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The Exact Measurement of Pi (π)

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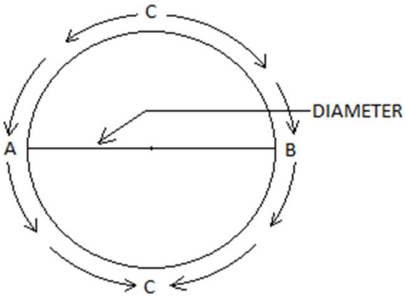
Abstract: This research study gives the actual value of PI (π), a mathematical constant that describes the relationship between a circular structure's circumference and diameter. It also highlights the lacuna in the most commonly used approximations of PI (π), such as 3.14159…, which were supplied by Archimedes. It also rejecting all the values of PI calculated by various mathematicians in almost 4000 years of mathematical history, and presents the absolute 100% true value of PI through various mathematical process and conclusions.



PI (π) $= \frac{CIRCUMFERENCE}{DIAMETER}$

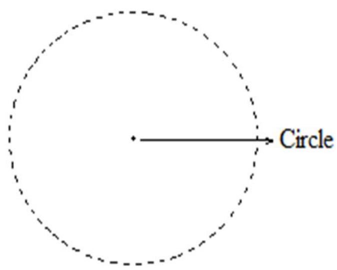
Keyword: Exact value of PI, PI method circle, PI constant, Irrational number.

I. INTRODUCTION

PI is a constant number that represents the ratio of a circle's circumference to its diameter. It is an irrational number whose value has infinite frequency of numbers after the decimal, but does not repeat. Hence it is not possible to represent it in the form of P/q.

PI (π) = circular structure's circumference/ diameter

Circle **-** A circle consists of points in the plane that are equidistant from a given point called the center.



II. HISTORY OF PI (π)

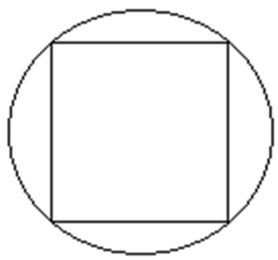
The Babylonians first gave the approximate value of PI as $3\,{}^{1}/_{8}$ = 3.125.

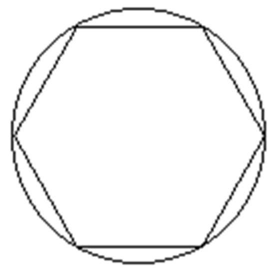
1) PI was calculated by Archimedes (287–212 BC) who gave the approximate value of PI as 3.14159….
2) The Egyptians used the formula [8d/9]2 for the area of a circle where d is the diameter of the circle, giving the value of PI as 3. 16 used.
3) In China the value of PI was used as a whole number as 3, but a Chinese mathematician ZU chongzhi (429–501) gave its value as 355/113 which is a rational number.
4) The symbol for PI is derived from the Greek letter which was popularized by Euler in 1737
5) Indian mathematician and astronomer Aryabhata gave the value of PI in the form of verse,

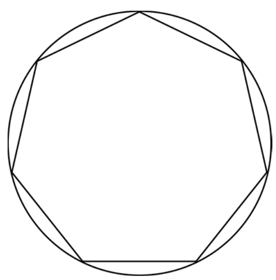
चतुराधिकं शतमष्टगुणं द्वादशष्टिस्तथा सहस्त्राणाम्।
अयुतद्वयस्य विश्कम्भस्य कमीशौ वृत्तपरिणाहः॥

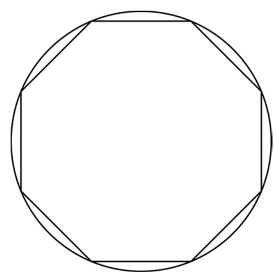
According to the above verse, its calculation is as follows-
(100+4)×8 + 62000 = 62832 circumference
Its diameter = 20000
Therefore 62832/20000 = 3.1416
It is also a rational number that became popular as 22/7 as an approximate value of PI.
From all the above types of calculations only the approximate value of PI is obtained and not the actual value.

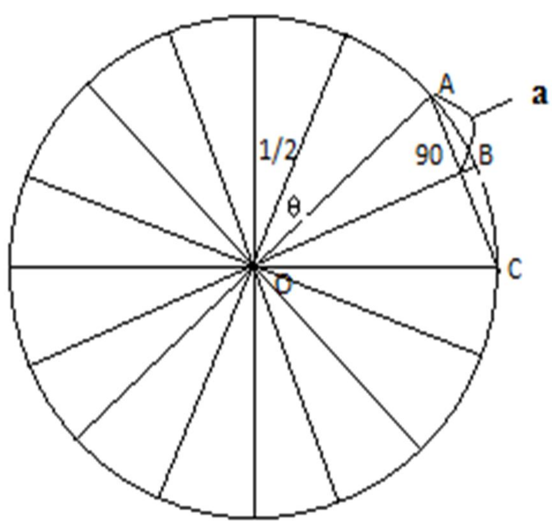
III. ARCHIMEDES CALCULATION OF PI


Circe 1


Circle 2


Circle 3


Circle 4



Circle 5

In circle 5 can see that
Radius = ½ cm
Circumference = $2\pi r$
$=2\times\pi\times1/2$
$= \pi$
So circumference for 1/2 radius will be equal to PI (π)
In circle 5

AB=a, ABC= 2a
∟OBA=90º, ∟AOB = ϴ
Sin ϴ = $\frac{a}{1/2}$ = 2a
Side = a + a (AB+BC) =2a
So sin ϴ = side
Perimeter = No of side (n) × side
= n × side
= n× sin ϴ

$$\Theta = \frac{360}{n} \times \frac{1}{2}$$
$$\Theta = \frac{180}{n}$$

Perimeter = n× sin ϴ
$= n\times \sin\frac{180}{n}$

Now on putting the number of sides in place of n in this formula,

If n = 12, then $= 12\times \sin\frac{180}{12}$ = 3.105828541…
n = 24, then $= 24\times \sin\frac{180}{24}$ = 3.132628613…
n = 96, then $= 96\times \sin\frac{180}{96}$ = 3.141031951…
n = 576, then $= 576\times \sin\frac{180}{576}$ = 3.141577078…
n = 100000, then $= 100000\times \sin\frac{180}{100000}$ = 3.141592653…

By substituting the values of the sides in the above formula of Archimedes, the following conditions are obtained

a) There is a considerable variation in the value of PI derived on the basis of minimum and maximum number of sides
b) In the above calculation it can be seen that with increasing number of sides the value obtained may be closer to PI but cannot be reached to the exact value of PI by this formula.
c) In circle 1, 2, 3, 4 it can be seen that with increasing number of sides, the size of the sides keeps getting smaller, and some part of the circumference of the circle is left out. This is a paradoxical situation which states that no matter how much we increase the number of sides in this process, the same situation will prevail. That is, the approximate value of PI will keep increasing towards PI but will never reach PI.

