CHAPTER – 12
CALENDARS

Suppose you are asked to find the day of the week on 30th June, 1974, it would be a tough job to find it if you do not know the method. The method of finding the day of the week lies in the number of "odd days".

Note : Every 7th day will be the same day count wise, i.e. if today is Monday, then the 7th day counting from today onwards will once again be Monday. Odd days is the days remaining after completion of an exact number of weeks. Odd days is the reminder obtained on dividing the total number of days with seven.

Example: 52 days ÷ 7 = 3 odd days.

Leap and Non-leap Year:

A Non- leap year has 365 days whereas a leap year has one extra day because of 29 days in the month of February. A non century year which is divisible by 4 is called a leap year. Leap year consists of 366 days, (52 complete weeks + 2 days), the extra two days are the odd days. So, a leap year has two odd days.

An non-leap year consists of 365 days (52 complete weeks + 1 day). The extra one day is the odd day.

Note: Every century, year which is a multiple of 400, is a leap year. A century year which is not divisible by 400 is a non-leap year.

Example: 400, 800, 1200, 1600 …. are leap years. 500, 700, 900, 1900 … are non-leap years.

Counting the number of Odd Days:

100 years consist of 24 leap years + 76 ordinary years. (100 years when divided by 4, we get 25. But at the 100th year is not a leap year, hence only 24 leap years).
= 2 x 24 odd days + 1 x 76 odd days = 124 days
= 17 weeks + 5 days
The extra 5 days are the odd days.
So, 100 years contain 5 odd days.
Similarly, for 200 years we have 10 extra days (1 week + 3 days).
∴ 200 years contains 3 odd days.
Similarly, 300 years contain 1 odd day and 400 years contain 0 odd days.
Any month which has 31 days has 3 odd days.
(∵ 31 ÷ 7 leaves 3 as remainder) and any month which has 30 days has 2 odd days (30 ÷ 7 leaves 2 as remainder).

Then, the total number of odd days are calculated by adding the odd days for each month. The value so obtained is again divided by 7 to get the final number of odd days. The day of the week of the second date is obtained by adding the odd days to the day of the week of the earlier date.

Worked Out Examples:

12.01. If you were born on 14th April, 1992, which was a Sunday, then on which day of the week does your birthday fall in 1993?
(A) Monday (B) Tuesday
(C) Wednesday (D) Friday

Sol. 14th April 1992 to 14th April 1993 is a complete year, which has 365 days. Hence, the number of odd days from 14th April 1992 to 14th April 1993 is 1. Hence, 14th April 1993 is one day after Sunday i.e., Monday. Choice (A)

12.02. If 1st Jan, 1992 is a Tuesday then on which day of the week will 1st Jan, 1993 fall?
(A) Wednesday (B) Thursday
(C) Friday (D) Saturday

Sol. Since 1992 is a leap year there are 2 odd days. Hence, 1st January 1992 is two days after Tuesday i.e., Thursday. Choice (B)

12.03. If 1st April, 2003 was Monday, then which day of the week will 25th December of the same year be?
(A) Tuesday (B) Wednesday
(C) Thursday (D) Friday

Sol. The number of days from 1st April to 25th December
(29 + 31 + 30 + 31 + 31 + 30 + 31 + 30 + 25) days
= 268 days = $\frac{268}{7} = 38 + 2\,\text{odd days}$.
Hence, 25th December is two days after Monday, i.e., Wednesday. Choice (B)

12.04. What day of the week was 18th April 1901?
(A) Monday (B) Tuesday
(C) Wednesday (D) Thursday

Sol. 18th April 1901 ⇒ (1600 + 300) years + 1st January to 18th April 1901.
1600 years have – 0 odd days
300 years have – 1 odd day
The number of days from 1st January, 1901 to 18th April 1901 is (31 + 28 + 31 + 18) days
108 days ≅ 3 odd days
∴ Total number of odd days = 3 + 1 = 4
Hence, 18th April 1901 is Thursday. Choice (D)

Exercise – 12

Directions for questions 1 to 25: Select the correct alternative from the given choices.

