4. DIVISIBILITY RULES

Class: VI, MATHEMATICS

INTEGRATED + SOLUTIONS

TEACHING TASK (2025|26)

JEE MAINS LEVEL

01. $23A57 = 2+3+A+5+7$

$= 17+A$

∴ The least value of A should be 1

so that $17+1 = 18$, which is divisible by 3

Hence, 23A57 is divisible by 3 Ans: B

02 $35x7y1 = 3+5+x+7+y+1$

$= 16+(x+y)$

The least sum of $x+y = 2$

So that $16+2 = 18$, which is divisible by 3

Ans: A

03 476a is divisible by 4

⇒ 6a should be divisible by 4.

Here a should be either 4 or 8. Ans: A, B

04 57a68 → here 68 is divisible by 68

∴ a can take any single digit number

Ans: A

05 3A57 = 3+A+5+7 = 15+A, divisible by 3 (2)

least value of A = 0

45783 = 4+5+7+8+B = 24+B, divisible by 9

least value of B = 3

∴ A+B = 0+3 = 3

Ans. D

06 A) 12345 = 1+2+3+4+5 = 15, divisible by 3 ✓

B) 453 = 4+5+3 = 12 ✓

C) 3690 = 3+6+9+0 = 18 ✓

d) 1235 = 1+2+3+5 = 11 ✗

Ans. A, B, C

07 Statement I:

abcdefghij kl

kl = 16 → which is divisible by 4 (True)

Statement II: Conceptual (True)

Ans. A

08 A) 200409 = 2+0+0+4+0+9 = 15, which is not divisible by 9

B) 124678 = 1+2+4+6+7+8 = 28 ✗

C) 32197 = 3+2+1+9+7 = 22 ✗

D) 320418 = 3+2+0+4+1+8 = 18, ✓

Ans. D

9 A) 120360 → divisible by 9 (3)

1+2+0+3+6+0 = 12, which is divisible by 3

Ans. A

10 A) 1080 = 1+0+8+0 = 9, which is divisible by both 3 and 9

∴ 1080 is divisible by both 3 and 9.

B) 46782 = 4+6+7+8+2 = 27, ✗

C) 112233 = 1+1+2+2+3+3 = 12, which is divisible by 3, not by 9

Hence 112233 is divisible by 3 not by 9

Ans. C

11 ay7 is divisible by 4

= 104 is divisible by 4

Ans, 104

12 104 is divisible by 8

Ans 104

13 a) clearly 39760 is divisible by 2, 5 and 10

Divisibility Condition of 7

39760 → Last digit 0 → ∴ 2×0 = 0

3976 − 0 = 3976

397 − 12 = 385

38 − 10 = 28, which is divisible 7

Hence, 39760 is divisible 7 (p, q, r, s)

b) 53676 is divisible 2 (4)

Divisibility Condition of 7 2×6=12

5367 − 12 = 5355

535 − 10 = 525

52 − 10 = 42

4 − 4 = 0, which is divisible by 7

Hence, 53676 is divisible by 7 (r, s)

c) 36,920 → divisible by 2, 5, 10 (p, q, r)

d) 569536 → is divisible by 2

Divisibility Condition of 11

$S_1 = 5 + 9 + 3 = 17$

$S_2 = 6 + 5 + 6 = 17$

$\therefore D = S_1 - S_2 = 17 - 17 = 0$, hence the number is divisible by 11 (r, t)

Ans. (p, q, r, s) (r, s) (p, q, r), (r, t)

LEARNERS TASK (CUQ's)

01.	2	Ans B
02	1, 3	Ans: D
03	Either 0 or 5	Ans. C

04. 2 and 3 Ans: C

05 A) 3650 (5)

650 is not divisible by 8

Hence, ~~the word~~ 3650 is not divisible by 8

B) 3644 → not divisible by 8

C) 3648 → divisible by 8 Ans: C

06 D) 340218 = 3+4+0+2+1+8

= 18, which is divisible by 9

Ans. D

07 A) 78436 → divisible by 2 Ans: A

08 3 and 9 Ans. B, C

09 B) 901351

Divisibility Condition of 11

$S_1 = 9+1+5 = 15$

$S_2 = 0+3+1 = 4$

$S_1 - S_2 = 15-4 = 11$, which is divisible by 11

Hence, 901351 is divisible by 11

Ans. B

10 B) 50815B

Divisibility Condition of 7

50815 − 16 = 50799	50 − 18 = 42
5079 − 18 = 5061	4 − 4 = 0, which is divisible by 7
506 − 2 = 504	

