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Ancient Indian Time Counting: An Analytical Study

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Abstract: ***India has had a glorious tradition of knowledge and science since ancient times. Two quantities are critical in the study of science: (1) space and (2) time. It is impossible to study the events happening in the universe without accurate information about space and time. According to Stephen Hawking's Big Bang theory, about 12 to 14 billion years ago, the universe was compressed. Due to an explosion in it, every particle compressed in it started expanding, resulting in the creation of the universe. Along with this, time has also been created because we measure changes through time. When the change started, time also started from that time itself. The universe originated billions of years ago, but in the currently prevalent time calculation, we are able to calculate only a few thousand years. On the other hand, the ancient Indian calculation of measuring time has a very glorious history. In Indian astrology, the date and time of solar and lunar eclipses are told on the basis of this time calculation. In this paper, we will analyze this ancient Indian time calculation so that we can know whether the basis of this time calculation is scientific or imaginary.***
Keywords: Ancient Indian knowledge tradition, Ancient Indian time calculation.

I. INTRODUCTION

In the ancient Indian knowledge tradition, the main basis for the calculation of time is the seven planets and their mutual motion. These planets are the Sun, Mars, Jupiter, Saturn, the Moon, Mercury, and Venus. Although according to modern science, the Moon is considered to be a satellite of the Earth, in ancient Indian time calculation, the Moon is regarded as a planet that determines time measurement. Along with these seven planets, there are 27 constellations in the sky: (1) Ashwini (2) Bharani (3) Krittika (4) Rohini (5) Mrigasira (6) Ardra (7) Punarvasu (8) Pushya (9) Ashlesha (10) Magha (11) Purvaphalguni (12) Uttara Phalguni (13) Hasta (14) Chitra (15) Swati (16) Vishakha (17) Anuradha (18) Jyestha (19) Mool (20) Purvashadha (21) Uttarashadha (22) Shravan (23) Dhanishtha (24) Shatabhisha (25) Purva Bhadrapada (26) Uttara Bhadrapada (27) Revati. These 27 nakshatras have been divided into four parts. In this way, there are a total of 108 feet. These 108 feet have been divided into 12 zodiac signs. Hence, the names of the 12 zodiac signs have been kept according to the shape of 9 feet, which are as follows: (1) Aries (2) Taurus (3) Gemini (4) Cancer (5) Leo (6) Virgo (7) Libra (8) Scorpio (9) Sagittarius (10) Capricorn (11) Aquarius (12) Pisces. Ancient Indian time calculations are based on the constellations, zodiac signs, and the rotation of the planets.

II. OBJECTIVE

The objective of this research study is to reveal some facts from the vast repository of knowledge of the ancient Indian knowledge tradition, which introduces us to the glorious past of our country.

III. RESEARCH METHODOLOGY

This research study is descriptive, and secondary data has been used for its analysis. Books, research papers, and research articles published by various publications, as well as reports from the government and its bodies, have also been used in this research study.

IV. ANCIENT INDIA'S AMAZING TIME CALCULATION

In ancient India, the sages had made calculations of planets and stars, etc. On the basis of rotation, not only did they calculate the time, but they also found a way to reach it to the common man. As we all know, in ancient India, the teaching system was based on Shruti, that is, the Guru used to impart education to his disciples orally from generation to generation. Based on this, a wonderful system was made to measure time day by day and remember it every day, in which the calculation from billions of years ago to the present time is described orally. Even today, before starting any worship in India, a Sankalp Mantra is recited. If we understand each word in this Sankalp Mantra, then we gain knowledge of the present time to the infinite past.

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These mantras are as follows: Om Asya Shri Vishnoragya Pravartamanasya Brahmanam, Dwitiye Parardhe, Shvetvarah Kalpe Vaivaswatmanvantare Ashtavimshattime Kaliyuge, Kaliyuge Pratham Charane, Kalisavante. Jambudweepe, Brahmavarta Deshe, Bharatkhande, Amuk sthane, Amuk samvatsare, Amuk ayane, Amuk ritau, Amuk mase, Amuk pakshe, Amuk tithau, Amuk vasare, Amuk samaya, Amuk vyakti,… by saying his name, his father's name, the name of Gotra, and for what purpose he is doing which work. Now let us explain each verse of this mantra Om Asya Shri Vishnoragya Pravartamanasya Brahmanam, Dwitiye Parardhe. That is - in the infinite time cycle started by Mahavishnu, the second half of the age of the present Brahma - 50 years of the age of the present Brahma have been completed (the age of Brahma is 100 Brahma years). Shwetvarah Kalpe - One day of Brahma is called a Kalpa. And the first Kalpa of the 51st year of Brahma is called Shwetvarah. Kalpa is also explained in terms of rotation of planets. According to Vedic sages, the present universe is of the Panch Mandala order: Chandra Mandala, Prithvi Mandala, Surya Mandala, Parameshthi Mandala, and Swayambhu Mandala. These Mandalas are revolving around the Uttarottar Mandala; that is, Chandra Mandala is revolving around Prithvi Mandala, Prithvi Mandala is revolving around Surya Mandala, Surya Mandala is revolving around Parameshthi Mandala (i.e., Milky Way), and Parameshthi Mandala is revolving around Swayambhu Mandala; i.e., the Milky Way is revolving around the Milky Way above it. The time taken for one such rotation is called a Kalpa. Its age is 4 billion 32 crore years