The above paradox can be understood in this way.
For example, dividing 10 by 3 will result in

$$\frac{10}{3} = 3.3333333\ldots$$

```
3)10(3.333...
  - 9
   10
   - 9
    10
    - 9
     10
     - 9
      10
      - 9
        1
```

In this we can see that the above result is progressing towards 100% of the result of 10 / 3, but it can never reach 100% real result, because in every step of division, a small part of 10 is always remains as one. Similarly, even if the number of sides is increased in n× sin $\frac{180}{n}$, a small part of the circumference of the given circle will remain outside the polygon formed and the perimeter of the polygon will never be equal to the circumference of the circle. That means the math calculation of PI will be approximate. And exact value of PI will be defiantly more then PI>3.141592653…

IV. APPROACH TO FIND THE EXACT VALUE OF PI

A. Approach 1

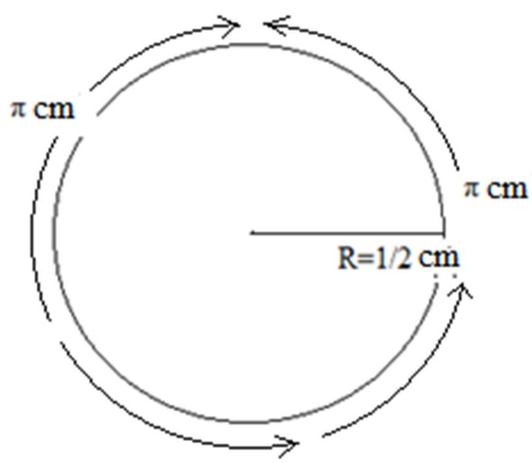
Here a hidden ratio present in the number system is calculated which is a constant.

1	1- 10	$\frac{\sqrt{10}}{\sqrt{1}} = 3.16227766\ldots$
2	2- 20	$\frac{\sqrt{20}}{\sqrt{2}} = 3.16227766\ldots$
3	4- 40	$\frac{\sqrt{40}}{\sqrt{4}} = 3.16227766\ldots$
4	5- 50	$\frac{\sqrt{50}}{\sqrt{5}} = 3.16227766\ldots$
5	30- 300	$\frac{\sqrt{300}}{\sqrt{30}} = 3.16227766\ldots$
6	40- 400	$\frac{\sqrt{400}}{\sqrt{40}} = 3.16227766\ldots$
7	600- 6000	$\frac{\sqrt{6000}}{\sqrt{600}} = 3.16227766\ldots$
8	0.1- 1	$\frac{\sqrt{1}}{\sqrt{0.1}} = 3.16227766\ldots$
9	0.2- 2	$\frac{\sqrt{2}}{\sqrt{0.2}} = 3.16227766\ldots$
10	0.3- 3	$\frac{\sqrt{3}}{\sqrt{0.3}} = 3.16227766\ldots$
11	36- 360	$\frac{\sqrt{360}}{\sqrt{36}} = 3.16227766\ldots$

It can be seen here that in each of the above sections of numbers, a certain ratio is hidden between the square root of the maximum number and the square root of the minimum number, which remains constant even if the numbers are small or large.

B. Approach 2

1) Draw a radius R = 1 / 2 cm circle.



Circle 1

Circumference of the circle = 2πR

$= 2\times\pi\times1/2$

$= \pi$

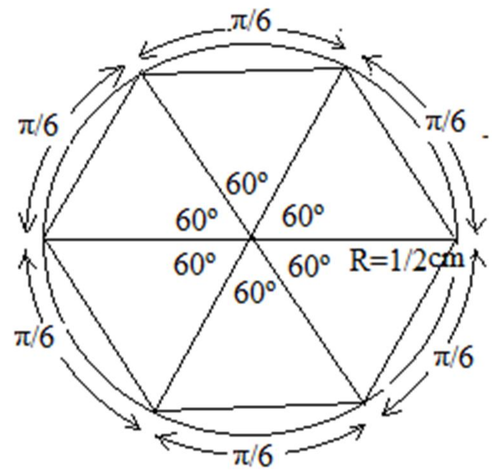
Circumference will be π cm, for R=1/2 cm

Now we divide the radius r in the ratio of the square root of the central angle 360º. ($\sqrt{360}$)

$$= \frac{1/2}{\sqrt{360}} = \frac{0.5}{\sqrt{360}} = 0.263523138\ldots cm \qquad equation\ A$$

2) Now inside this circle, we will create an equilateral triangle as per the picture and will work to increase the circumference of the circle in proportion equal to 360º central angle, so that the facts can be easily calculated and the actual measurement of pi(π) can be done.

Now those with Pi (π) cm circle divide into 6 parts.to fulfil the purpose hence the length of one part will be π/6 units. Which will represent an angle of 60º degrees at the center.



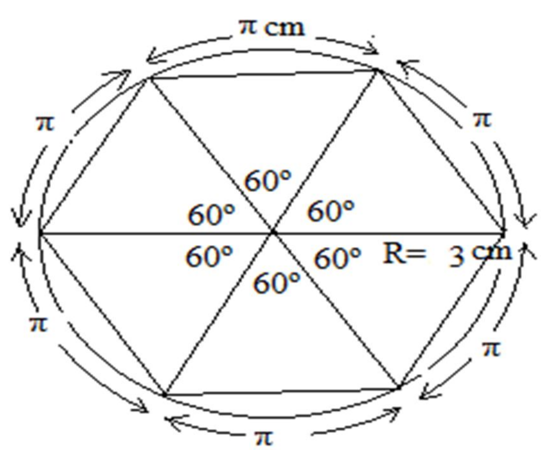
Circle 2

Now if we increase the radius R = 1/2 cm by 6 times, then the circumference of the circle will also increase by 6 times.

