

# **GATE**

## ***ALL BRANCHES***



**GENERAL APTITUDE**

**QUANTITATIVE APTITUDE**

**Lecture No.- 01**



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# Topics to be Covered



## Topic-1

Basic of English Calendar

## Topic-2

Importance of ODD Days

## Topic-3

Calendar Repetition

## Topic-4

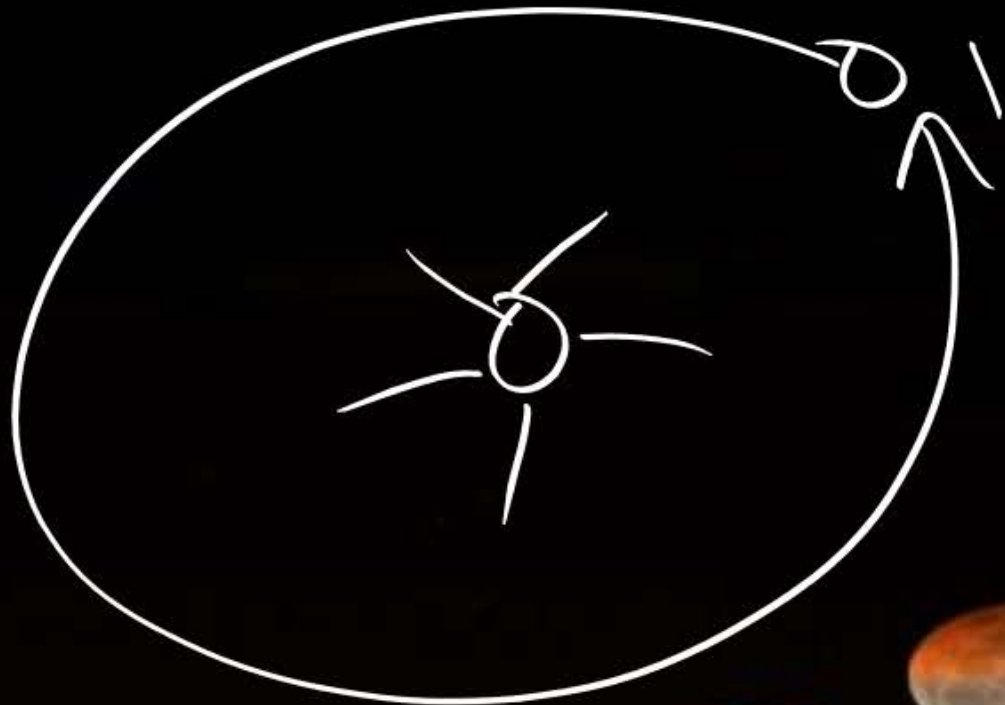
Questionnaire



# CALENDAR

English (Solar) ✓✓

Julian  $\rightarrow +17$



(Lunar) ✓

# Basic Questions



1. Use of CALENDAR?

2. How many months in a year consist of 30 days?

3. Which is the first day of a week?

4. What is the difference between A.D. & B.C.?

Date

~~Monday~~

4 months

exactly

Day?

April

June

Sep

Nov

SUNDAY

11 months

Anno Domini

Holy Year

1630 A.D.

1630 B.C.

Before Christ



# LEAP YEAR Occurrence



✓ 1796 ✓

✓ 1632 ✓

Yes?

Minimum → 1 year

1800

400

1755 ✗

Maximum

1404 ✗

✓ 8 years

Arrived 29<sup>th</sup> Feb, 1796

29<sup>th</sup> Feb ← 1800  
1804

## To be Noted:

- ✓ If a year is divisible by 4 then it's a leap year else normal. e.g. 1652, 1212, 1496, 1708, etc. are leap years whereas 1714, 1446, 2006 etc. are normal years.
- ✓ If a century is divisible by 400 then it's a leap year else normal. e.g. 1600, 1200, 2000, 800 etc. are leap years whereas 1000, 1500, 2100 etc. are normal years.

04  
08  
12  
16  
20

96 Leap Year



# ODD DAYS



365 days 5 hrs 42 min  
--- seconds  
 $365\frac{1}{4}$  days

✓ As today is 6<sup>th</sup> May, 2024. The day is Monday.<sup>+3</sup>

365 days  
(6 hrs)

✓ What would be the day on 16<sup>th</sup> May, 2024?

