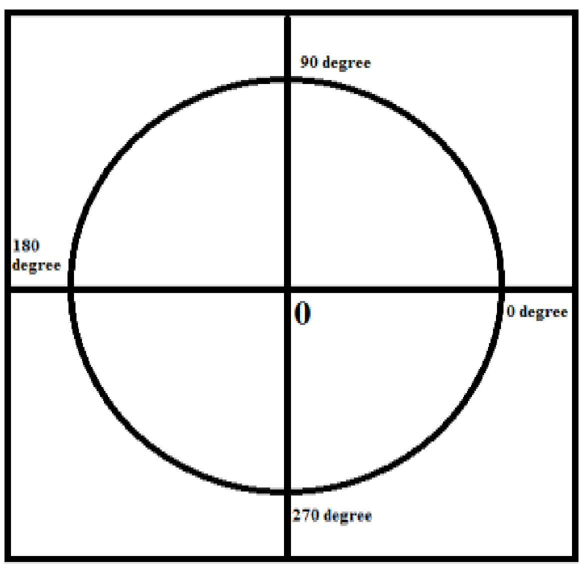
JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Proposed Numerous waves structure with their performance values

Dhrumant Gajjar

Abstract : Waves apart from Sinusoidal or Cosinusoidal wave or other than similar waves need to study for achieving more promising performance of devices or communication systems. Some of them could perform better than traditional waves. Waves like circular, Triangular or triangular waves which have been introduced in this paper, having different performance values than traditional Sinusoidal or Cosinusoidal waves. It could be applied from academic filed to industrial level research programs. Let's understand by this paper in more details.
Here, we have introduced numerous wave structure and their performance values.

1.0 Circular wave structure :



In circle which have diameter of 1 meter has been taken for reference to understand trends of circular wave. Here, circle is divided into four sections where first region has 0 to 90 degree and by taking difference of 90 degree the rest regions are divided. All region combination makes one complete circular area. Each section having similar area but dissimilar performance values.

1.0.1 Circular wave performance values:

Circular wave	0	10	20	30	40	50	60	70	80	90
Cir (A)	0	0.11	0.22	0.33	0.44	0.55	0.66	0.77	0.88	1
Cir (B)	1	0.88	0.77	0.66	0.55	0.44	0.33	0.22	0.11	0
Cir (C)	0	0.125	0.28	0.5	0.8	1.25	2	3.5	8	infinitive
Cir (D)	infinitive	8	3.5	2	1.25	0.8	0.5	0.28	0.125	0

Cir (E)	**infinitive**	**9.09**	**4.54**	**3.03**	**2.28**	**1.81**	**1.51**	**1.29**	**1.13**	**1**
Cir (F)	**1**	**1.13**	**1.29**	**1.51**	**1.81**	**2.28**	**3.03**	**4.54**	**9.09**	**infinitive**

First region values of performance has been shown above. These values could remain similar apart from direction for rest of the regions for circular wave.

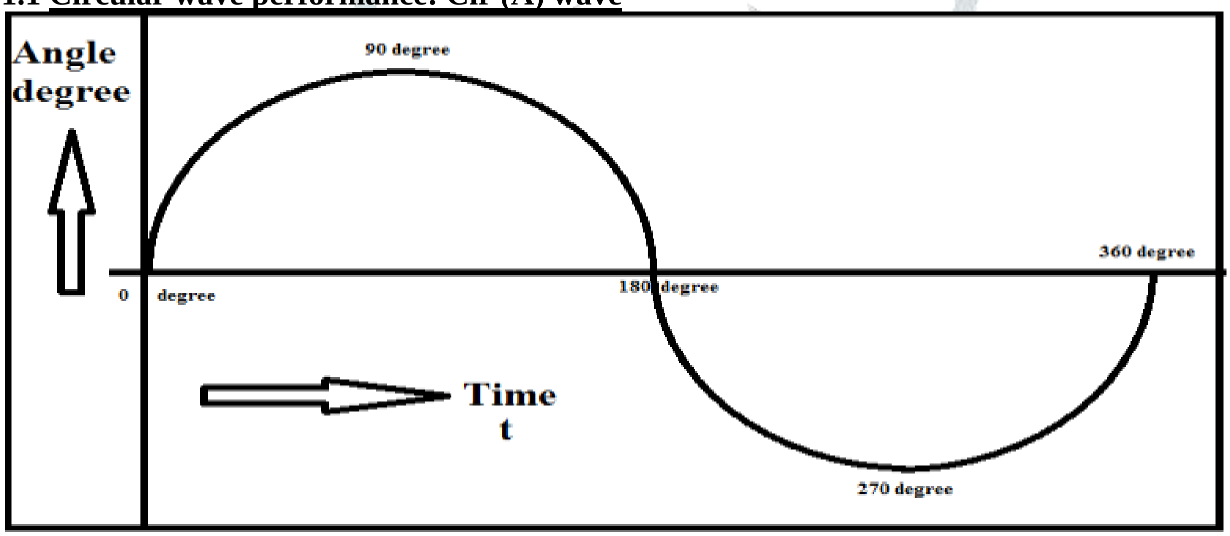
Here, the Circular waves have been distributed over six different waves like,

- Cir (A) wave,
- Cir (B) wave , which has been 90 degree differentiated from Cir (A) wave,
- Cir (C) wave, which is mathematically distributed by formula like,
  - Cir (C) = Cir (A) wave / Cir (B) wave,
- Cir (D) wave, which is mathematically distributed by formula like,
  - Cir (D) = Cir (B) wave / Cir (A) wave,
- Cir (E) wave, which is mathematically distributed by formula like,
  - Cir (E) = 1 / Cir (A) wave
- Cir (F) wave, which is mathematically distributed by formula like,
  - Cir (F) = 1 / Cir (B) wave

