CALENDAR

Odd Days: Number of days more than the complete weeks is called odd days in a given period.
Leap Year: A leap year has 366 days. In a leap year, the month of February has 29 days.
Every year divisible by 4 is a leap year, if it is not a century.
Examples: 1952, 2008, 1680 etc. are leap years.
1991, 2003 etc. are not leap years
Every 4th century is a leap year and no other century is a leap year.
Examples: 400, 800, 1200 etc. are leap years.
100, 200, 1900 etc. are not leap years
Ordinary Year: The year which is not a leap year is an ordinary year. An ordinary year has 365 days

Counting odd days and calculating day of any particular date
1 ordinary year ≡ 365 days ≡ (52 weeks + 1 day)
Hence number of odd days in 1 ordinary year = 1.

1 leap year ≡ 366 days ≡ (52 weeks + 2 days)
Hence number of odd days in 1 leap year = 2.

100 years ≡ (76 ordinary years + 24 leap years)
≡ (76 x 1 + 24 x 2) odd days
≡ 124 odd days
≡ (17 weeks + 5 days)
≡ 5 odd days

Hence number of odd days in 100 years = 5.
Number of odd days in 200 years = (5 x 2) = 10 ≡ 3 odd days
Number of odd days in 300 years = (5 x 3) = 15 ≡ 1 odd days
Number of odd days in 400 years = (5 x 4 + 1) = 21 ≡ 0 odd days
Similarly, the number of odd days in all 4th centuries (400, 800, 1200 etc.) = 0
Mapping of the number of odd day to the day of the week

Number of odd days	Day of the week
0	Sunday
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday

Note: Last day of a century cannot be Tuesday or Thursday or Saturday.
For the calendars of two different years to be the same, the following conditions must be satisfied.
1. Both years must be of the same type. i.e., both years must be ordinary years or both years must be leap years.
2. 1st January of both the years must be the same day of the week.

Example 1: What was the day on 9th February 1979?

Solution: In 1600 years, there will be 0 odd days.
And in the next 300 years, there will be 1 odd day.
From 1901 to 1978 we have 19 leap years and 59 non leap years. So, the total number of odd days up to 31st Dec. 1978 is 19 x 2 + 59 = 97.
On dividing 97 by 7 we get 6 as the remainder, which is the total number of odd days in these years.
So, till 31st Dec. 1978 we have 1 + 6 = 7 odd days, which forms one complete week.
Now, in 1979, we have 3 odd days in January, and 2 odd days in the month of February (up to 9th Feb). So, the total odd days are 3 + 2 = 5.
Hence, 9th February 1979 was a Friday.

Example 2: If May 10, 1997 was a Monday, what will be the day on Oct 10, 2001?

Solution: In this question the reference point is May 10, 1997
We have to find the number of odd days from May 10, 1997 up to Oct 10, 2001.
Now, from May 11, 1997 - May 10, 1998 = 1 odd day
May 11, 1998 - May 10, 1999 = 1 odd day
May 11, 1999 - May 10, 2000 = 2 odd days (2000 was leap year)
May 11, 2000 - May 10, 2001 = 1 odd day
Thus, the total number of odd days up to May 10, 2001 = 5
Now, the remaining 21 days of May will give 0 odd days.
In June, we have 2 odd days; in July, 3 odd days; in August, 3 odd days; in September,2 odd days and up to 10th October, we have 3 odd days. Hence, total number of odd days = 18 i.e. 4 odd days. Since, May 10, 1997 was a Monday, then 4 days after Monday will be Friday.
So, Oct 10, 2001 would be a Friday.

Example 3: If 11th April 1911 was a Tuesday, what would be the day on 17th September 1915?