R= ½ × 6 = 3 cm

Circumference = 2πR=6π cm

One part of the circumference will be π/6× 6= π cm, which will represent an angle of 60º degrees at the center.



Circle 3

Now we will divide the radius r = 3 CM in the ratio √360 of the square root of the central angle 360º.

$$= \frac{3}{360} = 0.158113883\ldots cm = \sqrt{0.025} \qquad equation\ B$$

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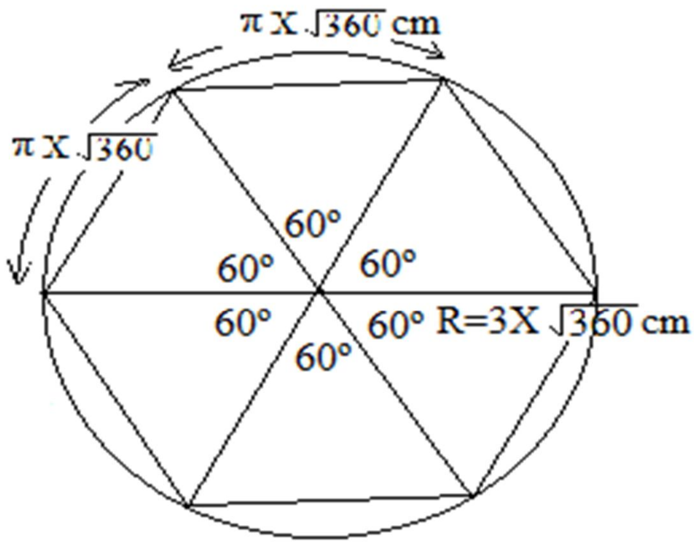
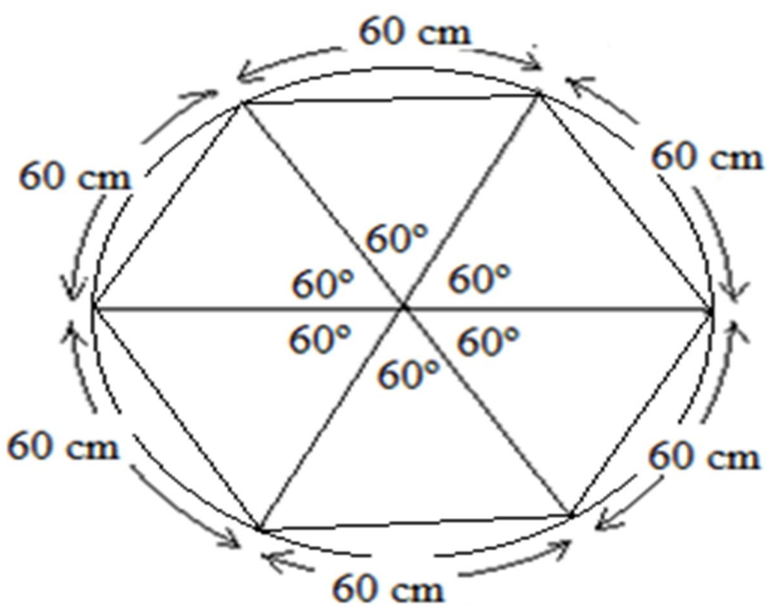
3) Now in the next step of calculation circle 3 will be enlarged in proportion to the radius of $R=3\times\sqrt{360}=56.9209979\ldots$cm$=\sqrt{3240}$.



Circle 4

Here $R=3\times\sqrt{360}=56.9209979\ldots$cm, in this case the length of a part of the circle will be $\pi\times\sqrt{360}$ cm.
One part of circle $=\pi\times\sqrt{360}$ cm $\qquad\qquad$ *equation* (c)
Circumference of circle$=6\times\pi\sqrt{360}$ cm

4) Now we will draw a circle with a circumference of 360 cm, that is, it will be in proportion to the central angle of 360 degrees. And will construct an equilateral triangle inside the circle.



Circle 5

Total circumference of the circle = 360° cm
One part of the circle, 1 part of the central angle, will make an arc of 60 cm with respect to 60 degrees. Because the central angle and the circumference are in the same ratio.
Radius of the circle = ?

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Collective analysis of circle 1, 2, 3, 4, 5

A. In the comparative study of circle four and five, the radius R=3×√360 cm is known in circle 4 and 1 part of circle =60 cm is known in circle 5.
Now comparatively, the value of R=3×√360 cm from circle 4 is considered equal to R radius of circle 5.
Calculation of PI (π) (in Circle-5)

2πr= 360 cm

2×π×3×√360= 360

$$\pi = \frac{360}{6\times\sqrt{360}} = \frac{\sqrt{360}}{6}$$

$$\mathbf{PI\ (\pi) = 3.16227766\ldots = \sqrt{10}}$$

Now the value of this π is put in a part of circle 4 i.e. in equation C, and if the result is 60 cm, then it is proved that both circles, circle-4 and 5 are of equal scale.

Therefore, after putting the value of π in equation C- (Circle 4)

π×√360=?

$= 3.16227766\ldots \times\sqrt{360}$

$= \mathbf{\sqrt{10}\times\sqrt{360} = 60\ cm}$

Therefore, it is proved from the above incident that

1. Circles 4 and 5 are of equal radius and circumference R = √3240= 56.9209979… cm and C=360 cm respectively.
2. The length of one side of both the circles is π×√360 = 60 cm
3. The value of pi(π) is =3.16227766…=√10
4. Being equal ratio, an arc equal to the radius i.e. √3240= 56.9209979… cm arc will subtend the same angle at the center i.e. √3240 degree.
   Thus 1 radian angle =√3240 degree
   = 56.9209979… degrees
   One steradian = $(\sqrt{3240})^2$ $degrees^2$
   = 3240° $degree^2$

(B) In circles 4 and 5, we can see that dividing the radius r =√3240 in the ratio =√360, we get √3240/√360 = 3 cm.