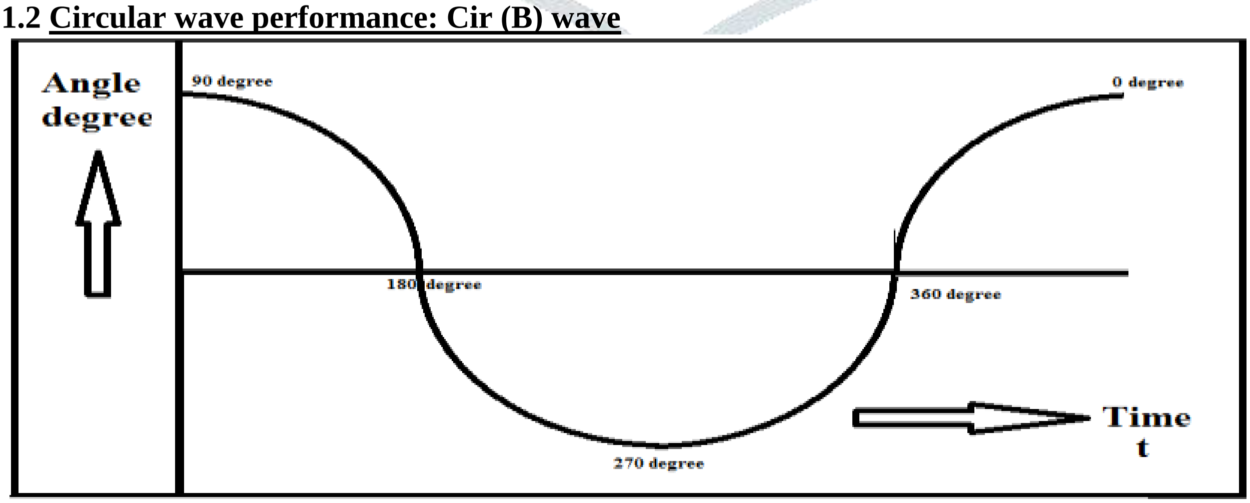
All waves from Cir (B) to Cir (F) waves are derived from single paternal wave Cir (A)

It could perform in all mathematical functions as shown in below graphs of waves.

1.1 Circular wave performance: Cir (A) wave

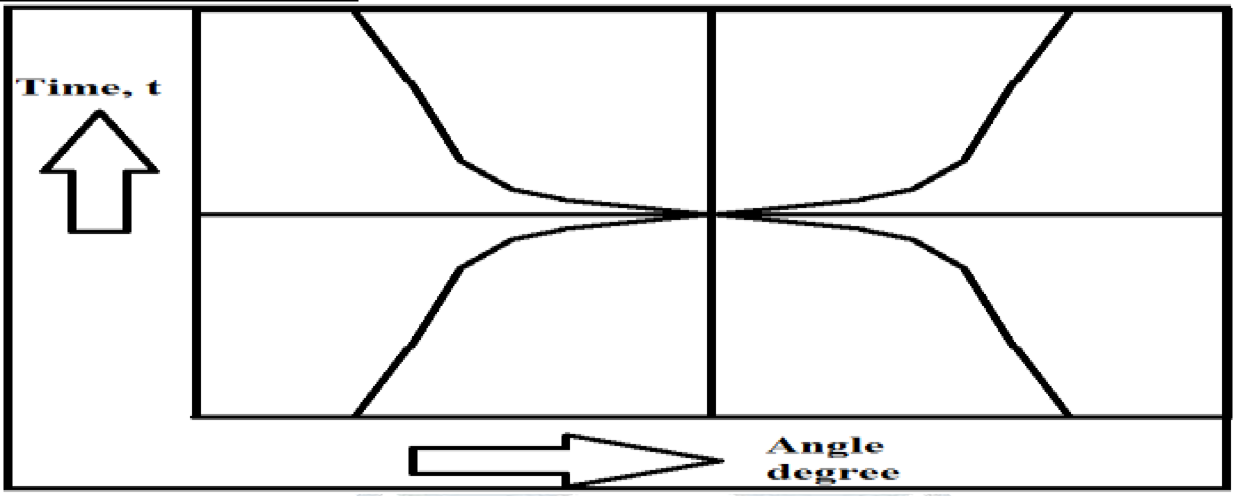


1.2 Circular wave performance: Cir (B) wave



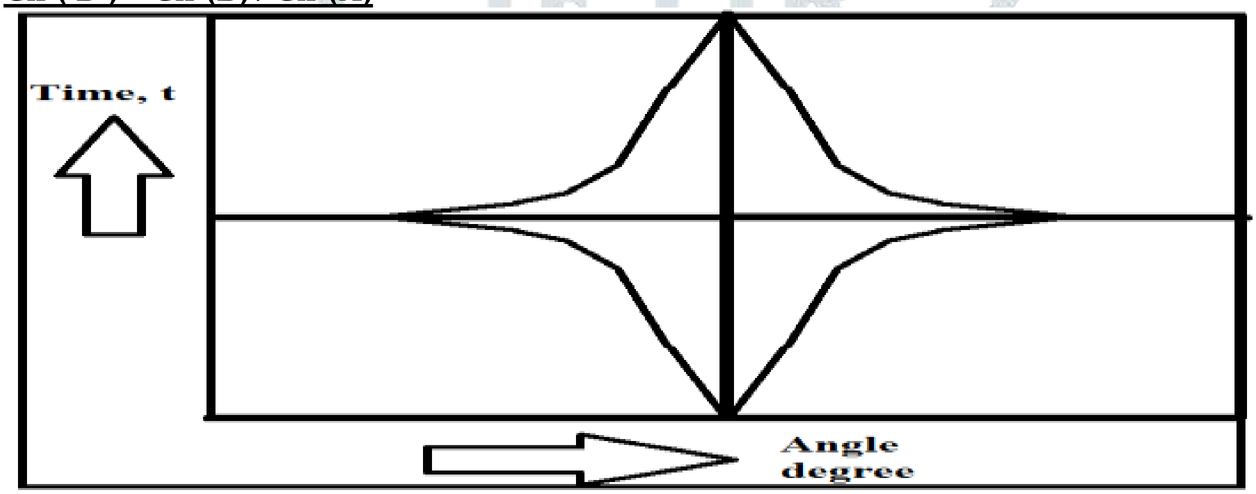
1.3 <u>Circular wave performance: Cir (C) wave</u>

