Ex – 5 (D)

For what value of digit x, is

1) 1x5 divisible by 3?

Ans- 1+x+5 is a multiple of 3

$\Rightarrow$ 6+x = 0, 3, 6, 9
Multiple of 3 are
$\Rightarrow$ x = 0, 3, 6, 9

2) 31x5 divisible by 3?

3+1+x+5 is a multiple of 3

Ans

$\Rightarrow$ 9+x = 0, 3, 6, 9, -9, -6, -3
Multiple of 3 are
$\Rightarrow$ x = 0, 3, 6, 9

3) 28x6 a multiple of 3?

2+8+x+6 is a multiple of 3

Ans

$\Rightarrow$ 16+x = 0, 3, 6, 9, 12, 15, 18
Multiple of 3 are
$\Rightarrow$ x = -18, -15, -2, 0, 2, 5, 8

2+8+x+6 is a multiple of 3

$\Rightarrow$ 16+x = 18, 21, 24, 27, 30

$\Rightarrow$ x = 2, 5, 8, 11, 14

Since x is a digit, so, x = 2, 5, 8.

4) 24x divisible by 6?

Ans- 2+4+x is a multiple of 6

$\Rightarrow 6+x = 0, 6, 12, 18, 24$

$\Rightarrow x = -6, 0, 6, 12$

Since, x is a digit,

So $x = 0$ or 6

5) 3x26 a multiple of 6?

Ans- 3+x+2+6 is a multiple of 6

$\Rightarrow 11+x = 0, 6, 12, 18, 24, 30, 36, 42$

$\Rightarrow x = -11, -5, 1, 7, 13 \ldots$

$\Rightarrow x = 1$ and 7

3+x+2+6 is a multiple of 3

$\Rightarrow 11+x = 0, 3, 6, 9, 12, 15, 18, 21, 24$

$\Rightarrow x = -11, -8, -5, -2, 1, 4, 7, 10 \ldots$

$\Rightarrow x = 1, 4, 7$

Since, x is a digit $x = 1, 4$ or 7.

6) $42x8$ is divisible by 4?

Ans- $4+2+x+8$ is a multiple of 2

$\Rightarrow 14+x = 0, 4, 8, 12, 16, 20, 24, 28$

$\Rightarrow x = -14, -10, -6, -2, 2, 6, 10, 4$

$\Rightarrow 14+x = 16, 18, 20, 22, 24, \ldots$

$\Rightarrow x = 2, 4, 6, 8, 10 \ldots$

$\Rightarrow x = 2, 4, 6, 8$

Since, x is a digit $x = 2, 4, 6, 8$.

7. $9142x$ a multiple of 4?

Ans- $9+1+4+2+x$ is a multiple of 4

$\Rightarrow 16+x = 0, 4, 8, 12, 16, 20, 24, 28, \ldots$

$\Rightarrow x = -16, -12, -8, -4, 0, 4, 8, 12 \ldots$

Since, x is a digit, $x = 0, 4, 8$

8. $7x34$ divisible by 9?

Ans- $7+x+3+4$ is a multiple of 9

$\Rightarrow 14+x = 0, 18, 27, 36, 45, \ldots$

$\Rightarrow x = 4, 13 \ldots$

Since, x is a digit

So, $x = 4$

9. $5x555$ a multiple of 9?

Ans- $5+x+5+5+5$ is a multiple of 9

$\Rightarrow 20+x = 27, 36, 45, 54, 63 \ldots\ldots$

$\Rightarrow x = \underline{7}, 16, 25, 34 \ldots\ldots$

Since, x is a digit

So, $x = 7$

10. $3x2$ divisible by 11?

Ans- Sum of the digit in even place $= x$

" " " " " odd place $= 3+2 = 5$

Difference of the sum of even and odd

$= x-5$

$3x2$ is a multiple of 11.

$\Rightarrow x-5 = 0, 11, 22, 33 \ldots\ldots$

$\Rightarrow x = 5, 16, 27 \ldots\ldots$

Since, x is a digit

So, $x = 5$

11. $5x2$ a multiple of 11 ?

Ans- Sum of a digit in even place $= x$
" " " " " odd place $= 5+2=7$

Difference of the sum of even and odd
$= x-7$

$5x2$ is a multiple of 11

$\Rightarrow x-7 = 0, 11, 22, 33, \ldots\ldots\ldots$

$\Rightarrow x = 7, 18, 29 \ldots\ldots\ldots$

Since, x is a digit

So, $x = 7$