Since the circumference of circle 4 and 5 relative to the center angle is 360 cm i.e. in proportion, therefore 3 cm will subtend 3 degree angle at the center. Hence this condition will be same for all circles.

That is, for any circle, dividing its radius R in the ratio √360, the result obtained will subtend an angle of 3 degrees at the center of that circle.

Now on the basis of this principle the circumference of a circle can be calculated for a given radius.

So $C=\frac{R}{\sqrt{360}}\times\frac{360}{3}$ (The obtained result displays the 3° degree angle)

$C=\frac{R}{\sqrt{360}}\times 120$

(C) Thus, for circle 1, circumference(C) = π

$$\frac{1/2}{\sqrt{360}} = \frac{0.5}{\sqrt{360}} = 0.0263523138\ldots \qquad equation\ A$$

$$0.0263523138\ldots \times 120 = 3.16227766\ldots cm$$

$$= \sqrt{10}\quad cm$$

$$\mathbf{PI\ (\pi) = 3.16227766\ldots = \sqrt{10}}$$

(D) For circle 3(R=3 cm)

$$\frac{3}{\sqrt{360}} = 0.158113883\ldots = \sqrt{0.025}\ cm$$

Then

$$\sqrt{0.025}\times 120 = 18.973666\ldots\ cm$$

$$= \sqrt{360}\ cm$$

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So circumference of $6\pi = \sqrt{360}$ cm

$$\pi = \frac{\sqrt{360}}{6}$$

$$\mathbf{PI}\ (\boldsymbol{\pi}) = \mathbf{3.16227766} \ldots = \sqrt{\mathbf{10}}$$

For circle 4 & 5

$$R = \frac{3 \times \sqrt{360}}{\sqrt{360}} \times 120$$

$= 3 \times 120$

& $6\pi \times \sqrt{360} = 360$

$6\pi = 360/\sqrt{360}$

$6\pi = \sqrt{360} = 18.973666\ldots$

$\pi = \sqrt{360}/6 = \frac{18.973666\ldots}{6}$

$$\mathbf{PI}\ (\boldsymbol{\pi}) = \mathbf{3.16227766} \ldots = \sqrt{\mathbf{10}}$$

5) For circle 5

Calculating the ratio of √360 to a part of a circle of 60 cm

$$\pi = \frac{60}{\sqrt{360}} = 3.16227766\ldots = \sqrt{10}$$

$2\pi r = 360$ cm

$2 \times \sqrt{10} \times R = 360$

$R = \frac{360}{\sqrt{40}}$

$= \sqrt{3240}$

$= 56.9209979\ldots$

Verification for PI (π) and radius for circle 5

First of all, in circles 2, 3, 4 Circumferences are divided into 6 equal parts, in all these circles a part of the circumference [circumference/6] and the ratio of the radius will be analyzed.

Circle 2

Circumference = π , radius = ½ cm

$$\frac{\pi/6}{1/2} = \frac{\boldsymbol{\pi}}{\mathbf{3}} = \frac{\text{Circumference}}{radius}$$

Circle 3

Circumference = 6π, radius = 3 cm

$$\frac{\text{Circumference}/6}{radius} = \frac{6\pi/6}{3} = \frac{\boldsymbol{\pi}}{\mathbf{3}}$$

Circle 4

Circumference = 6[π×√360], radius = 3×√360 cm

$$\frac{\text{Circumference}/6}{radius} = \frac{6[\pi\sqrt{360}]/6}{3 \times \sqrt{360}} = \frac{\boldsymbol{\pi}}{\mathbf{3}}$$

It is clear from the above analysis of circle 2,3,4 that on dividing the circumference of any circle into 6 equal parts, the ratio of its 1 part and the radius of the circle will be π/3, which will be a constant ratio for all circles.

So in circle 5

$$\frac{\text{Circumference}/6}{radius} = \frac{60\text{ cm}}{\text{R}} = \frac{\boldsymbol{\pi}}{\mathbf{3}}$$

On taking the square root of this circle

Circumference =√360 cm

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One part of the circumference is = 60 /√360
Radius = R/√360
So for square root circle

$$\frac{60/\sqrt{360}]}{R/\sqrt{360}} = \frac{\pi}{3} = \frac{\sqrt{10}}{R}$$

$$\textbf{PI}\ (\pi) = \sqrt{10} = 3.16227766\ldots$$

R= 3

Hence the above square root circle is on the same scale as circle 3, r = 3, which proves PI (π).

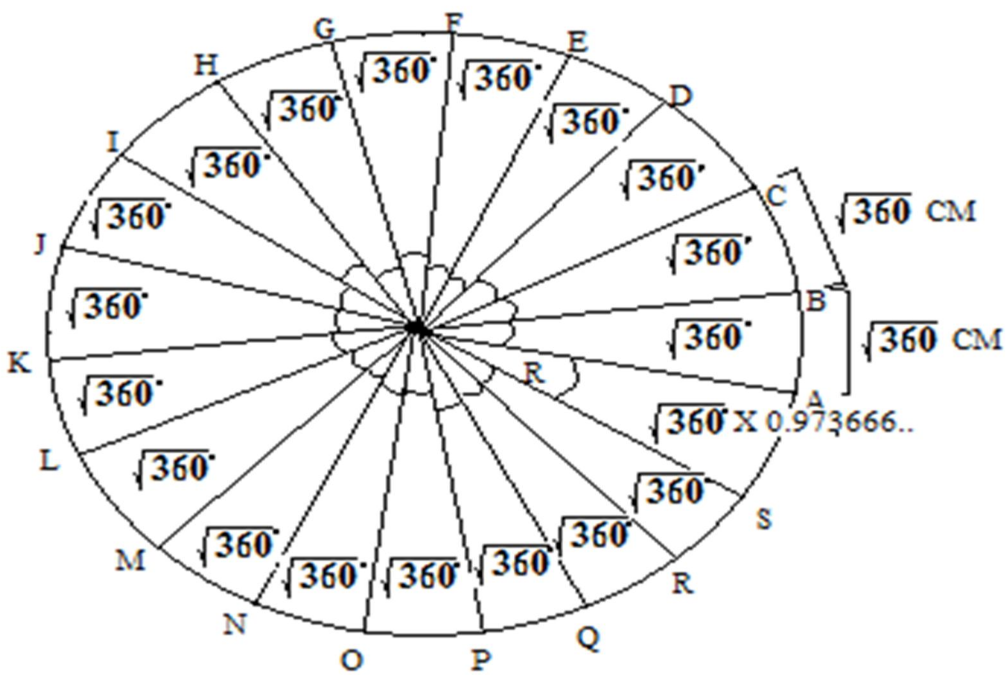
C. Approach 3

Circumference of circle = 2πR
Now let's imagine a circle whose radius R = 3 units and diameter 6 = (2R) units.
2πR= 2 × 3.14159…× 3 (π = 3.14159…)
= 18.84959… unit