<u>Cir (C) = Cir (A) / Cir (B)</u>



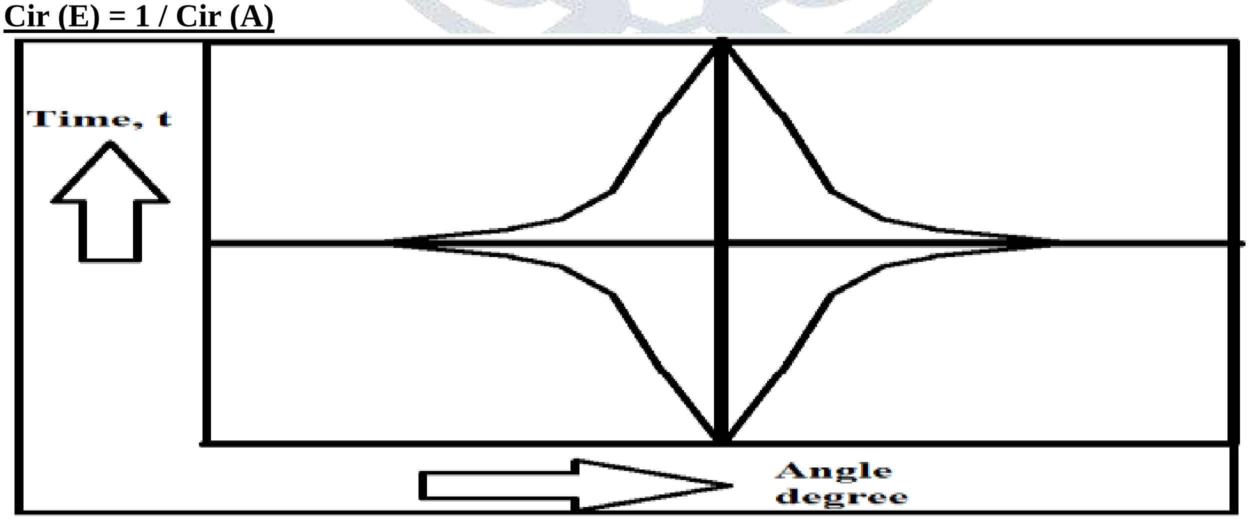
1.4 <u>Circular wave performance: Cir (D) wave</u>

<u>Cir (D) = Cir (B) / Cir (A)</u>



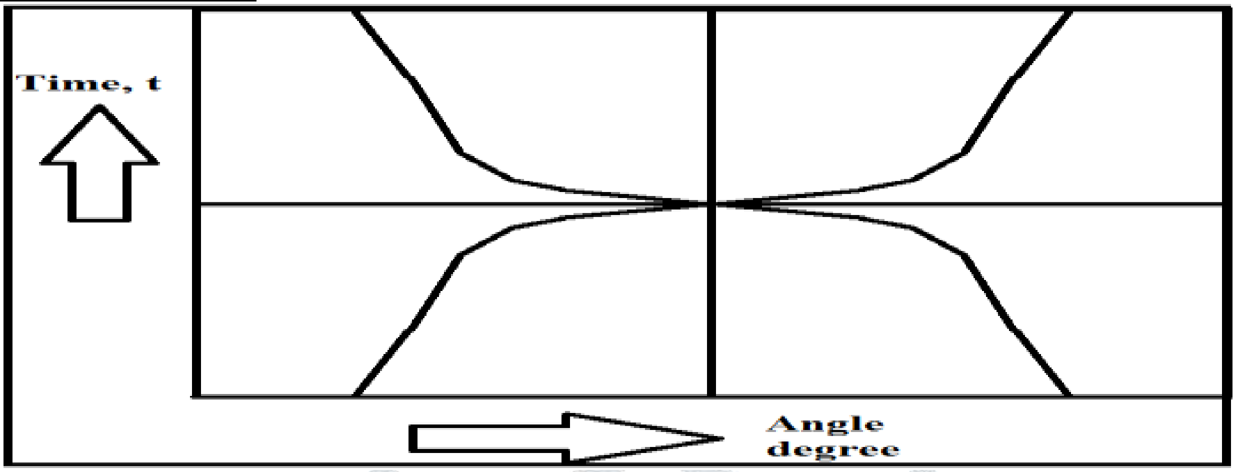
1.5 <u>Circular wave performance: Cir (E) wave</u>

<u>Cir (E) = 1 / Cir (A)</u>

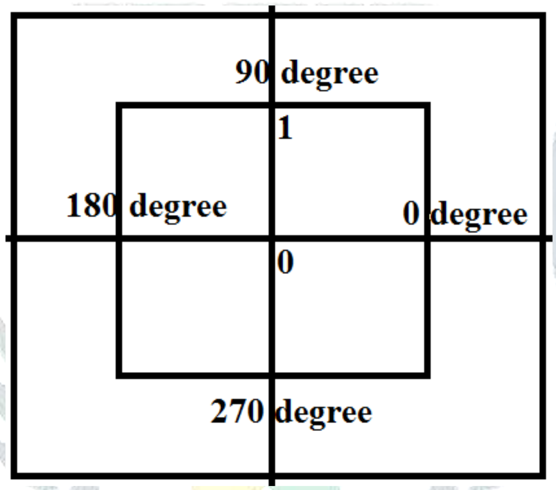


1.6 Circular wave performance: Cir (F) wave

Cir (F) = 1 / Cir (B)



2.0 Square wave structure :



In square which have length of 1 meter has been taken for reference to understand trends of square. Here, square is divided into four sections where first region has 0 to 90 degree and by taking difference of 90 degree the rest regions are divided. All region combination makes one complete square area. Each section having similar area but dissimilar performance values.

2.0.1 Square wave performance value :

Square wave	0	10	20	30	40	50	60	70	80	90
Sqr (A)	0	0.08	0.18	0.28	0.42	0.58	0.71	0.82	0.9	1
Sqr (B)	1	0.9	0.82	0.71	0.58	0.42	0.28	0.18	0.08	0
Sqr (C)	0	0.08	0.21	0.39	0.72	1.38	2.53	4.55	11.25	infinitive
Sqr (D)	infinitive	11.25	4.55	2.53	1.38	0.72	0.39	0.21	0.08	0
Sqr (E)	infinitive	12.5	5.55	3.57	2.38	1.72	1.4	1.21	1.11	1
Sqr (F)	1	1.11	1.21	1.4	1.72	2.38	3.57	5.55	12.5	infinitive

First region values of performance has been shown above. These values could remain similar apart from direction for rest of the regions.