Solution: Firstly in terms of years, the year 1911 to 1912 would give us 2 odd days and 1913, 1914, 1915 would give 1, 1 and 1 odd day respectively.
Now shift the focus on months. If you move one month ahead i.e. from 11th April to 11th May, the month ending in between is April, which gives you 2 days. Now after that the month of May, June, July, and August gives you 3, 2, 3, and 3 odd days respectively.
With this you reach on 11th September 1915. After this there are 6 more September days (from 11th to 17th September).
The total number of odd days is 2 + 1 + 1 + 1 + 2 + 3 + 2 + 3 + 3 + 6 = 24.
Subtracting 21 (3 full weeks) from this the odd number of days left is 3.
Adding three days to the day given i.e. Tuesday, the answer becomes Friday.

IV. 2 b) Shortcut to find the day

1. Month Code:

0	3	3		6	1	4		6	2	5		0	3	5
Jan	Feb	Mar		Apr	May	Jun		July	Aug	Sept		Oct	Nov	Dec

2. Year Code

Years between	Code/Odd days
1600-1699	6
1700-1799	4
1800-1899	2
1900-1999	0
2000-2099	6

Steps:
Find the sum of:

1. Date
2. Last 2 digits of the year
3. Quotient of last two digits of the year when divided by 4
4. Code of month
5. Odd days of the year

The odd days in the above sum value will give the day

Note:
Incase of months of January and Februray in a leap year, subtract one odd day from the total odd days.

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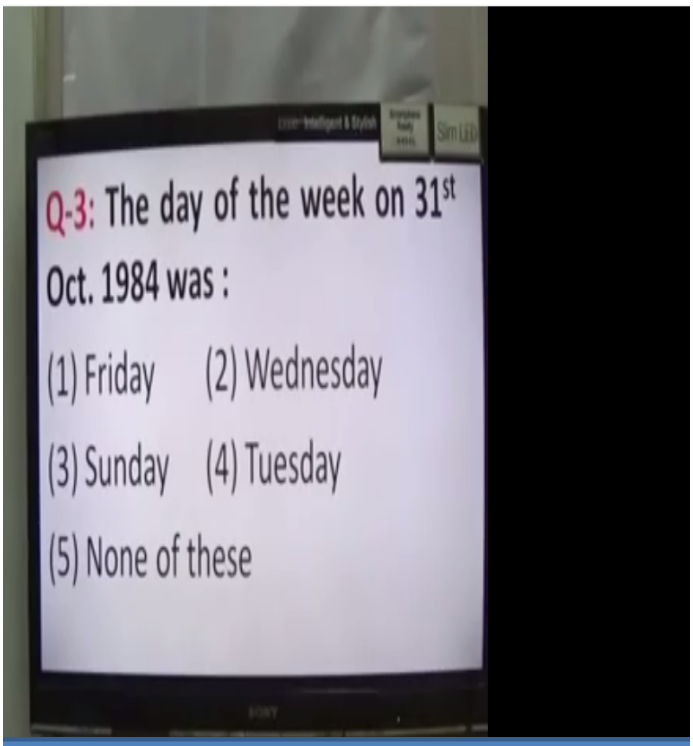

31 + 84 + 21 + 0 + 0 = 136

136/ 7 remainder = 3

0 means Sunday 1 means Monday 2 Means Tuesday and 3 means Wednesday so Ans is Wednesday