It can be seen here that here the approximate value of PI has been taken and the value of circumference obtained is 18.84959, which is 6 times completely and somewhat more than the relative radius.

Or 6 × 3 +0.84959…
= 18 + 0.84959…
= 18.84959…

Now here, let's construct the structure of a circle whose circumference is 360 cm. And the angle at the center of the circle is always 360 degrees, now divide the circumference of this circle in the ratio of its square root.



√360 = 18.973666…

In the above circle we can see -

1) Circumference = 360 cm is divided in the ratio of its square root,

That is, the circumference is divided into 18.97366 units of $\sqrt{360}$ = 18.97366 cm, and the central angle of 360 degrees is divided in the same proportion.

So

$18 \times \sqrt{360} + \sqrt{360} \times 0.97366\ldots = 360$ cm

2) In the above circle angle $\angle\sqrt{360}$ = 18.97366… represents its own equal value i.e. arc of 18.97366….on circumference.

3) Calculation of Radius

It has been known that the radius of the circumference of a circle is the sum of six times the relative part plus the partial part.
And the number of complete parts in the circle is 18. (According to diagram)

So $R = \frac{18\times\sqrt{360}}{6}$

$= 3 \times \sqrt{360}$

$= 3 \times 18.97366\ldots$

$= 56.9209979 = \sqrt{3240}$

The above value of R is equal to 3 units divided by the circumference, so

R=3, Diameter 2R=6

So

$$\textbf{PI} = \frac{18.97366\ldots}{6}\ \textbf{unit}$$

$$= \mathbf{3.16227766\ldots} = \sqrt{10}$$

In above circle the angle $\sqrt{360}°$ represents the same arc $\sqrt{360}$ c.m. on circumference. Also confirms at quarter of circumference represent 90 degree at the center.

Verification of radius

(A) In the above circle (360 cm circumference) radius equal to three units has been determined. Now we will see how many centimeters of arc will be produced by 3 units of circumference.

360 cm × 3/$\sqrt{360}$ = 56.9209979…. cm

= $\sqrt{3240}$ cm

It is clear that the above value is equal to the calculated value of the radius. So for the given circle (360 cm) the value of radius will be 56.9209979…cm = $\sqrt{3240}$ cm.

For a circle, the value of 1 radian angle will be 56.9209979… $\sqrt{3240}$ degrees.

The angle of the whole circle will be 360/ $\sqrt{3240}$ = 6.32455…

= $\sqrt{40}$ radians.

= 2π (2PI) radians

(B) In the above circle

We can see, when we divided radius in to ratio of $\sqrt{360}°$, we found 3 cm as resultant which represent 3 degree angle at the center. (According to diagram)

$$\frac{\sqrt{3240}}{\sqrt{360}} = \frac{56.9209979}{\sqrt{360}} = \mathbf{3cm}$$

Result confers that in any circle if we divided the radius of given circle, into ratio of $\sqrt{360}°$ the obtained result represent 3 degree angle of that circle.