Here, the Square waves have been distributed over six different waves like,

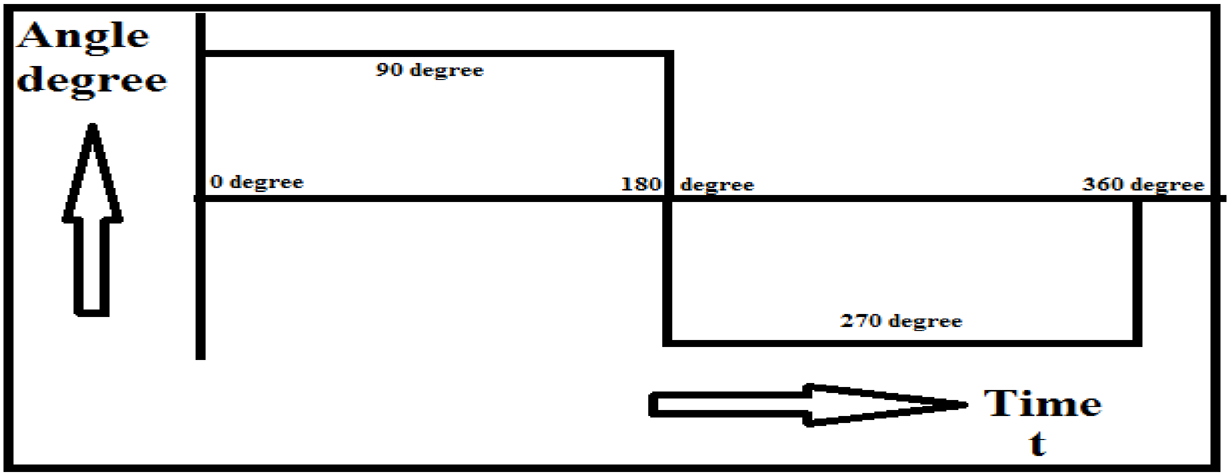
- Sqr (A) wave,
- Sqr (B) wave , which has been 90 degree differentiated from Sqr (A) wave,
- Sqr (C) wave, which is mathematically distributed by formula like,
  - Sqr (C) = Sqr (A) wave / Sqr (B) wave,
- Sqr (D) wave, which is mathematically distributed by formula like,
  - Sqr (D) = Sqr (B) wave / Sqr (A) wave,

- Sqr (E) wave, which is mathematically distributed by formula like,
  - Sqr (E) = 1 / Sqr (A) wave
- Sqr (F) wave, which is mathematically distributed by formula like,
  - Sqr (F) = 1 / Sqr (B) wave

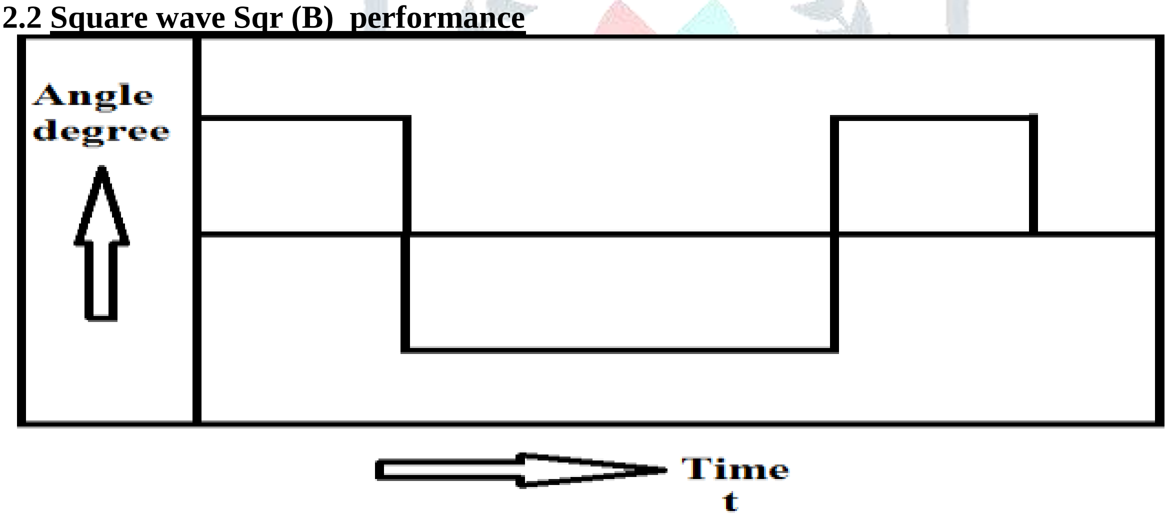
All waves from Sqr (B) to Sqr (F) waves are derived from single paternal wave Sqr (A)

It could perform in all mathematical functions as shown in below graphs of waves.