1. If 22nd April, 1982 was a Thursday, then what day of the week was 3rd November, 1982?
(A) Monday (B) Wednesday
(C) Friday (D) Sunday

2. If 30th June, 1989 was a Friday, then what day of the week was 17th September, 1993?
(A) Monday (B) Wednesday
(C) Thursday (D) Friday

3. February, 2014 is on Wednesday, then what day of the week is on 14th July, 2017?
(A) Friday (B) Saturday
(C) Wednesday (D) Thursday

4. If 10th April, 1963 was a Wednesday, then what day of the week was 23rd August, 1959?
(A) Sunday (B) Monday
(C) Friday (D) Tuesday

5. If 4th August, 1996 was a Sunday, then what day of the week was 12th April, 1992?
(A) Friday (B) Saturday
(C) Monday (D) Sunday

6. If 1st January, 2012 is on Sunday, then what day of the week is 1st January, 2016?
(A) Friday (B) Sunday
(C) Wednesday (D) Saturday

7. If 31st January, 1995 was a Tuesday, then what day of the week was 30th July, 1993?
(A) Monday (B) Sunday
(C) Friday (D) Thursday

8. If 20th January 2000 was a Thursday, then what day of the week was 26th February, 1997?
(A) Tuesday (B) Sunday
(C) Wednesday (D) Thursday

9. If 10th January 2008 is a Monday, then which dates of December 2008 are Sundays?
(A) 2, 9, 16, 23, 30 (B) 1, 8, 15, 22, 29
(C) 7, 14, 21, 28 (D) 3, 10, 17, 24, 31

10. If holidays are declared only on Sundays and 19th March in a particular year was a Sunday, is 23rd September a holiday in that year?
(A) Yes, 23rd September is a holiday.
(B) 23rd September is not a holiday.
(C) 23rd September is a holiday only if it is a leap year.
(D) 23rd September is not a holiday only if it is a leap year.

11. If today is Sunday, then what day of the week will be the 426th day from today?
(A) Monday (B) Friday
(C) Tuesday (D) Saturday

12. If today is Wednesday, what day will it be, 1 year and 10 days from today?
(A) Sunday (B) Friday
(C) Monday (D) Cannot be determined

13. If the first day of the year 2005 is a Saturday, then what day of the week will be 1st January, 2009?
(A) Thursday (B) Friday
(C) Sunday (D) Monday

14. What day of the week will 1st January, 2018 be, given that 1st January, 2012 is a Saturday?
(A) Monday (B) Saturday
(C) Sunday (D) Friday

15. If 23rd February 2011 is Tuesday then what day of the week will be 25th March 2013?
(A) Thursday (B) Wednesday
(C) Tuesday (D) Sunday

16. I met my boss 15 days ago, on that day he told me that he will give the salary after 36 days. If today is Wednesday, then on which day of week he told that he will give the salary?
(A) Monday (B) Tuesday
(C) Thursday (D) Wednesday

17. How many odd days are there in 382 days?
(A) 1 (B) 2 (C) 3 (D) 4

18. I met my friend on 3rd April, 1995 which was a Monday and promised to meet him again in the month of October in the same year – but only on a Sunday. On which of the following days could I meet my friend?
(A) 7th, 14th, 21st, 28th
(B) 1st, 8th, 15th, 22nd, 29th
(C) 2nd, 9th, 16th, 23rd, 30th
(D) 3rd, 10th, 17th, 24th,31st

19. Which among the following years is a leap year?
(A) 2600 (B) 2700 (C) 2800 (D) 3000

20. If a year starts and ends with Sunday then how many Sundays are there in that year?
(A) 51 (B) 52
(C) 53 (D) Either (B) or (C)

21. I met my friend on 26 days ago then he told me that he will meet on this day, but he called me to intimate that he can meet me after 10 days from today which is a Wednesday. On which day of the week I met my friend.
(A) Sunday (B) Monday
(C) Tuesday (D) Wednesday

22. What the day of the week is on the day which is 15 days after a day which is 26 days prior to a Sunday?
(A) Wednesday (B) Thursday
(C) Friday (D) Saturday

23. Imagine that in a calendar year, there were 436 days and 9 days in a week, then how many odd days will be there in that year?
(A) 1 (B) 2 (C) 3 (D) 4

24. What day of the week on the day which is 23 days prior to the day which is 55 days after Monday?
(A) Monday (B) Saturday
(C) Sunday (D) None of these

25. What day of the week is the independence day in a year, if the Republic day in that year is on Thursday?
(A) Monday (B) Wednesday
(B) Tuesday (D) Cannot be determined

Key

Exercise – 12

1. B	6. A	11. D	16. D	21. C
2. D	7. C	12. D	17. D	22. A
3. A	8. C	13. A	18. B	23. D
4. A	9. D	14. C	19. C	24. D
5. D	10. B	15. D	20. C	25. D