Vaivasvat Manvantara-There are 14 Manvantaras in a Kalpa. Out of them, the seventh Manvantara, Vaivasvat Manvantara, is currently ongoing. When the center of the Parameshthi Mandal (Akash Ganga) of the solar system completes one revolution, it is called the Manvantara period. There are 306,720,000 years in one Manvantara, that is, thirty crore sixty-six lakh twenty thousand years. Ashtavimshattime Kaliyuge - There are 71 Chaturyugis in one Manvantara, and in each Chaturyugi, there are four yugas: (1) Satyug, (2) Treta Yuga, (3) Dwapar Yuga, and (4) Kaliyuga. Out of these four yugas, the Kaliyuga of the 28th Chaturyugi is currently ongoing. Now we will analyze whether the concept of Chaturyugi is scientific or imaginary. According to Indian Astrology, Chaturyugi is based on the movement of seven planets. When all seven planets come into the same zodiac sign, this event is called Yutikaal, and the time taken in one Yutikaal is 432,000 years. That is, after 432,000 years, all seven planets come into the same zodiac sign, and this time period is called Yutikaal. The time span of these four yugas is calculated on the basis of Yutikaal. The time span of Kaliyuga is one Yutikaal (432,000 years), Dwaparayuga is two Yutikaals (864,000 years), Treta Yuga has three Yutikaals (conjunctions) totaling 1,296,000 years, and Satya Yuga has four Yutikaals totaling 1,728,000 years. Hence, the time span of one Chaturyugi is 10 Yutikaals, i.e., 4,320,000 years.

Kaliyuge pratham charane – It means presently the first phase of Kaliyuga of the 28th Chaturyugi is ongoing. Kalisavante Currently, Kalisavant 5126 is running, which means the present Kaliyuga started 5,126 years ago. Jambu Dweep, Brahmavarta Desh, Bharat Khande - this indicates the location of India. Information regarding the status of the resolver is given, including details regarding the position at a particular place.

Amuk samvatsare - Currently, Vikram Samvatsara 2081 is ongoing.

Amuka Ayane - In Vedic time calculation, one year is divided into two Ayanas; its determination is also based on the movement of the Earth and the Sun. The Earth is inclined 23.5 degrees to the north-west on its orbit. Hence, the sun's rays fall perpendicularly at 23.5 degrees north and south of the equator. The perpendicular falling of the sun's rays is called Sankranti. The sun's rays fall perpendicularly every month of the year. 23.5 degrees north is called the Tropic of Cancer, and south is called the Tropic of Capricorn. The equator is called 0 degrees. When the Sun enters the Cancer zodiac, it is called Dakshinayan, and after six months, when it enters Capricorn, it is called Uttarayan. When the sun travels from Capricorn to Gemini, it is called Uttarayan, and when it travels from Cancer to Sagittarius, it is called Dakshinayan. By establishing Makar Sankranti as a festival, this calculation reminds us that now the Sun has entered Capricorn, meaning that Uttarayan has started.

Amuka Ritu - 12 months of a year are divided into 6 Ritu. These Ritus are - Spring, Summer, Rain, Autumn, Winter.

Amuk mase - As mentioned earlier, 27 constellations located in the sky have been considered for time calculation. These constellations are - (1) Ashwini (2) Bharani (3) Kritika (4) Rohini (5) Mrigashira (6) Arda (7) Punarvasu (8) Pushya (9) Ashlesha (10) Magha (11) Purvaphalguni (12) Uttara Phalguna (13) Hasta (14) Chitra (15) Swati (16) Vishakha (17) Anuradha (18) Jyestha (19) Mool (20) Purvashadha (21) Uttarashadha (22) Shravan (23) Dhanishtha (24) Shatabhisha (25) Bhadrapada (26) Uttar Bhadrapada (27) Revati.

