14 Monday

Q - What is the probability that a leap year selected at random will contain 53 Sundays ?

Sol^{n} We know that a leap year contains 52 weeks and 2 extra days. These 2 days can be one of the following combinations.

15 Tuesday

(i) Monday & Tuesday

(ii) Tuesday & Wednesday

(iii) Wednesday & Thursday

16 Wednesday

(iv) Thursday & Friday

(v) Friday & Saturday

(vi) Saturday & Sunday

(vii) Sunday & Monday.

From 52 weeks, we have 52 Sundays

17 Thursday

and from the 7 combination we have 2 possible cases.

i.e (No — vi, vii)

So out of 7 cases, favourable cases

18 Friday are 2

$\therefore$ Reqd probability $= \frac{2}{7}$ //

Q → 7 marbles are marked with one day of the week viz. Monday, Tuesday, Wednesday, Thursday, Friday, Saturday & Sunday.

19 Saturday

20 Sunday

One marble is drawn at random. What is the probability that it is marked either Thursday or Sunday ?

21 Monday

Sol^{n} A week contains 7 days.

Let A = day is Thursday

B = " " Sunday

$\therefore P(A) = \frac{1}{7}, \quad P(B) = \frac{1}{7}$

22 Tuesday

$P(A \cap B) = 0$ [$\because$ Thursday & Sunday cannot come together]

Now

$P[\text{Either A or B}] = P[A \cup B]$

23 Wednesday $\Rightarrow P[A \cup B] = P(A) + P(B) - P(A \cap B)$

$= \frac{1}{7} + \frac{1}{7} - 0$

$= \frac{2}{7}$ Ans

24 Thursday Q There are 365 marbles each carrying one date of the year viz, 1st Jan, 2nd Jan, ... 31st Dec. One marble is drawn at random, what is the probability that it bears a date of either April or

25 Friday May ?

Sol^{n} We know that April contains 30 days & May contains 31 days

Let A = a date of April

26 Saturday $\therefore P(A) = \frac{30}{365}$ 27 Sunday

Ily B = a date of May

$$P(B) = \frac{31}{365}$$

now $P(A \cap B) = 0$ [$\because$ no common day]

October 2020

28 Monday

Now

$P[$ a date of either April or May$]$

$= P(A \cup B)$

29 Tuesday $\Rightarrow P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$= \frac{30}{30} + \frac{31}{31} - 0$

$= \frac{30}{365} + \frac{31}{365}$

$= \frac{61}{365}$ //

30 Wednesday