Ans. B

01 $7x57y \rightarrow$ divisible by 6 $\rightarrow$ divisible by 2 and 3

$\therefore \boxed{y = 0}$

$7 + x + 5 + 7 + y = 19 + x + y$

$= 19 + x + 0$

$= 19 + x$, Divisible by 3

$\Rightarrow \boxed{x = 2}$

$\therefore xy = 3 \times 0 = 0$

Ans. C

02 D) $4995 = 4 + 9 + 9 + 5 = 27$, which is divisible by both 3 and 9

A) $7983 = 7 + 9 + 8 + 3 = 27$, " "

B) $14301 = 1 + 4 + 3 + 0 + 1 = 9$, " "

C) $1668 = 1 + 6 + 6 + 8 = 21$, which is divisible by 3 but not by 9

$\therefore$ Hence 1668 is divisible by 3 but not 9

Ans: C

03 B) 111111

$S_1 = 1 + 1 + 1 = 3$

$S_2 = 1 + 1 + 1 = 3$

$D = S_1 - S_2 = 3 - 3 = 0$

Ans. B

04 A) 4640

$\therefore 4 + 6 + 4 + 0 = 20$, not divisible by 3

B) 74628 $\rightarrow$ not divisible by 5

C) 59698 $\rightarrow$ not divisible by 5

Ans: D

05 7a6b5c

$S_1 = 7+6+5 = 18$

$S_2 = a+b+c$

$D = S_1 - S_2 = 0$ ∴ $18-(a+b+c)=0$

$\Rightarrow a+b+c = 18$ Ans. A

06 Conceptual D) Both B and C Ans: D

07 $a\underline{y} \rightarrow y = 2x$ Ans. A

08 A) $39\underline{40}$ → divisible by 4

$\underline{3940}$ → not divisible by 8 Ans. C

09 A) 8449

$S_1 = 8+4 = 12$

$S_2 = 4+9 = 13-1 = 12$

∴ $8449-1 = 8448$ is divisible by 11

Ans. A

10 Trial and Error method

Let the number be 9

∴ 6)9 (1 6)81 (13

6 78

(3) (3) → Remainder = 3

Ans: D

JEE ADVANCED LEVEL

01. Given number 1234568
clearly this number is divisible by 2
Now, 1+2+3+4+5+6+8 = 36, which is divisible by 3 and 9
Ans.. D

02 $99 = 9 \times 11$
$= 3 \times 33$
∴ The number is divisible by 3, 9, 11, 33
Ans A, B, C, D

03 $15 = 3 \times 5$
Ans. A, C.

04 Statement I: Conceptual (True)
Statement II: Conceptual (True)
Ans. A

05 23581344, clearly this number is divisible by 4.
2+3+5+8+1+3+4 = 26, Not divisible by 3
Hence not divisible by 6.
Now, Last three digits 134, not divisible by 8
Ans: C

06 A) 41384 → 384 is divisible by 8
Ans. A

07: B) 12672 → divisible by 2
1+2+6+7+2 = 22, Not divisible by 3
Hence, Not divisible by 6

D) 36926 → divisible by 2

3+6+9+2+7+6 = 35, which is not divisible by 3, Hence not divisible by 6

Ans: B, D

08 c) m=6, n=4

mn = 64, divisible by 4 Ans C

09 A) 345 → not divisible by 8

B) 356 → "

C) 579 → "

D) 704 → Divisible by 8 Ans. D

Ans B

10 Conceptual

11 d54 → is divisible by 4

d+5+4 = 9+d, should be divisible by 3

∴ d = 3 Ans. 3

12 lm + lm = l+m

least sum of l+m = 0 Ans. 0

13 a) 578 → divisible by 2 (S)

b) 789 → divisible by 3 (P)

c) 895 → divisible by 5 (Q)

d) 957 → divisible by 3 (P) Ans. S, P, Q, P

⟹ THE END ⟸