2.1 Square wave Sqr (A) performance :

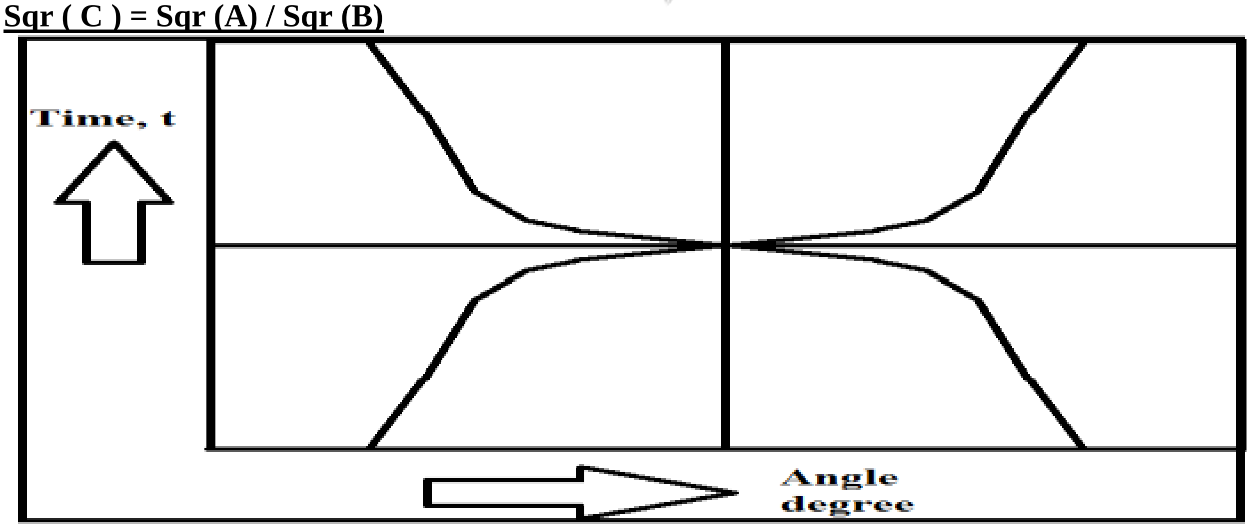


2.2 Square wave Sqr (B) performance



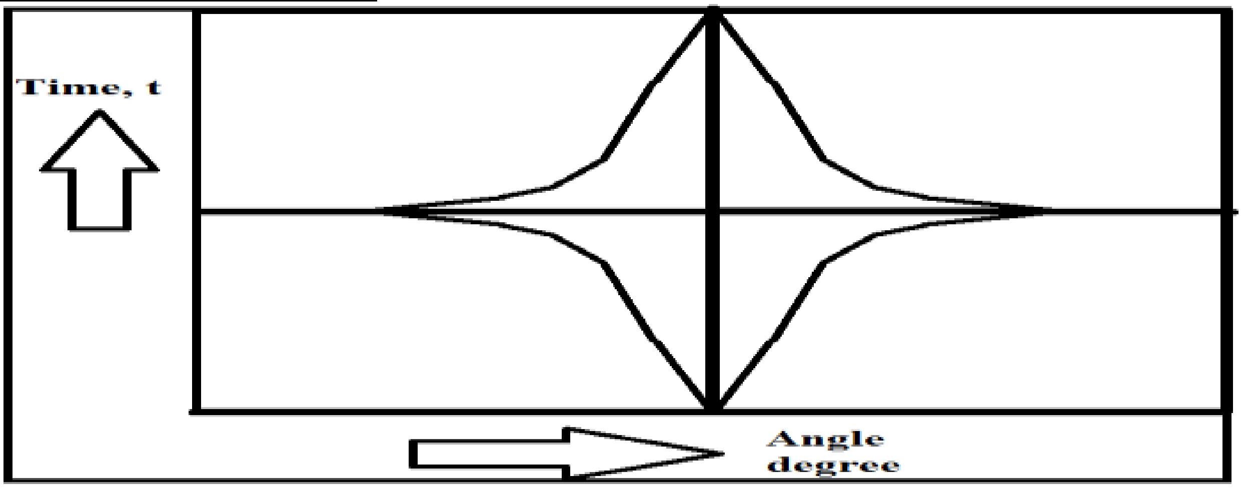
2.3 Square wave performance: Sqr (C) wave

Sqr (C) = Sqr (A) / Sqr (B)

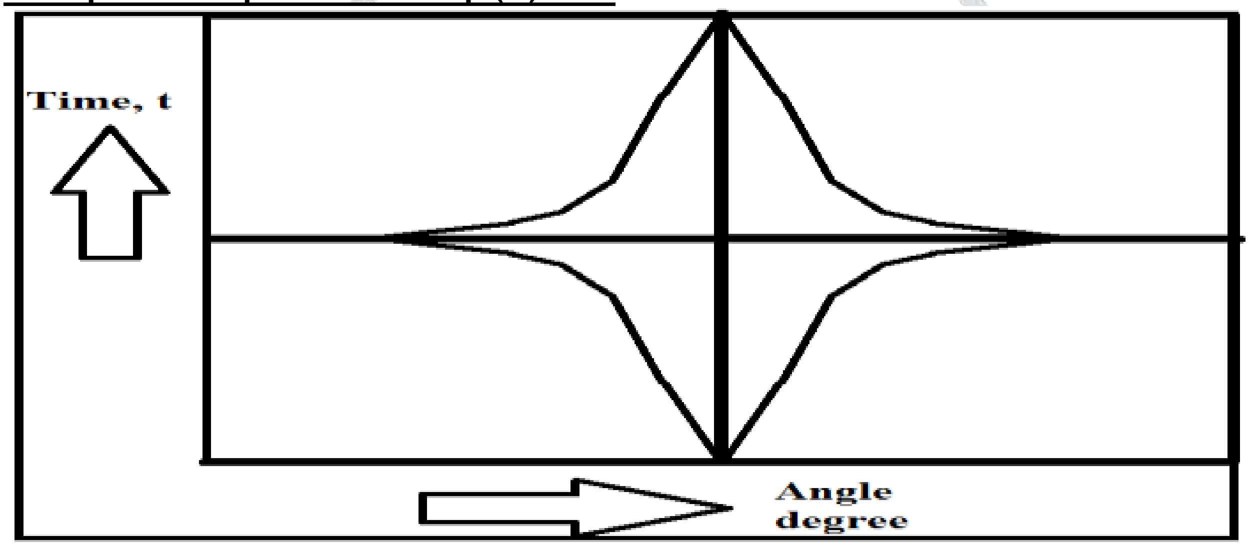


2.3 Square wave performance: Sqr (D) wave

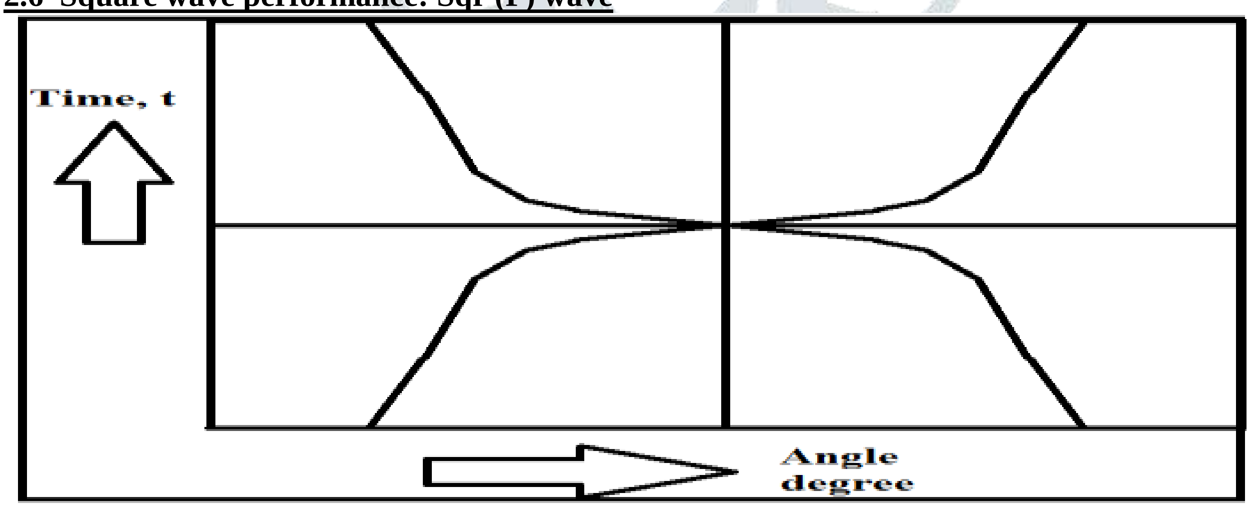
Sqr (D) = Sqr (B) / Sqr (A)