→ Thursday

6 hr  
6 hr  
6 hr  
6 hr  
24

10 days

?  
3 odd days

→ 7 days (week)

365  
365  
365  
365 → 365+1

## ODD DAYS



$$\begin{array}{r} 76 \\ \hline 70-6 \\ \hline 6 \end{array}$$

50 days

↓  
1 odd day

✓ All those number of days which can't be kept in a group of a week.

OR

✓ When given number of days is divided by 7, the remainder is called as odd days.

$$\underline{42}$$

$$\underline{\underline{35}}$$

$$\underline{70}$$

$$\begin{array}{r} 22 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \overline{) 50} \\ \underline{49} \\ 1 \end{array} \quad \begin{array}{l} \cancel{7 \text{ weeks}} \\ 1 \rightarrow \text{odd day} \end{array}$$



# Normal Year & Leap Year



ODD DAYS

~~52 weeks~~

N.Y.  $\rightarrow$  365  $\rightarrow$

1 odd day

L.Y.  $\rightarrow$  366  $\rightarrow$

2 odd days

# First Century

$\times$  100  $\rightarrow$  5 500  
 $\times$  (10) 200  $\rightarrow$  3 600  
 $\times$  (15) 300  $\rightarrow$  1 700  
~~(20)~~ 400  $\rightarrow$  ~~6~~ 0  
 $6 + 1 = 7$   
 500

180 years

$\rightarrow$  5 odd days

L.Y. N.Y.  
 24 76  
 $\times 2$   $\times 1$   
 48 76  
 6 + 6 = 12

04  
 - 08  
 - 12  
 - 16  
 - 20  
 - 24  
 - 28  
 - 32  
 96



## Odd Days in Centuries

1700 1300 900 500 100 →

1800 1400 1000 600 200 →

1900 1500 1100 700 300 →

2000 1600 1200 800 400 →

5

3

1

0

Date

Day → ?

# Questionnaire:



2003  $\rightarrow$  3

Jan  $\rightarrow$  0

3 odd days  $\leftarrow$  3 years  $\rightarrow$  Normal Year

3

14<sup>th</sup> Jan, 2004  $\rightarrow$  Wednesday  
3 odd days

2000  
 $\downarrow$

Odd day.

4  $\rightarrow$  Thurs 0  $\rightarrow$  Sunday

5  $\rightarrow$  Fri

1  $\rightarrow$  Mon

6  $\rightarrow$  Sat

2  $\rightarrow$  Tue

3  $\rightarrow$  Wed



# Questionnaire:

1900 → 1 odd day



3<sup>rd</sup> June, 1947

2 odd days

1946 → 2 odd days

46 → 1

(31) Jan → ~~3~~

(28) Feb → 0

(31) Mar → ~~3~~

6-4  
11  
22  
+

11-4  
35  
35  
0 =

April → 2

May → ~~3~~

(3) June → ~~3~~

(1) Thursday

(2) Tuesday

(3) Saturday

(4) None

+



# Questionnaire:

1400  $\rightarrow$  3 odd days

$\rightarrow$  4 odd days

#Q. Guru Nanak was born on 15th April, 1469. What was the week day?

$$\begin{array}{r} 04 \\ \times 17 \\ \hline 68 \end{array}$$

$$\begin{array}{r} 68 \rightarrow 1 \\ \swarrow \searrow \\ L.Y. \quad N.Y. \\ 17 \quad 51 \\ \textcircled{34} \quad \textcircled{51} \\ 6 + 2 = 8 \end{array}$$

$1468 \rightarrow 4$

Jan - 3

Feb - 0

Mar - 3

Apr - 1

---

0

- (1) Sunday
- (2) Thursday
- (3) Tuesday
- ~~(4) Saturday~~



**Fact:**

~~Julian~~

Thursday



## April 15, 1469: Day of the Week

April 15, 1469 was the 105<sup>th</sup> day of the year 1469 in the Gregorian calendar. There were 260 days remaining until the end of the year. The day of the week was Thursday.

The day of the week for April 15, 1469 under the old Julian calendar was Saturday. Did you notice the difference with the Gregorian calendar?

# CALENDAR REPETITION



N.Y.  
2011  $\Rightarrow$  2022  
N.Y.