(C) Circumference of above circle = 360 cm

360 cm = 18.97366 … unit of 18.97366 … cm

We obtained R= 3 unit PI= 3.16227766… unit

2πR = 2πR = 18.97366 …… unit

2×π×3(R=3) = 2×$\sqrt{10}$×R = 18.84959…

$6\pi = \sqrt{40}\,R = 18.97366\ldots$

Then

$6\pi = 18.97366\ldots$

$\pi = \frac{18.97366\ldots}{6}$

$\boldsymbol{\pi} = \mathbf{3.16227766\ldots}$

And

$\sqrt{40}\,R = 18.97366\ldots$

$$R = \frac{18.97366...}{6.32455532...} = 3$$

$$R = 3$$

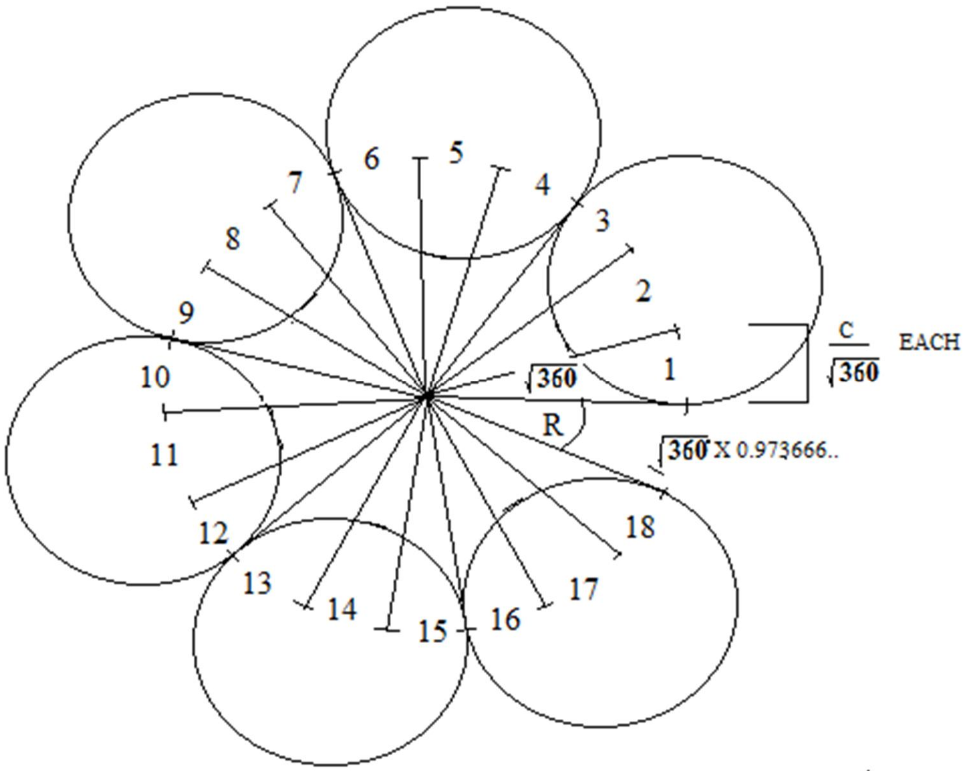
$6\,\pi = 360°$ degree angle

$\pi = \frac{360}{6} = 60°$ degree

In above circle π unit represents 60° degree angle.

Relation Between Radius And Circumference

The radius of a circle is equal to 3 times of 360 proportion of the circumference of that circle.



In the above circle we can see that we divide the given circumference in the ratio of $\sqrt{360}$ according to the central angle 360, then $\sqrt{360}$ = 18.973666… in the circumference totally 18 parts angle and a partial part of $\sqrt{360} \times 0.973666…$ are formed.

Now if a small circle is made in its third part, then it will be completely 6 circles. Which will cut each other at a certain point on the circle in the case of zero human error, so the arc inside this small circle will be equal to the length of the radius, which will be exactly 3 unit arc relative to the $\sqrt{360}$ angle.

$$R = \frac{C}{\sqrt{360}} \times 3$$

Or
$$R = C \times \frac{3}{\sqrt{360}}$$
$$= C \times 0.158113883\ldots$$
$$\boldsymbol{R = C \times \sqrt{0.025}}$$

And
$$\boldsymbol{C = \frac{R}{\sqrt{0.025}}}$$

Angle of 1 radian is

$\sqrt{360} \times 3 = 56.9209979\ldots$ Degree

$= \sqrt{\mathbf{3240}}$ Degree

D. Approach 4

1) Find the Value of PI Using the Pythagorean Theorem

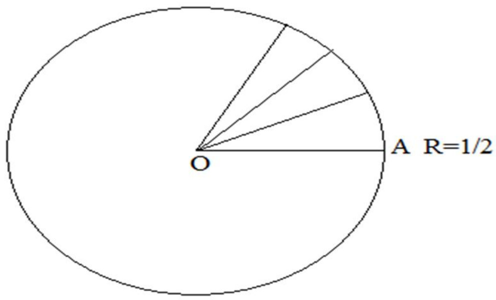
Hypotenuse = $\sqrt{Longitude^2 + Base^2}$

R= ½ cm

C= 2πR

= 2×π×1/2

= π



Base =OA = ½ cm

$Longitude = 0$ (Circle is a group of points)

H = $\sqrt{L^2 + B^2}$

= $0^2 + (1/2)^2$

= $\sqrt{1/4}$= 1/2

H= B (Let h = b = 1/2 at all points of the circle.)

Now on dividing this measure 1/2 in the ratio $\sqrt{360}$.

$$\frac{1/2}{\sqrt{360}} = 0.0263523138\ldots$$

We have obtained the radius of a circle equals three units of the arc on the circumference relative to the √360 angle, so an arc of length $\frac{\frac{1}{2}}{\sqrt{360}}$ will represent an angle of 3 degrees at the center.

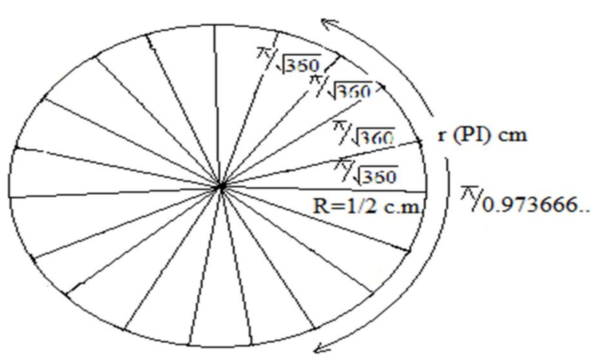
Therefore

$$\frac{\frac{1}{2}}{\sqrt{360}} \times \frac{360}{3} = 3.16227766\ldots$$

$$= \sqrt{10}$$

(B)

Where R= ½ C= π (PI)



$\sqrt{360}$ = 18.973666…

- First of all divide the circumference = π (PI) of the above circle in the ratio of $\sqrt{360}$.
- From the above procedure circumference (π) increase 18 units of $\pi/\sqrt{360}$ and one unit of π / 0.973666…
- The radius of any circle, divided by the circumference of that circle with respect to √360, is equal to 3 unit units.

Taking 3 units from the above circle,

$$\frac{\pi}{\sqrt{360}} + \frac{\pi}{\sqrt{360}} + \frac{\pi}{\sqrt{360}} = \frac{1}{2} \qquad \left(R = \frac{1}{2}\right)$$

$$\frac{3\pi}{\sqrt{360}} = \frac{1}{2}$$

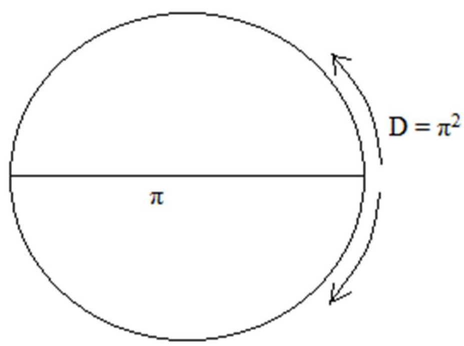
$$\pi = \frac{\sqrt{360}}{3 \times 2}$$

$$\pi = \frac{18.973666\ldots}{6}$$

$$\pi = 3.16227766\ldots = \sqrt{10}$$

E. Approach 5

(Diameter = π)



Circumference D=2πR

D = 2×π×R

D = π ×π (If 2R= π)

D = π^2

It is clear from the above calculation that if a circle of diameter PI is drawn, then the circumference of the circle will be equal to the square of the diameter.