The months are named after the constellation that is visible from evening till morning throughout the month and in which the moon attains completeness. For example, when Chitra nakshatra is visible from evening to morning for the whole month and the moon attains fullness in this nakshatra, then this month is called Chaitra month. After this, the month of Vishakha nakshatra is Vaishakh, the month of Jyeshtha nakshatra is Jyeshtha, the month of Purvashadha nakshatra is Ashadha, the month of Shravan nakshatra is Shravan, the month of Poorva Bhadrapad nakshatra is Bhadrapad (Bhadon), the month of Ashwini nakshatra is Ashwin, the month

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of Krittika nakshatra is Kartik, the month of Mrigasira nakshatra is Margashirsha (Agahan), the month of Pushya nakshatra is Paush, the month of Magha nakshatra is Magh, and the month of Uttara Phalgun nakshatra is Phalgun. Thus, according to Vedic time calculation, there are 12 months in a year. The months of Chaitra (2), Vaisakha (3), Jyestha (4), Ashadha (5), Shravan (6), Bhadrapad (7), Ashwin (8), Kartika (9), Margasirsa (10), Paush (11), Magha, and (12) Phalguna are: Amuk Pakshe, Amuk tithi. According to Indian astronomy, the period of one month is divided into two pakshas, (1) Shukl paksha and (2) Krishna Paksha. In the Indian calendar, the days in a month are called Tithi, just as in the modern calendar, some months have 30 days, some have 31 days, and some have 28 or 29 days. These days are counted from 1st to 31st; similarly, in the ancient Indian calendar, there are Tithi from Amavasya to Poornima, and then from Poornima to Amavasya, there are Pratipada, Dwitiya, to Chaturdashi. The calculation of these Tithi is not based on counting one, two, three…but depends on the angular difference between the Sun and the Moon. The movement of 12 degrees of the Moon in its orbit around the Earth is called a Tithi. On Amavasya (new moon day), the Moon remains between the Earth and the Sun; this is called 0 degrees. Moving 12 degrees from here is Pratipada, from 12 to 24 degrees is Dwitiya, from 24 to 36 degrees is Tritiya, from 36 to 48 degrees is Chaturthi… In this way, when the Moon comes at a distance of 180 degrees from the Sun, it is called Poornima. Thus, the period from Ekam (Pratipada) to Poornima is called Shukla Paksha, and the period from Pratipada to Amavasya is called Krishna Paksha.

Amuka Vasare - (Name of the day). It contains the name of the day. In ancient time calculations, the names of the days are also based on the movement of planets. In the Vedic method of time calculation, seven planets are important. The order of the planets has been determined on the basis of their progressive distance from the Earth, viz. Saturn, Jupiter, Mars, Sun, Venus, Mercury, and Moon. Among these, the Moon is the closest to the Earth and Saturn is the farthest. Each planet rules over one hour (Hora) in the 24 hours of the day (which are called Hora in Indian time calculation). Hence, the order of all the seven planets ruling over one hour continues in sequence, and after the completion of 24 hours (Hora), the day is named after the planet that rules the first hour of the next day. Creation has started from the Sun; hence, considering Sunday as the first day, the remaining days have been named in the order mentioned below:

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Sun	Venus	Mercury	Moon	Saturn	Jupiter	Mars
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25 (Monday)	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25 (Tuesday)
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25(Wednesday)	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25 (Thursday)	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	1,8	19	20	21	22	23
24	25(Friday)	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25(Saturday)		

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Amuk samaye - This describes the situation that is occurring at the time of making a resolution. There are 24 Horas from sunrise to sunset, in which the seven planets are the rulers of each Hora in sequence. As per the situation on 20th August 2024, the Hora table according to modern times is as follows:

Planet	Time starts	Time ends
Mars	05:53 AM	06:58 AM
Sun	06:58 AM	08:03 AM
Venus	08:03 AM	09:08 AM
Mercury	09:08 AM	10:13 AM
Moon	10:13 AM	11:18 AM
Saturn	11:18 AM	12:24 PM
Jupiter	12:24 PM	01:29 PM
Mars	01:29 PM	02:34 PM
Sun	02:34 PM	03:39 PM
Venus	03:39 PM	04:44 PM
Mercury	04:44 PM	05:49 PM
Moon	05:49 PM	06:55 PM
Saturn	06:55 PM	07:49 PM
Jupiter	07:49 PM	08:44 PM
Mars	08:44 PM	09:39 PM
Sun	09:39 PM	10:34 PM
Venus	10:34 PM	11:29 PM
Mercury	11:29 PM	Next day 00:24 AM
Moon	Next day 00:24 AM	Next day 01:19 AM
Saturn	Next day 01:19 AM	Next day 02:14 AM
Jupiter	Next day 02:14 AM	Next day 03:09 AM

