

LOGICAL REASONING
MODULE 11 – CALENDARS

1. Today is Monday. After 61 days, it will be:

- (a) Tuesday (b) Thursday (c) Friday **(d) Saturday**

Solution:

Each day of the week is repeated after 7 days. So, after 63 days, it will be Monday.

After 61 days, it will be Saturday.

2. Find the no. of odd days in 123 days.

- (a) 5 **(b) 4** (c) 3 (d) 2

Solution:

Odd days \Rightarrow The number of days more than complete number of weeks in the given period are odd days. $123 = 7 \times 19 + 4 \Rightarrow 4$ odd days.

3. Which of the following is not a leap year?

- (a) 2100** (b) 2004 (c) 1996 (d) 1600

Solution:

The century divisible by 400 is a leap year. 2100, which is not divisible by 400 is not a leap year.

4. The calendar for the year 2007 will be the same for the year:

- (a) 2014 (b) 2017 (c) 2016 **(d) 2018**

Solution: Count the number of odd days from the year 2007 onwards to get the sum equal to 0 odd day.

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Odd Day	1	2	1	1	1	2	1	1	1	2	1

Sum = 14 odd days = 0 odd days.

Therefore, Calendar for the year 2018 will be the same as for the year 2007.

5. On what dates of May 2001 did Thursday fall?

(a) 1st, 8th, 15th, 22nd, 29th

(b) 2nd, 9th, 16th, 23rd, 30th

(c) 3rd, 10th, 17th, 24th, 31st

(d) 4th, 11th, 18th, 25th

Solution:

We shall find the day on 1st May, 2001.

1st May, 2001 = (2000 years + Period from 1.1.2001 to 1.5.2001)

Odd days in 1600 years = 0, Odd days in 400 years = 0, Jan. Feb. March April May

$(31 + 28 + 31 + 30 + 1) = 121$ days 2 odd days.

Total number of odd days = $(0 + 0 + 2) = 2$. On 1st May, 2001 it was Tuesday.

In May, 2001 Thursday falls on 3rd, 10th, 17th, 24th & 31st.

6. Given that 27th February 2003 is a Thursday. What was the day on 27th February 1603?

(a) Monday

(b) **Thursday**

(c) Sunday

(d) Tuesday

Solution:

After every 400 years, the same day occurs. Thus, if 27th February 2003 is Thursday, before 400 years i.e., on 27th February 1603 has to be Thursday.

7. The last day of a century cannot be

- (a) Tuesday (b) Monday (c) Friday (d) Sunday

Solution:

100 years contain 5 odd days. Therefore, Last day of 1st century is Friday.

200 years contain $(5 \times 2) = 10 = 0$ odd days. Therefore, Last day of 2nd century is Wednesday.

300 years contain $(5 \times 3) = 15 = 1$ odd day. Therefore, Last day of 3rd century is Monday.

400 years contain 0 odd day. Therefore, Last day of 4th century is Sunday.

This cycle is repeated. Last day of a century cannot be Tuesday or Thursday or Saturday.

8. If the date April 12, 2007 is a Tuesday, then which one of the following will the date March 11, 2008 be?

- (a) Tuesday (b) Wednesday (c) Monday (d) Sunday

Solution:

From April 12, 2007, to March 11 2008, there will be 334 days.

We can form 47 $(334/7)$ weeks. The remaining "5" days, that don't form weeks, are called odd days.

So, there are 5 odd days from April 12, 2007, to March 11, 2008.

Hence, If April 12, 2007, is a Tuesday, then March 11, 2008, = Tuesday + 5 = Sunday.

(OR)

If April 12, 2007, is a Tuesday, then April 12, 2008, will be a Thursday. (Because 2008 is a leap year and contains 2 odd days)

From March 11, 2008, to April 12, 2008, there are 32 days.

The number of odd days = 4 days = behind April 12, 2008

So, Thursday - 4 days = Sunday.

9. What was the day of the week on 28th May 2006?

- (a) Sunday (b) Saturday (c) Friday (d) Thursday

Solution:

28 May, 2006 = (2005 years + Period from 1.1.2006 to 28.5.2006)

Odd days in 1600 years = 0

Odd days in 400 years = 05 years = (4 ordinary years + 1 leap year) = $(4 \times 1 + 1 \times 2) = 6$ odd days

Jan. Feb. March April May

$(31 + 28 + 31 + 30 + 28) = 148$ days

148 days = (21 weeks + 1 day) = 1 odd day.

Total number of odd days = $(0 + 0 + 6 + 1) = 7 = 0$ odd day. \rightarrow Given day is Sunday.

10. Today is 3rd November. The day of the week is Monday. This is a leap year. What will be the day of the week on this date after 3 years?

- (a) Monday (b) Tuesday (c) Wednesday (d) **Thursday**

Solution:

This is a leap year. So, none of the next 3 years will be leap years. Each year will give one odd day so the day of the week will be 3 odd days beyond Monday i.e. it will be Thursday.