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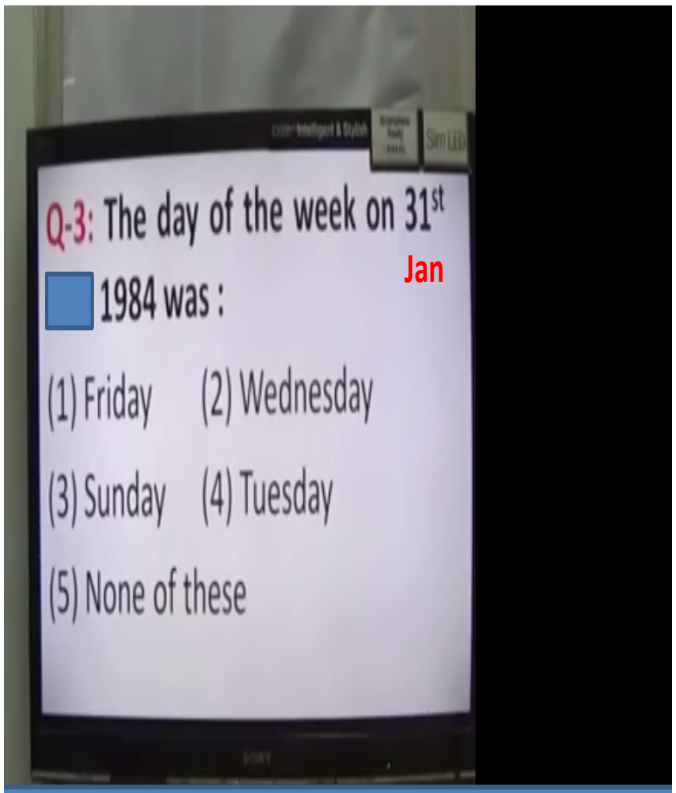

31 + 84 + 20 (no of leap years have gone by since 29 feb is NOT crossed) + 0 + 0 = 135

135/ 7 remainder = 2

0 means Sunday 1 means Monday 2 Means Tuesday so Ans is Tuesday

Shortcut (Only when you are not crossing a an ordinary century year) :

Leap year calendar repeats every 28 years.

LY	1ST	2ND	3RD	LY
28	6	11	11	28

Here 28 is distributed as 6+11+11.

Rules:

a) If given year is at 1^{st} position then next repeated calendar year is ***Given+6.***

b) If given year is at 2^{nd} position then next repeated calendar year is ***Given+11.***

c) If given year is at 3^{rd} position then next repeated calendar year is ***Given+11.***

Example:

Find the year which as same calendar as that of 2007 after it.

Sol:

LY	1ST	2ND	3RD	LY
28	6	11	11	28

Given year is 2007

According to the above above ***Rule:***
2007 is at the 3^{rd} position. So add 11 yr

2007+11=2018
so the same Calendar after 2007 is 2018.

LEVEL – I

1. What will be the day after 62 days, if Today is Friday?
A. Monday B. Thursday C. Saturday D. Wednesday

2. The last day of a century cannot be:
A. Thursday B. Monday C. Wednesday D. Sunday

3. What day of week was it on 5th November, 1989 if it was Monday on 4th April, 1988?
A. Sunday B. Monday C. Tuesday D. Wednesday

4. The maximum gap between two successive leap years is?
A. 4 B. 8 C. 2 D. 1

5. What was the day on 1st January 2010, if there was Sunday if there was Sunday on 1st January 2006?
A. Monday B. Friday C. Wednesday D. Tuesday

6. What was the day on 3rd November 1987, if it was Monday on 4th April, 1988?
A. Monday B. Sunday C. Tuesday D. Wednesday

7. Find the calendar which is identical to the year 1998.
A. 2001 B. 2002 C. 2003 D. 2004

8. What was the day of the week on 1st January, 1987 if it was Wednesday on 1st January 1986?
A. Tuesday B. Wednesday C. Thursday D. None of these

9. Today is Monday. After 54 days, it will be:
A. Monday B. Saturday C. Sunday D. Tuesday

10. If 29th April 2013 is Monday then what is the day on 30th November 2013?
A. Saturday B. Sunday C. Monday D. Wednesday

11. The last day of a century cannot be
A. Monday B. Wednesday C. Tuesday D. Friday

12. How many days are there in x weeks x days?
A. 7x * x B. 8x C. 14x D. 7

13. How many leap years do 100 years have?
A. 25 B. 26 C. 4 D. 24

14. The calendar for the year 2007 will be the same for the year
A. 2017 B. 2014 C. 2018 D. 2016

15. How many leap years do 300 years have?
A. 75 B. 74 C. 72 D. 73

16. If the first day of a year (other than leap year) was Friday, then which was the last day of that year?

A. Saturday B. Friday C. Tuesday D. Monday

17. If 1st October is Sunday, then 1st November will be

A. Saturday B. Thursday C. Wednesday D. Tuesday

18. 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. Saturday C. Friday D. Sunday