This is the balance point

1) That is, by reducing the length of the diameter from here, the circumference of the circle will be greater than the square of the diameter.
2) On increasing the length of the diameter, the circumference of that circle will be smaller than the square of the diameter.

Now let's understand it by calculation-

- On doubling the diameter

Circumference =2πR

C = π×2R

C = π ×2π (If 2R= 2π)

C = $2\pi^2$

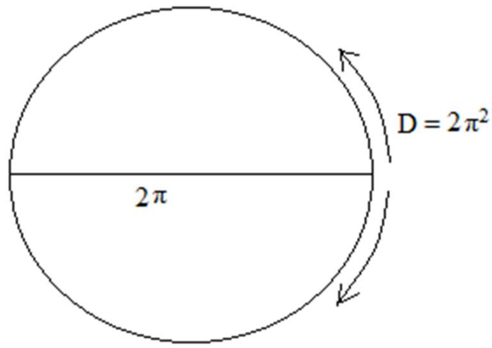
Comparing circumference to square of diameter

$(\text{Diameter})^2 = (2\pi)^2 = 4\pi^2$

(Circumference= $2\pi^2$)

$$\frac{4\pi^2}{2\pi^2} = 2$$

i.e. the length of the circumference is 2 times less relative to the square of the diameter



On 3 times the diameter-

Circumference $=2\pi R$

$C = \pi \times 3 \times R$

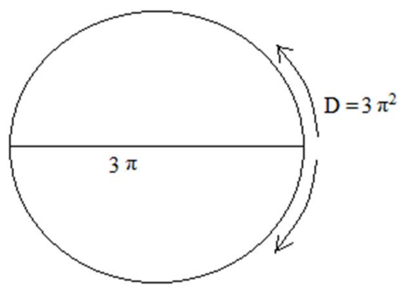
$C = \pi \times 2\pi$ (If $2R = \pi$)

$C = 3\pi^2$

$(\text{Diameter})^2 = (3\pi)^2 = 9\pi^2$

$\frac{9\pi^2}{3\pi^2} = 3$

That is, here the length of the circumference is 3 times less than the square of the diameter.



- Putting the diameter as $\pi/2$, the circumference will be $\pi^2/2$.

$[\pi/2]^2 = \frac{\pi^2}{4}$

Circumference $= \pi^2/2$

$\frac{\text{Diameter}}{\text{Circumference}} = \frac{\pi^2/4}{\pi^2/2} = 1/2$

Here the length of the square of the diameter is 1/2 relative to the length of the circumference.

- On arranging all the above conditions

Diameter	(Diameter) ^{2}	Circumference	$Diameter^2$ $/Circumference$	
$\frac{\pi}{2}$	$\frac{\pi^2}{4}$	$\frac{\pi^2}{2}$	$\frac{1}{2}$	
π	π^2	π^2	1	**Balance Point**
2π	$4\pi^2$	$2\pi^2$	2	
3π	$9\pi^2$	$3\pi^2$	3	
4π	$16\pi^2$	$4\pi^2$	4	

Arranging the above situations step by step, we can see that-

A. Balance Point = $\frac{\text{Diameter}(\pi^2)}{\text{Circumference}(\pi^2)} = 1$, With decreasing and increasing the value of the diameter, the value of Diameter^2 (D^2) decreases and increases in the order of the numbers of a decimal system with respect to the circumference.
B. Hence the Diameter^2 will always be a rational number and equal to one-tenth of the circumference times the circumference.

In other words

$$Diameter^2 = \frac{\text{Circumference}}{10} \times \text{Circumference}$$
$$Diameter^2 = \frac{\text{Circumference}^2}{10}$$

Here we take diameter = π at the balance point whose circumference is also π.

So $\pi^2 = \frac{(\pi^2)^2}{10}$

$$\pi^2 = \frac{\pi^4}{10}$$
$$\frac{\pi^4}{\pi^2} = 10$$
$$\pi = \sqrt{10} = 3.16227766\ldots$$

Now calculate all the above conditions

1. Diameter = $\pi/2$ Circumference $= \frac{\pi^2}{2}$

$$\left[\frac{\pi}{2}\right]^2 = \frac{[\pi^2/2]^2}{10}$$
$$\pi^4/2 = \frac{\pi^4/4}{10}$$
$$\frac{\pi^4}{\pi^2} = \frac{10\times4}{4}$$
$$\pi^2 = 10$$
$$\pi = \sqrt{10} = 3.16227766\ldots$$

2. Diameter = 2π Circumference = $2\pi^2$

$$[\ 2\pi]^2 = \frac{(2\pi^2)^2}{10}$$
$$4\pi^2 = \frac{4\pi^4}{10}$$
$$\pi^2 = 10$$
$$\pi = \sqrt{10} = 3.16227766\ldots$$

3. Diameter = 3π Circumference = $3\pi^2$

$$[\ 3\pi]^2 = \frac{(3\pi^2)^2}{10}$$
$$9\pi^2 = \frac{9\pi^4}{10}$$
$$\pi^2 = 10$$
$$\pi = \sqrt{10} = 3.16227766\ldots$$

F. Approach 6

Understanding the PI with Basel problem

In 1650, the Italian mathematician Pietro Mognoli introduced an infinite series related to the infinite sum of inverse squares, which was solved by Leonhard Euler in 1734 and the sum of the series was given as $\frac{\pi^2}{6}$.

$$\sum_{n=1}^{\infty}\frac{1}{n^2} = \frac{\pi^2}{6}$$
$$\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots \ldots\ldots\ldots\ldots\ldots\ldots = \frac{\pi^2}{6}$$

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$$\frac{1}{1}+\frac{1}{4}+\frac{1}{9}+\frac{1}{16}+\frac{1}{25}+\cdots\ldots\ldots\ldots\ldots\ldots\ldots = \frac{\pi^2}{6}$$

Now let's try to solve each of its term through L Sign Theory.