11. How many odd days are there from 13th May 2005 to 19th August 2005 (both inclusive)?

- (a) **1** (b) 2 (c) 3 (d) 4

Solution:

Here we have to count the number days from 13th May, 2005 to 18th August 2005 (both inclusive)

From 13 th to 31 st May	= 19 days
In June	= 30 days
In July	= 31 days
From 1st to 19th April	= 19 days

Total number of days	= 99 days
The number of odd days are = $14 \times 7 + 1 = 99$	
So there is 1 odd day in the given period	

12. In 2007, what was the date of last Saturday in May?

- (a) 22th May (b) 24th May **(c) 26th May** (d) 28th May

Solution:

1 - May - 2007

$$= (1 + 2 + 7 + 1 + 6)/7 = 17/7 = 3 = \text{Tuesday}$$

= May 1st --> Tuesday + 5 days = Saturday = 5th may

5th may + 7 days = Saturday = 12th may

12th may + 7 days = Saturday = 19th may

19th may + 7 days = Saturday = 26th may

13. What was the day of the week on 26-January-1950?

- (a) Monday (b) Sunday **(c) Thursday** (d) Wednesday

Solution:

Formula: - (Date + Month code + No.of years + No.of leap year + Century code)/7

$$= (26 + 1 + 50 + 12 + 0)/7 = 84/7 = 5$$

= Thursday

14. Arun went for a movie nine days ago. He goes to watch movies only on Thursdays. What day of the week is today?

- (a) Wednesday (b) Thursday (c) Friday **(d) Saturday**

Solution:

Clearly it can be understood from the question that 9 days ago was a Thursday

Number of odd days in 9 days = 2 (As $9-7 = 2$, reduced perfect multiple of 7 from total days)

Hence today = (Thursday + 2 odd days) = Saturday

15. Second Saturday and every Sunday is a holiday. How many working days will be there in a month of 30 days beginning on a Saturday?

(a) 21

(b) 24

(c) 23

(d) 22

Solution:

Mentioned month begins on a Saturday and has 30 days

Sundays = 2nd, 9th, 16th, 23rd, 30th

=> Total Sundays = 5

Every second Saturday is holiday.

1 second Saturday in every month

Total days in the month = 30

Total working days = $30 - (5 + 1) = 24$

HOMEWORK

16. What will be the day of the week on 15th August, 2010?

(a) Friday

(b) Saturday

(c) **Sunday**

(d) Monday

Solution:

15th August, 2010 = (2009 years + Period 1.1.2010 to 15.8.2010)

Odd days in 1600 years = 0

Odd days in 400 years = 09 years = (2 leap years + 7 ordinary years) = $(2 \times 2 + 7 \times 1) = 11$ odd days
= 4 odd days.

Jan. Feb. March April May June July Aug.

$(31 + 28 + 31 + 30 + 31 + 30 + 31 + 15) = 227$ days

227 days = (32 weeks + 3 days) = 3 odd days.

Total number of odd days = $(0 + 0 + 4 + 3) = 7 = 0$ odd days.

Given day is Sunday.

17. On what dates of April 2001 did Wednesday fall?

(a) 3rd, 10th, 17th, 24th

(b) 4th, 11th, 18th, 25th

(c) 2nd, 9th, 16th, 23rd, 30th

(d) 1st, 8th, 15th, 22nd, 29th

Solution:

We shall find the day on 1st April 2001.

1st April 2001 = (2000 years + Period from 1.1.2001 to 1.4.2001)

Odd days in 1600 years = 0

Odd days in 400 years = 0

Jan. Feb. March April

$(31 + 28 + 31 + 1) = 91$ days 0 odd days.

Total number of odd days = $(0 + 0 + 0) = 0$

On 1st April, 2001 it was Sunday.

In April, 2001 Wednesday falls on 4th, 11th, 18th and 25th.

18. How many times does the 29th day of the month occur in 400 consecutive years?

(a) 4487 times

(b) 4457 times

(c) **4497 times**

(d) 4447 times

Solution:

In 400 consecutive years there are 97 leap years. Hence, in 400 consecutive years February has the 29th day 97 times and the remaining eleven months have the 29th day 400×11 or 4400 times.

Thus the 29th day of the month occurs

$= 4400 + 97 = 4497$ times.

19. If today is Monday, what will be the day 350 days from now?

(a) **Monday**

(b) Tuesday

(c) Wednesday

(d) Thursday

Solution:

350 days, $350/7 = 50$, no odd days, so it will be a Monday.

20. How many days are there from 3rd February 2012 to 18th April 2012 (both inclusive)?

(a) 55 days

(b) 65 days

(c) 75 days

(d) 85 days

Solution:

Here we have to count the number days from 3rd February 2012 to 18th April 2012 (both inclusive)

The given year is leap year, So, February month has 29 days.

From 3rd to 29th February	= 27 days
In March	= 30 days
From 1st to 18th April	= 18 days

Total number of days	= 75 days