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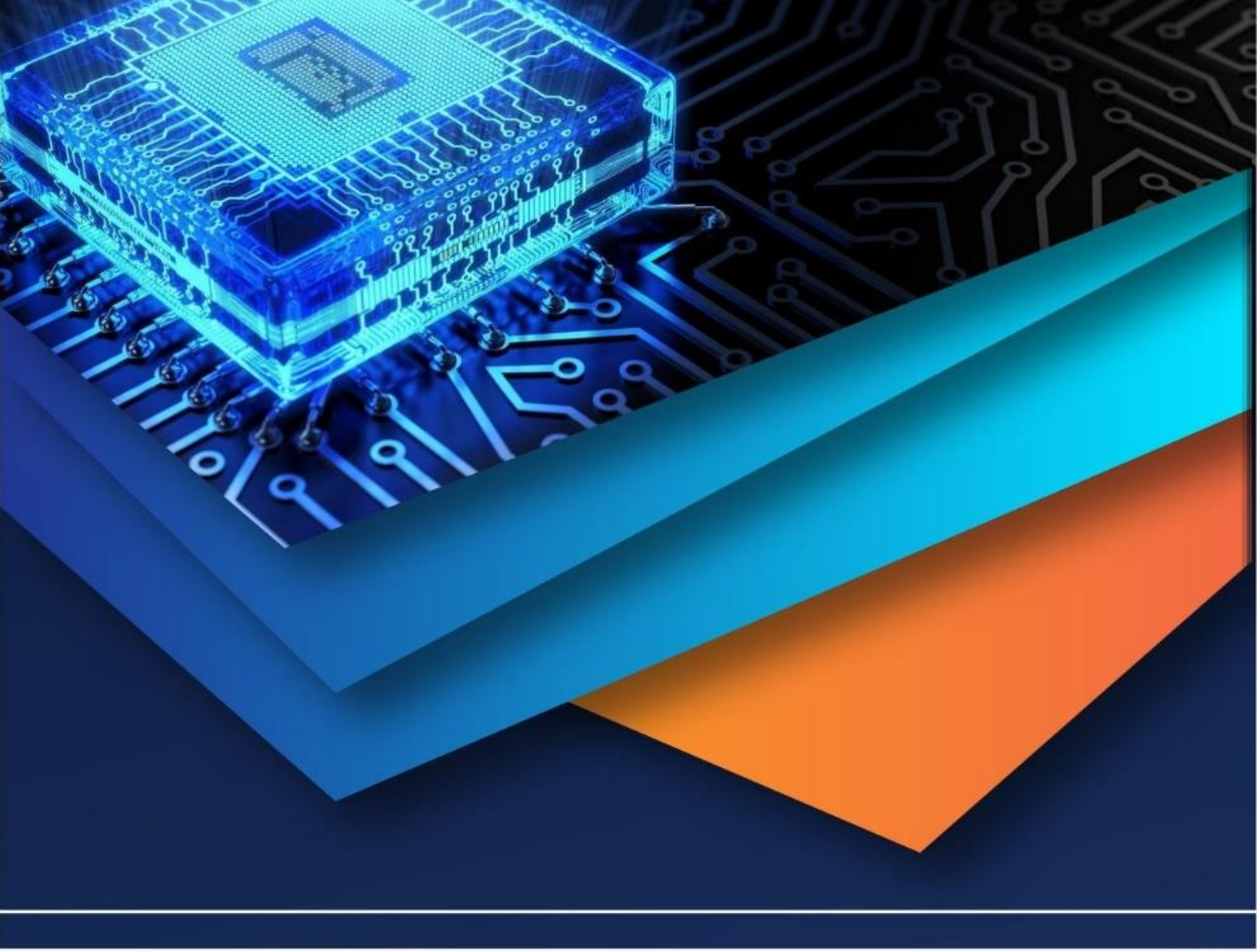
Mars	Next day 03:09 AM	Next day 04:03 AM
Sun	Next day 04:03 AM	Next day 04:58 AM
Venus	Next day 04:58 AM	Next day 05:53 AM

V. CONCLUSION

By interpreting just one Sankalp Mantra from ancient Indian knowledge, it has been observed that this mantra, which is recited in daily religious activities, has been used in many forms from the present time to the past. It presents accurate information about the past, and the important thing is that the basis of this information about time is not mere imagination but the rotation of the planets, the Sun, the Moon, Mars, Mercury, Jupiter, Venus, Saturn, constellations, galaxies, etc. in the universe. There is a lot of such knowledge in the infinite storehouse of ancient Indian knowledge, the basis of which is completely scientific. We just need to strengthen our faith in our ancient knowledge tradition.

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