19. If the day before yesterday was Thursday, when will Sunday be?

A. Day after tomorrow B. Tomorrow C. Two days after today D. Today

20. The second day of a month is Friday, What will be the last day of the next month which has 31 days?

A. Friday B. Saturday C. Wednesday D. Data inadequate

LEVEL – II

1. What was the day on 27th –November-1989?

A. Monday B. Wednesday C. Saturday D. Tuesday

2. What was the day on 26-January-2012?

A. Friday B. Monday C. Wednesday D. Thursday

3. What was the day on first republic day on 26th –January-1950?

A. Wednesday B. Sunday C. Thursday D. Tuesday

4. What was the day of week on 17th July, 1776?

A. Monday B. Friday C. Sunday D. Wednesday

5. What was the day on 10th November, 1581?

A. Tuesday B. Saturday C. Monday D. Friday

6. What was the day on 17th June 1998?

A. Monday B. Tuesday C. Wednesday D. Thursday

7. What was the day of the week on 15th August 2010?

A. Sunday B. Monday C. Tuesday D. Friday

8. What was the day on 15th august 1947?

A. Friday B. Saturday C. Sunday D. Thursday

9. On what dates of April, 2001 did Wednesday fall?

A. 2nd,9th,16th,23rd B. 4th,11th,18th,25th

C. 12th,18th,27th,6th D. 1st,8th,15th,22nd

10. On what dates of July.2004 did Monday fall?

A. 6th,10th,21st,30th B. 12th,7th,19th,28th

C. 5th,10th,24th,17th D. 5th, 12th, 19th, 26th

11. The calendar of the year 2024 can be used again in the year?

A. 2030 B. 2052 C. 2048 D. 2036

12. What day of the week will 22 Apr 2222 be?

A. Sunday B. Tuesday C. Monday D. Thursday

13. What was the day of the week on January 1, 2001?

A. Sunday B. Monday C. Tuesday D. Wednesday

14. What day on 23.04.1990?

A. Monday B. Tuesday C. Wednesday D. Friday

15. 1.12.91 is the first Sunday. Which is the fourth Tuesday of December 91?

A. 20.12.91 B. 22.12.91 C. 24.12.91 D. 25.12.91

16. If 25th of August in a year is Thursday, the number of Mondays in that month is

A. 4 B. 5 C. 2 D. 3

17. If the seventh day of a month is three days earlier than Friday, What day will it be on the nineteenth day of the month?

A. Saturday B. Monday C. Sunday D. Wednesday

18. 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. 24 B. 23 C. 18 D. 21

19. Given that on 9th August 2016 is Saturday. What was the day on 9th August 1616?

A. Monday B. Sunday C. Friday D. Saturday

20. If every seconds Saturday and all Sundays are holidays in a 30 days month beginning on Saturday, then how many working days are there in that month ? (Month starts from Saturday)

A. 25 B. 22 C. 24 D. 23

LEVEL – III

1. Which two months in a year have the same calendar?
A. October, December B. April, November
C. June, October D. April, July

2. How old are you if you are born in 1995?
A. 22 B. 23 C. 24 D. 25

3. How many weekends in a year?
A. 52 B. 53 C. 103 D. 104

4. John was born on Feb 29th of 2012 which happened to be a Wednesday. If he lives to be 101 years old, how many birthdays would he celebrate on a Wednesday?
A. 3 B. 4 C. 5 D. 1

5. In 2013, Gandhi's birth-anniversary is on Wednesday. In which nearest future year, will his birth-anniversary be on Monday?
A. 2017 B. 2014 C. 2018 D. 2016