2016  $\rightarrow$  2

2017  $\rightarrow$  1

2018  $\rightarrow$  1

2019  $\rightarrow$  1

2020  $\rightarrow$  2

2021  $\rightarrow$  1

2022

2011<sup>th</sup>  $\rightarrow$  1

2012  $\rightarrow$  2

2013  $\rightarrow$  1

2014  $\rightarrow$  1

2015  $\rightarrow$  1



# Questionnaire:

Note:

Q N.Y.  
Ans N.Y.

Q L.Y.  
Ans L.Y.

N.Y. ✓  
2005

N.Y. ✓  
2011

2011

2005<sup>k</sup> → 1

2006 → 1

2007 → 1

2008 → 2

2009 → 1

← 2010 → 1

[MCQ]



#Q. 2005 calendar is same as which of the given years?

**A** 2009

**B** 2016

**C** 2011

**D** 2015





[MCQ]



64.

#Q. When does 2016 calendar repeats?

**A** 2027

**B** 2040

**C** 2021 N.Y. X

**D** 2044 L.Y.

2016 → 2	2021 → 1
2017 → 1	2022 → 1
2018 → 1	2023 → 1
2019 → 1	
2020 → 2	
<hr/>	
	2043

Chue

$$\begin{array}{r} 2005 \\ + 6 \\ \hline 2011 \end{array}$$

$$\begin{array}{r} 2016 \\ + 28 \\ \hline 2044 \end{array}$$

L.Y.  $\rightarrow$  28 years

$\rightarrow$  N.Y.  $\rightarrow$  6 years

N.Y.  $\rightarrow$  11 years

N.Y.  $\rightarrow$  11 years

L.Y.  $\rightarrow$  28 yrs

$$\begin{array}{r} 2004 \\ + 28 \\ \hline 2032 \end{array}$$

$$\begin{array}{r} 2012 \\ + 28 \\ \hline 2040 \end{array}$$

$$\begin{array}{r} 2013 \\ + 6 \\ \hline 2019 \end{array}$$



## Conditional Question

$$\begin{array}{r}
 8 \overline{) 382} 47 \\
 \underline{32} \phantom{00} \\
 62 \\
 \underline{56} \\
 6
 \end{array}$$

Q. If a year 6 odd days consist of 382 days and every week has 8 days, then how many odd day will be there in the year?

## Conditional Question

Q The last day of any century  
cannot be which week day?

100  $\rightarrow$  5 Friday ✓  
200  $\rightarrow$  3 Wednesday ✓  
300  $\rightarrow$  1 Monday ✓  
400  $\rightarrow$  0 Sunday ✓

Tuesday  
Thursday  
Saturday



[MCQ]



#Q. Mahatma Gandhi was born on 2<sup>nd</sup> October 1869. What was the week Day?

→ Saturday

$$1868 \rightarrow 4 + 2 = 6 \\ 1800 \rightarrow 3 \checkmark$$

**A**

Monday

**B**

Thursday

**C**

Tuesday

**D**

Saturday

Jan - 3 ✓

Feb - 0

Mar - 3 ✓

Apr - 2

May - 3 ✓

June - 2

July - 3

Aug - 3

68 → 1 ✓

L.Y.

N.Y.

(2) Oct - 2

17

51

34

51

$$6 + 2 = 8$$

[MCQ]



#Q. The day of the March 16th of any year is the same day of the week as the corresponding date in which month of the same year?

- A** July ✓
- B** November
- C** April
- D** September

March → 3      Sep → 2  
April → 2      Oct → 3  
May → 3  
June → 2  
July → 3  
Aug → 3

16<sup>th</sup> Nov



[MCQ]



#Q. If January 1st, 1992 was a Wednesday. What day of the week was January 1st, 2003?

- A** Sunday
- B** Wednesday
- C** Thursday
- D** Friday

1992 - 1993  $\rightarrow 2$

1993 - 1994  $\rightarrow 1$

1994 - 1995  $\rightarrow 1$

1995 - 1996  $\rightarrow 1$

1996 - 1997  $\rightarrow 2$

11 yrs

4-4 2-4

3 8

6 + 8 = 0

1997 - 98  $\rightarrow 1$

98 - 99  $\rightarrow 1$

99 - 2000  $\rightarrow 1$

2000 - 2001  $\rightarrow 2$

2001 - 2002  $\rightarrow 1$

2002 - 2003  $\rightarrow 1$

0



## 2 mins Summary



Topic

Calendar

ODD DAYS

- ① Date <sup>✓</sup> → Day?
- ② Repetition of Calendar
- ③ Conditional





**THANK - YOU**