UNIT-5

1) In 2023,

2023 → ordinary year

In an ordinary year (365 days), then will be only one odd day.

No. of odd days = 1

2) Today → Friday

After 152 days,

No. of odd days = 152 % 7 = 5

Friday	Sat	sun	M	T	W	T
0	1	2	3	4	5	6

it will be wednesday.

3) Today → Friday

After 77777, days,

NO·of odd days = 77777 ÷ 7 = 0

It will be Friday.

4) Today → Saturday

93 days back?

NO·of odd days = 93 ÷ 7 = 2

S	M	T	W	T	Fri	Saturday
6	5	4	3	2	1	0
				↓		

So it will be Thursday.

5) 15th October 1931 ?

1600 years — 0 odd days

+300 — 1 odd day

1900

+30 — 2 odd

1930

$\frac{30}{4} = 7$

OY LP

23 7

1 2

$23 + 7 \times 2 = 23 + 14$

$= 37$

$= 2$ odd

Months 1931 — ordinary year

Jan	Feb	March	April	May	June
3	0	3	2	3	2

July	Aug	Sep	Oct
3	2	3	1

upto Sep total odd days

$= 21 \cdot 1 \cdot 7 = 0$

Total = 3+1 = 4 odd days

sun	Mon	T	W	T
0	1	2	3	4
			1	

Wednesday Thursday

6) 15th Aug 1947

1600 — 4
+300 — 1
1900

46 — 11 LP
35 ordinary year

= 35 + 11 × 2 = 35 + 22 = 57 ÷ 7
= 1

1946

Jan	Feb	March	April	May	June
3	0	3	2	3	2

July	Aug	Sep	Oct
3	4	5	2

Total odd days = 17 ÷ 7 = 3 odd days

Total = 1 + 1 + 3 = 5 → So Friday

Sun	M	T	W	T	F	S
0	1	2	3	4	5	6

7) August 15th 2022 — Monday

↓ } 4 years

Aug 15th 2026

4 < 1 Leap year
3 Non-Leap

= 3+1×2

= 3+2 = 5

Mon	Tues	Wed	Thu	Fri	Sat	S
0	1	2	3	4	5	6

So it will be Saturday

8) 2nd April 2011

2000 — 0 odd days

10 — 2 Leap years

8 Non-leap years

= 8 + 2×2 = 8 + 4 = 12 odd days

= 12 ÷ 7 = 5

2000 — 0
+ 10 — 5
2010

2011 — Non-leap year

Jan	Feb	March	April
3	0	3	2

= 3 + 3 + 2 = 8 ÷ 7 = 1

Total = 5 + 1 = 6

So it is Saturday.

9) Time between 4 & 5

As hands coincide

angle = 0

$\theta = 30H - \frac{11}{2}M$

$0 = 30 \times 4 - \frac{11}{2}M$

4:00

4:59

So H will be 4

$0 = 120 - \frac{11}{2}M$

$\frac{11}{2}M = 120$

$\Rightarrow M = 120 \times \frac{2}{11} = 40 \times \frac{6}{11}$

Time will be $\boxed{4:40\frac{6}{11}}$

10) Time b/w 10 & 11

As they are at right angle, $\theta = 90$.

$90 = 30 \times 10 - \frac{11}{2}M$

$\frac{11}{2}M = 300 - 90$

$\frac{11}{2}M = 210$

$M = \frac{21 \times 10 \times 2}{11}$

$= \frac{420}{11} = 42 \times \frac{10}{11}$

Time: $\boxed{10:42\frac{10}{11}}$