6. What was the day on 26/11 attacks in 2008?
A. Monday B. Sunday C. Wednesday D. Saturday

7. Dec 9, 2001 is Sunday then what was the day on Dec 9, 1971?
A. Thursday B. Wednesday C. Saturday D. Sunday

8. Mrs. Susheela celebrated her wedding anniversary on Tuesday 30th September 1997. What will she celebrate her next wedding anniversary on same day (Tuesday)?
A. 30 Sept 2003 B. 30 Sept 2004 C. 30 Sept 2002 D. 30 October 2003

9. On 5th December 1993, Nirmala and Raju celebrated their anniversary on Sunday. What will be the day on their anniversary in 1997?
A. Wednesday B. Thursday C. Friday D. Tuesday

10. How many times the 29th of a month occur in 400 consecutive years?
A. 4126 B. 5012 C. 1237 D. 4497

11. Ketan takes casual leave only on first working day of every month. The office has weekly offs on Saturday and Sunday. In a month of 30 days, the first working day happened to be Tuesday. What will be the day for his next casual leave?
A. Wednesday B. Thursday C. Friday D. Monday

12. Abhay gave an application for a new ration card to the clerk on Monday afternoon, next day was a holiday. So the clerk cleared the papers on the next working day on resumption of duty. The senior clerk checked it on the same day but forwarded it to the head clerk on next day. The head clerk decided to dispose the case on the subsequent day. On which of the following days was the case put up to the head clerk by the senior clerk?
A. Wednesday B. Thursday C. Friday D. Saturday

13. Two brothers were expected to return here on the same day. Rajat returned 3 days earlier but Rohit returned 4 days later. If Rajat returned on Thursday, what was the expected day when both the brothers were to return home and when did Rohit Return?

A. Wednesday, Sunday B. Thursday, Monday
C. Sunday, Thursday D. Monday, Friday

14. If we suppose the 60th independence day of India was on Thursday, then the 85th independence day would have been on?

A. Monday B. Wednesday C. Friday D. Sunday

15. History Professor Nagarajan was talking to the students about a century which has started with a Monday. What day India would be witnessing on the last day of the century, the Professor was posing a question. Incidentally he posed a question that the last day of the century cannot be:

A. Monday B. Tuesday C. Wednesday D. Friday

16. In an year N, the 320th day of the year is Thursday. In the year N+1 the 206th day of the year is also Thursday. What is the 168th day of the year N-1?

A. Friday B. Thursday C. Tuesday D. Saturday

17. Given that 27th February 2003 is a Thursday. What day of the week was 27th February 1603?

A. Friday B. Monday C. Wednesday D. Thursday

18. In a particular year the month of January had exactly 4 Thursdays and 4 Sundays, on which day of the week, Jan 1 occurs?

A. Tuesday B. Thursday C. Monday D. Sunday

19. Curious Elva asked her father what he would gift for her nineteenth birthday. Father replied that it would depend on the day of the week and be one of SUNglasses, MONeybag, ..., FRIedcake, and SATchel. Please help Elva find the day of the week on 08-Jan-2029.

A. Monday B. Tuesday C. Thursday D. Saturday

20. In a year N, the 259th day of the year is a Saturday. In the year N+l, the 222th day of the year is also a Saturday. What is the 119th day of the year N-l?

A. Thursday B. Saturday C. Friday D. Tuesday

Calendar Solutions

Level – I									
Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
1	B	2	A	3	A	4	B	5	B
6	C	7	D	8	C	9	B	10	A
11	C	12	B	13	D	14	C	15	C
16	B	17	C	18	B	19	B	20	D
Level – II									
Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
1	D	2	A	3	C	4	D	5	A
6	C	7	A	8	A	9	B	10	D
11	B	12	C	13	B	14	A	15	C
16	B	17	C	18	A	19	D	20	D
Level – III									
Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
1	D	2	B	3	D	4	B	5	A
6	C	7	A	8	A	9	C	10	D
11	B	12	B	13	C	14	A	15	B
16	A	17	D	18	C	19	A	20	C