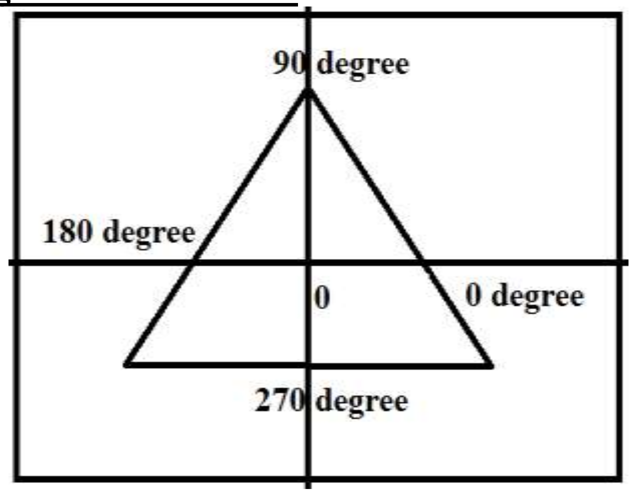
2.5 Square wave performance: Sqr (E) wave



2.6 Square wave performance: Sqr (F) wave



3.0 Equilateral triangular wave structure :



In Triangular which have reference length of 1 meter has been taken for reference to understand trends of Triangular wave. Here, Triangular is divided into four sections where first region has 0 to 90 degree and by taking difference of 90 degree the rest regions are divided. All region combination makes one complete Triangular area. Each section having dissimilar area with dissimilar performance values.

3.0.1 Equilateral triangular wave performance values :

Triangular wave	0	10	20	30	40	50	60	70	80	90
Trg (A)	0	0.06	0.11	0.17	0.24	0.3	0.35	0.44	0.55	0.71
Trg (B)	0.71	0.55	0.44	0.35	0.3	0.24	0.17	0.11	0.06	0
Trg (C)	0	0.1	0.25	0.48	0.8	1.25	2.05	4	9.16	infinitive
Trg (D)	infinitive	9.16	4	2.05	1.25	0.8	0.48	0.25	0.1	0
Trg (E)	infinitive	16.66	9.09	5.88	4.16	3.33	2.85	2.27	1.81	1.4
Trg (F)	1.4	1.81	2.27	2.85	3.33	4.16	5.88	9.09	16.66	infinitive
Triangular wave (Negative values)	180	190	200	210	220	230	240	250	260	270
Trg (A)	0	0.09	0.22	0.38	0.59	0.72	0.81	0.88	0.93	1
Trg (B)	1	0.93	0.88	0.81	0.72	0.59	0.38	0.22	0.09	0
Trg (C)	0	0.09	0.25	0.46	0.81	1.22	2.13	4	10.33	infinitive
Trg (D)	infinitive	10.33	4	2.13	1.22	0.81	0.46	0.25	0.09	0
Trg (E)	infinitive	11.11	4.54	2.63	1.69	1.38	1.23	1.13	1.07	1
Trg (F)	1	1.07	1.13	1.23	1.38	1.69	2.69	4.54	11.11	infinitive

Negative region is sharing more area than positive region.

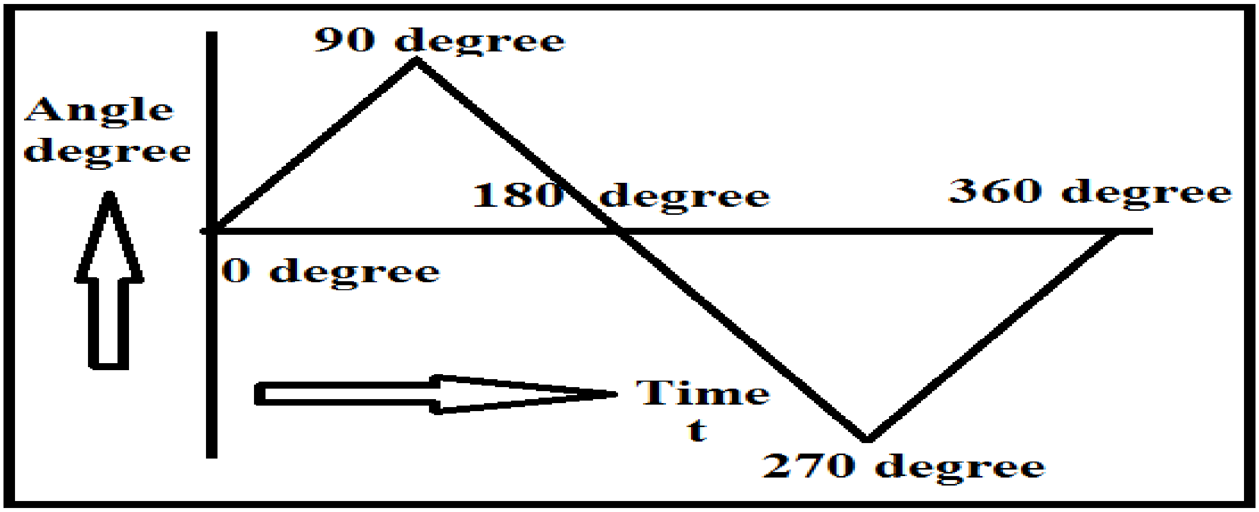
Here, the Triangular waves have been distributed over six different waves like,

