Calendars

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Calendars are one of the most important topics for government sector entrance exams. The topic “Calendar” falls under the category of Logical Reasoning as it involves a lot of logical discussion and analysis.

> *In Calendar, questions are mainly based on finding the day of the week if we are given a date. For example, we may be asked to find the day of 2 February 1981.*

The concepts as well as formulas used for Calendars in the aptitude section are explained below.

Calendars Formulas and Concepts

A calendar is a system used to organize time into days, weeks, and months throughout the year. It typically includes important dates, such as holidays or special events. There are various types of calendars, depending on cultural or religious practices, but many follow the same basic structure. This includes evaluating leap years, decoding the days of the week, finding the day when another day is given or not given, and matching calendars for a particular month. Understanding these concepts can help make planning and keeping track of important dates much easier.

1. Odd Days

To determine the day of the week for a specific date, we use the concept of “odd days”. Odd days refer to the extra or remaining days in a given period

important to understand this concept when working with calendars and scheduling events on specific dates.

- Finding days from dates is based on calculating the number of odd days by odd days, we mean several days more than a complete number of weeks.
- For example, the number of days in a non-leap year = 365 365 mod 7 = 1 So, the number of odd days in a non-leap year = 1
- Number of days in a leap year = 366 => Number of odd days in a leap year = 366 mod 7 = 2
- Number of odd days in 100 years (76 non-leap years + 24 leap years) = [(76 x 1) + (24 x 2)] mod 7 = (76 + 48) mod 7 = 124 mod 7 = 5 days
- Number of odd days in 200 years = (2 x Number of odd days in 100 years) mod 7 = 10 mod 7 = 3
- Number of odd days in 300 years = (3 x 5) mod 7 = 1
- Number of odd days in 400 years = (4 x 5 + 1) mod 7 = 21 mod 7 = 0 Note that here, we have added 1 day extra because the 400th year would itself be a leap year.

Month	**Number of odd days**
January	3
February (ordinary/leap)	(0/1)
March	3
April	2
May	3

June	2
July	3
August	3
September	2
October	3
November	2
December	3

2. Leap Year

- To check if a non – centennial year is a leap year, we divide it by 4. If the remainder is 0, the year is a leap year. For example, 2016 mod 4 = 0. Thus, we can safely deduce that 2016 is a leap year.
- To check if a centennial year is a leap year, we divide it by 400. If the remainder is 0, the year is a leap year. For example, 1700 mod 400 = 100. So, it was not a leap year. But 1600 mod 400 = 0. Thus, we can safely deduce that 1600 was a leap year.

3. Day of the Week Related to Odd Days

No. of days:	0	1	2	3	4	5	6

Calendars - Examples

Example 1:

Problem Statement: Today is Wednesday. After 45 days, it will be:

Solution:

To find the day of the week after 45 days from a Wednesday, follow these steps:

- ***Determine the number of weeks and extra days:***
  45 ÷ 7 = 6 weeks and a remainder of 3.
- ***Count 3 days from Wednesday:***
  - *Wednesday + 3 days = Saturday.*

*Therefore, after 45 days, it will be **Saturday**.*

Example 2:

Problem Statement: If 12th July 2010 is a Monday, what was the day of the week on 12th July 2009?

Solution:

- *Since 2009 is not a leap year, it has 365 days.*

- ***Calculate the day of the week one year earlier:***
  - *Going back one year (from July 12, 2010, to July 12, 2009), we lose 1 day.*

If July 12, 2010 = Monday, then:

- *July 12, 2009 = Monday - 1 day =* ***Sunday****.*

Therefore, July 12, 2009, was a ***Sunday****.*

Related Read: Practice Quiz on Calenders

Summary

Calendar aptitude questions test an individual's ability to manipulate dates, understand the structure of calendars, and perform calculations related to days, months, and years. These problems often involve determining the days of the week for given dates, calculating intervals between dates, understanding leap years, and recognizing patterns in the calendar. Solving these questions requires knowledge of calendar rules, such as the number of days in each month, leap year conditions, and the concept of weekdays repeating every seven days.

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