 3rd law
IJSER , volume-11 , issue- 3
March-2020 , ISSN 2229-5518

4) Nrusingh's 4th law
GSJ , volume-8 , issue-9
September-2020 , ISSN 2320-9186

5) Nrusingh's 5th law
GSJ , volume-8 , issue-12
December-2020 , ISSN 2320-9186

6) Nrusingh's 6th law
GSJ , volume-8 , issue-12
December-2020 , ISSN 2320-9186

7) Nrusingh's 7th law
GSJ , volume-9 , issue-01
January-2021 , ISSN 2320-9186

8) Nrusingh's 8th law
GSJ , volume-9 , issue-01
January-2021 , ISSN 2320-9186

9) Nrusingh's 9th law
GSJ , volume-8 , issue-6
June-2020 , ISSN 2320-9186

10) Nrusingh's 10th law
GSJ , volume-8 , issue-10
October-2020 , ISSN 2320-9186