- Trg (A) wave,
- Trg (B) wave , which has been 90 degree differentiated from Trg (A) wave,
- Trg (C) wave, which is mathematically distributed by formula like,
  - Trg (C) = Trg (A) wave / Trg (B) wave,
- Trg (D) wave, which is mathematically distributed by formula like,
  - Trg (D) = Trg (B) wave / Trg (A) wave,
- Trg (E) wave, which is mathematically distributed by formula like,
  - Trg (E) = 1 / Trg (A) wave
- Trg (F) wave, which is mathematically distributed by formula like,
  - Trg (F) = 1 / Trg (B) wave

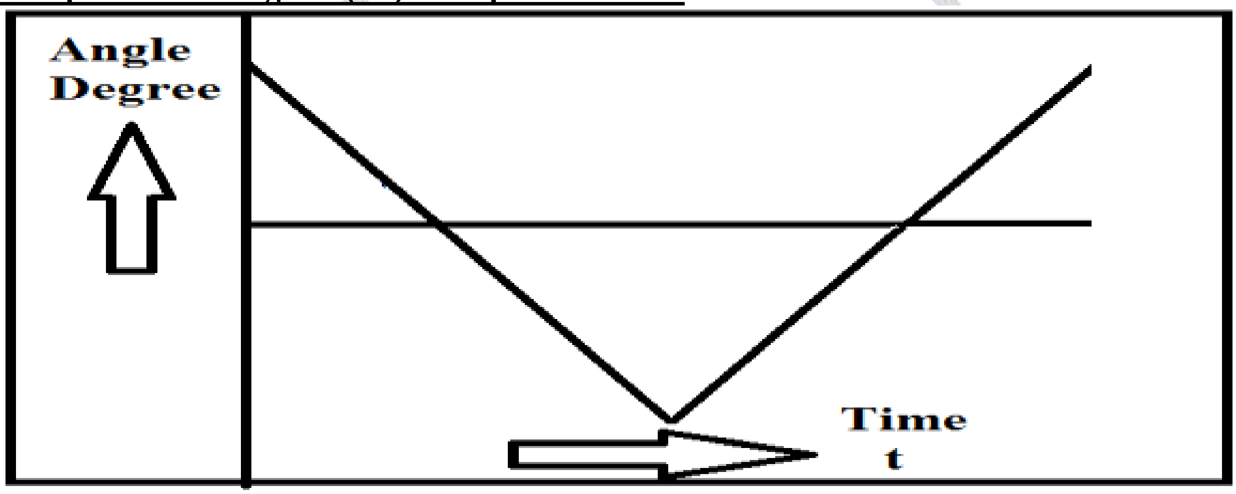
All waves from Trg (B) to Trg (F) waves are derived from single paternal wave Trg (A)

It could perform in all mathematical functions as shown in below graphs of waves.