¼ =

4)10(0∟256
- 8
2x11 = 22
20
2x12 = 24

so ¼ = ∟256 (solved by L- sign theory)

1/9 =

9) 1 (0∟112895
-0
1x10=10
9
1x11=11
9
2x12=24
18
6x13=78
72
6x14=84
81
3x15=45
45
xx

1/9 = ∟112895 (solved by L- sign theory)

1/16 =

16) 1x10(0∟06$\overline{1}$067
-0
10x11=110
96
14x12=168
160
8x13=104
96
8x14=112
112
xxx

1/16 = ∟06T067 (solved by L- sign theory)

Considering all of the calculations above

$$\frac{1}{1}+\frac{1}{4}+\frac{1}{9}+\frac{1}{16}+\frac{1}{25}\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \frac{\pi^2}{6}$$

1+∟256 + ∟112895 +∟06T067 $+\frac{1}{25}\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \frac{\pi^2}{6}$

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$$\begin{array}{r} 1\llcorner \\ 0\llcorner 25\ 6 \\ 0\llcorner 11\ 2\ 895 \\ +\ 0\llcorner 06\overline{10}67 \\ \hline 1\llcorner 42\ 7225 \end{array}$$

(Solved by L- sign theory)

$1\llcorner 427225 + \frac{1}{25} + \frac{1}{36} \ldots\ldots\ldots = \frac{\pi^2}{6}$

It is clear from the above calculation that the sum of the numbers given in the given series will be 1 perfect rational number, so their sum $\frac{\pi^2}{6}$ in π^2 must be a perfect number.

Therefore, according to the previous calculation, $\pi^2 = 10$, the sum of this series will be $\pi^2/6 = 10/6 = 1\llcorner 66\overline{16}$. (Solved by L- sign theory)

V. CONCLUSION

The calculation of PI has presented in this research paper with the actual percent value, so where a certain ratio in the sequence of numbers is $\sqrt{10}$ = 3. 16227766... and in addition to this, in this research paper It is clear from geometrical and numerical experiments that $\sqrt{10}$ = 3. 16227766... is the true value of PI and actual value of radian is $\sqrt{3240}$ = 56.9209979…

Apart from this, the relation of circumference and radius of a circular structure has also been described in the form of R = C×$\sqrt{0.025}$, through which the actual value of the second factor can be obtained for the given radius or circumference. This real value of PI is reflected in more effective applications in the fields of physics, mathematics, and space science.

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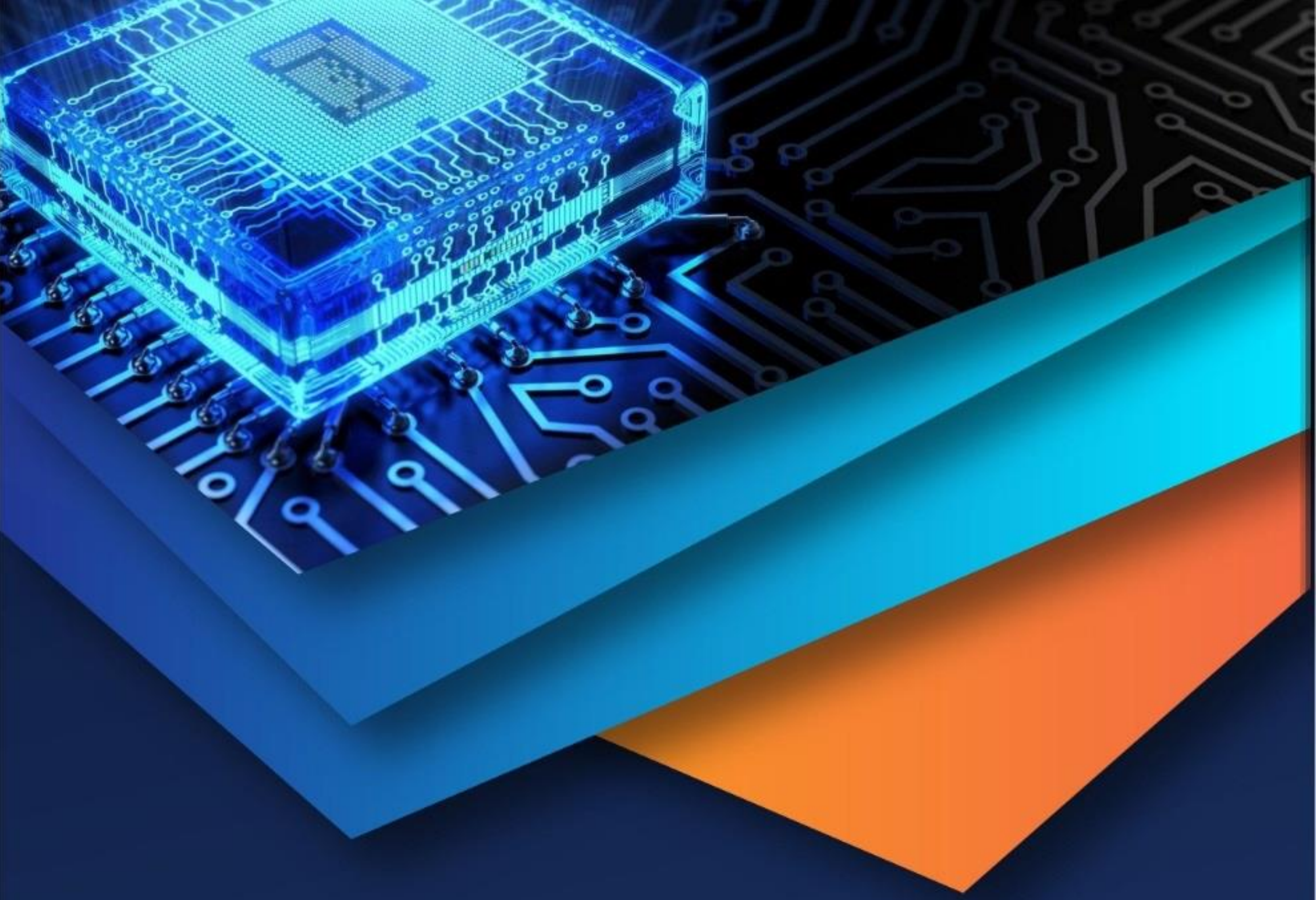

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