3.1 Equilateral triangular (A) wave performance :

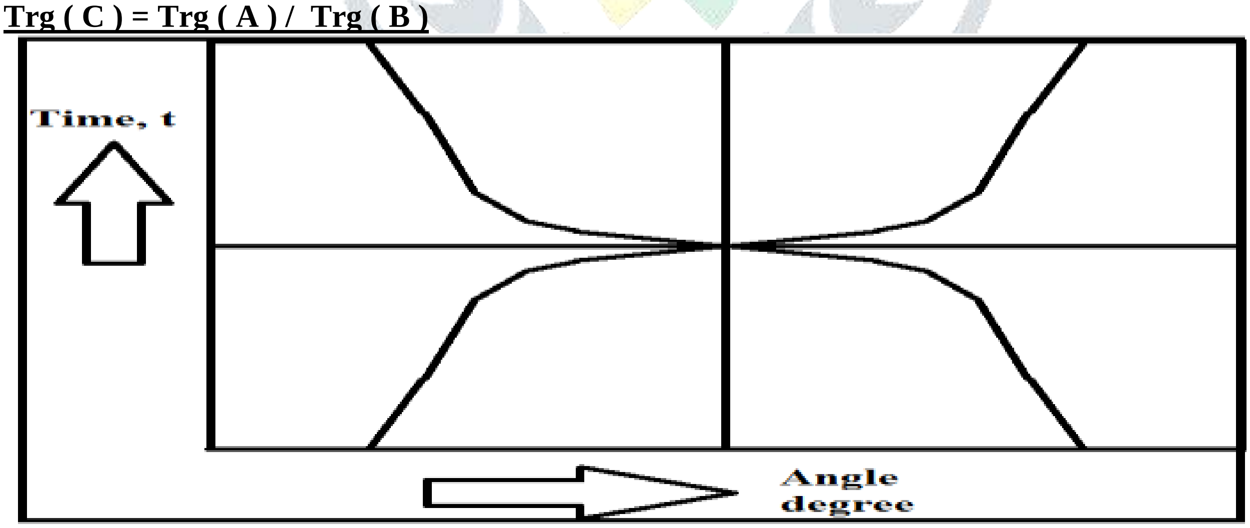


3.2 Equilateral triangular (B) wave performance :

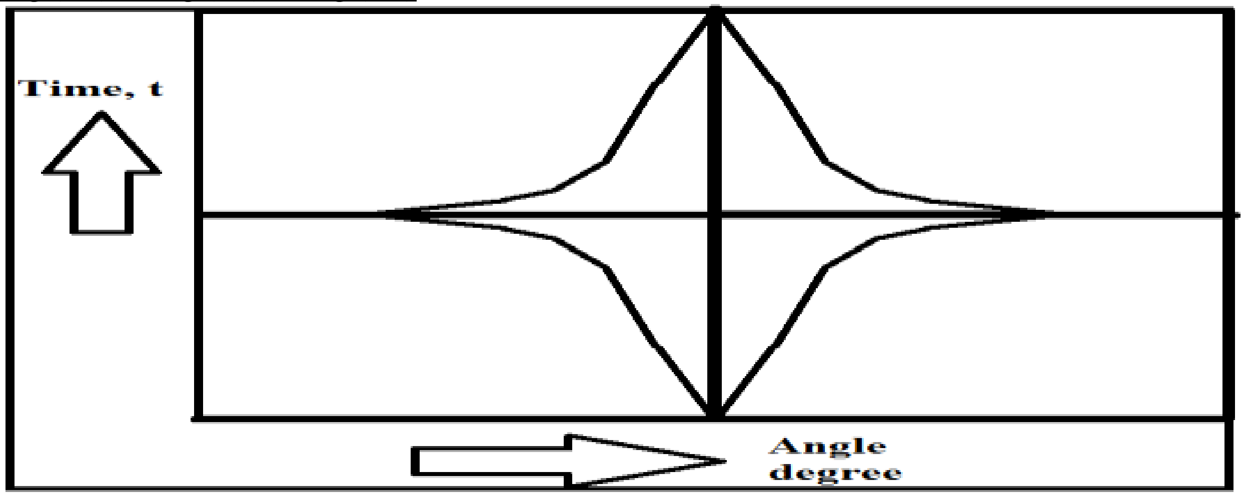


3.3 Equilateral triangular (C) wave performance :

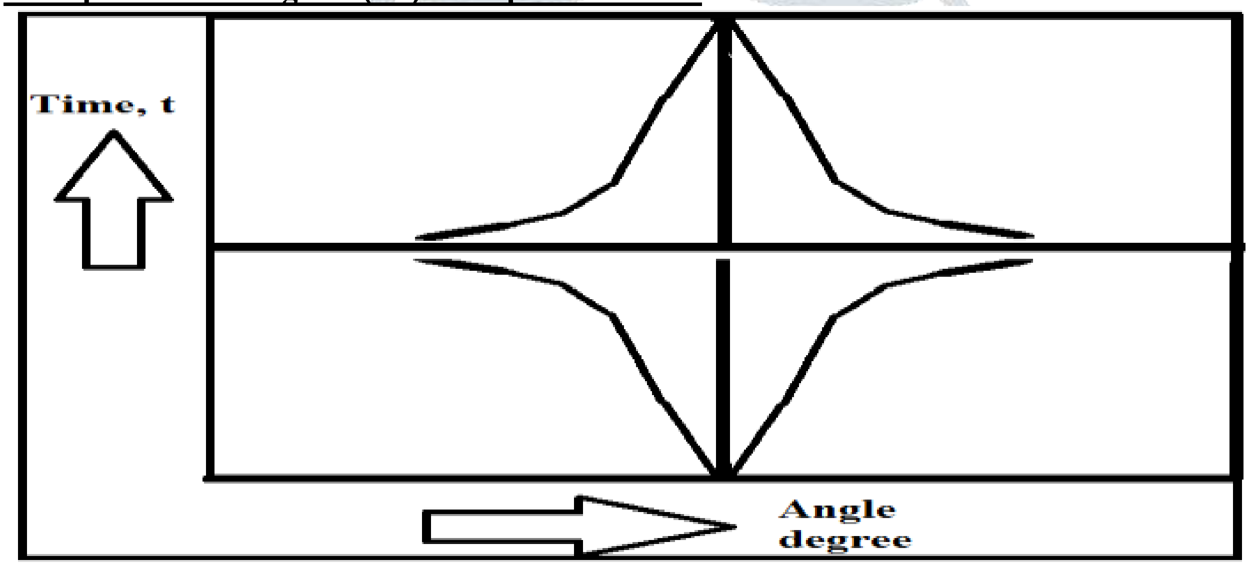
Trg (C) = Trg (A) / Trg (B)



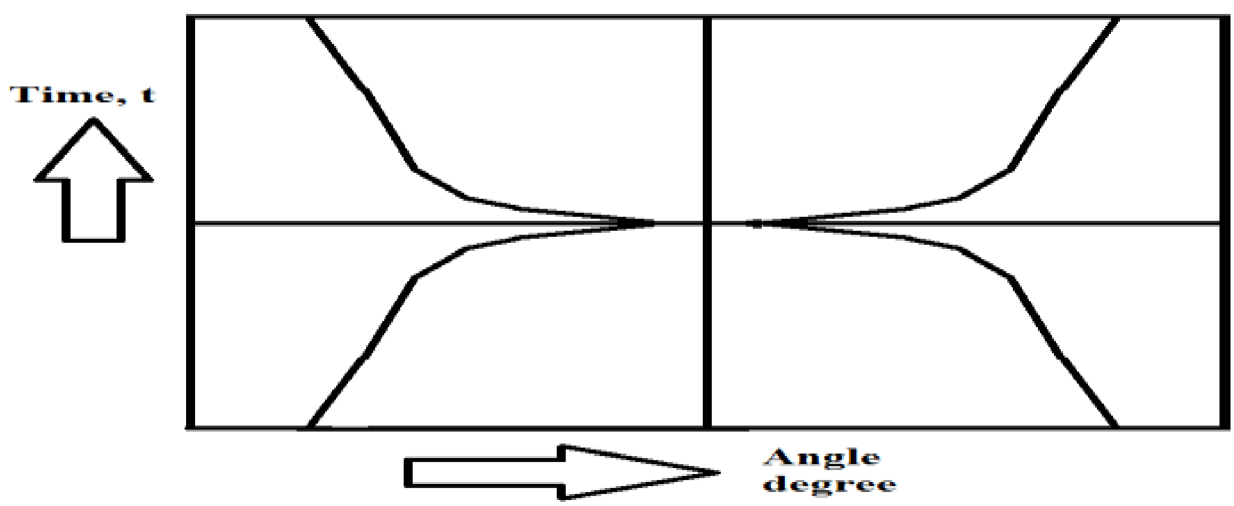
3.4 Equilateral triangular (D) wave performance :
Trg (D) = Trg (B) / Trg (A)



3.5 Equilateral triangular (E) wave performance :



3.6 Equilateral triangular (F) wave performance :



Conclusion :

Circular wave covers similar performance in all four reason where proportional angle is common 30 degree for all four region. This wave is useful where similar electronics device performance required irrespective of their direction values.

Square wave covers similar performance in all four reason where proportional angle is divided into two parts in each single region of rest of all. This wave is useful where similar electronics device performance required irrespective of their direction values where proportion angle is equally divided in single region.

Equilateral triangular wave covers more negative region and perform better in negative region more than positive rigion. It could be applied in electronic equipment performance where negative direction in important.

Equilateral triangular wave (E) performance ended at 1.40 value which is different from tradition end point 0 and (F) performance started at 1.40 value than traditional 0 value, so these kind of waves could be used where triggering value could not 0 of electronic equipments or similar application where delayed or dissimilar response time is required.

More such a kind of waves form shapes like rectangular and trapezium or similar shapes could discover more distinguish values of waves which are different than traditional sinusoidal wave and could perform better integration or derivation like academic or industrial mathematical functions than traditional waves.

References :

www.google.com
www.yahoo.com
www.wikipedia.com