

2. OPERATIONS ON ① INTEGERS

Class: VI . MATHEMATICS

FOUNDATION! SOLUTIONS
2025-26

Teaching: JEE MAINS LEVEL

01. Largest 3 digit negative integer = -100
The smallest 3 digit positive integer = 100
Difference = $100 - (-100) = 200$ Ans: —

02. $(-1)^n \times (-1)^{n+1}$
let $n=0 \Rightarrow (-1)^0 \times (-1)^{0+1} = 1 \times (-1) = -1$ Ans: B

03. Conceptual Ans: C

04. $(-1)^{100} + (-1)^{101}$
 $= 1 - 1 = 0$ Ans: A

05. $x = \frac{132}{-12} = -11$ Ans: B

06. $\{-4, -3, -2, -1, 0, 1, 2, 3, 4\} \rightarrow$ total 9 Ans: A

07. $|a| + |-a| = a + a = 2a = 2|a|$ Ans: C

08. $8 \times 53 \times (-125) = -53000$ Ans: B

$$09 \quad 22 \times (-1) \times (-2) \times (-10) = -440$$

Ans: A

(2)

$$10 \quad 5 + (-5) + (5) + (-5) + \dots = 400$$

Since 400 is even number

$$\text{Sum} = 0$$

Ans: A

$$11 \quad \text{Other number} = \frac{60 - (-300)}{-1} = \frac{360}{-1} = -360$$

Ans: B

$$12 \quad x + 7 = 20 \Rightarrow x = 13$$

Ans: A

$$13 \quad K + y = x \Rightarrow K = x - y$$

Ans: A

$$14 \quad K \times y = x \Rightarrow K = \frac{x}{y}$$

Ans: A

$$15 \quad \text{Other integer} = \frac{-120}{-1} = 120$$

Ans: A

ADVANCED LEVEL

$$01. \quad \text{Conceptual} \quad a \cdot b > 0, \quad a + b < 0$$

Ans:

$$\text{Let } a = -3, \quad b = -2$$

A) Correct

$$B) \quad |-3| > |-2| \quad (\text{True})$$

$$C) \quad (-3) \cdot (-2) > 0 \quad (\text{True})$$

D) False

Ans: A, B, C

02 Conceptual

Ans: A, B

03 Statement I: Conceptual (True)

Statement II: Conceptual (True)

Ans: A



04

Statement I: Conceptual (True)

Statement II: Conceptual (True)

Ans: A

05

Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

06

Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

07

$$p^2 - q^2 = 15$$

$$A) (4, 1) \Rightarrow 4^2 - 1^2 = 16 - 1 = 15 \text{ (True)} \quad \text{Ans: A}$$

$$D) (8, 7) \Rightarrow 8^2 - 7^2 = 64 - 49 = 15 \text{ (True)}$$

Ans: A, D

08

$$p^2 - q^2 = 4^2 - 1^2 = 16 - 1 = 15$$

$$p = 4, q = 1 \Rightarrow p + q = 5$$

Ans: A

09

$$(8, 7), (4, 1), (-8, -7), (-4, -1)$$

Ans: B

10

$$513627$$

Ans: B

11

Conceptual

Ans: B

12

$$-(b-a)$$

Ans: C

13

$$-12$$

Ans: D

14

Let $p = 3$, $p^2 + 2 = 3^2 + 2 = 11$, a prime
only one possible answer

Ans: 1

15 other number is $= \frac{139750}{-2150} = -65$ (4) Ans: -65

16 $5 + \frac{6}{12} \times 2 = 5 + 1 = 6$ Ans: 6

17 a) $a > 0, b < 0 \Rightarrow a + b > 0$ or $a + b < 0$ (P)
 $ab < 0$

b) $a < 0, b < 0 \Rightarrow a + b < 0, ab > 0$ (Q)

c) $a > 0, b > 0 \Rightarrow ab > 0$ (R)

d) $a \times b < 0 \Rightarrow a < 0$ and $b > 0$ (S) or $a > 0$ or $b < 0$ (S)
Ans: P, Q, R, S

18 a) $-51 \times (16 + 13) = (-51) \times 16 + (-51) \times 13$ (S)

b) $(-51 + 16) \times 13 = (-51) \times 13 + (16) \times 13$ (R)

c) $(-51 + 16) + 13 = -51 + (16 + 13)$ (P)

d) $-51 + (16 - 13) = (-51 + 16) - 13$ (Q)

Ans: S, R, P, Q

LEARNERS TASK (CUG'S)

01. Conceptual

Ans: D

02. Conceptual

Ans: A

03. Conceptual

Ans: B

04. Conceptual

Ans: C

05 $a < 0, b < 0 \Rightarrow ab > 0$

Ans: B (5)

06 $(-7) + (-9) + 4 + 16$
 $= -16 + 4 + 16 = 4$

Ans: A

07 $37 + 2 + (-65) + (-8)$
 $= 39 - 73$
 $= -34$

Ans: A

08 $-312 + 39 + 192 = -81$

Ans: C

09 $(-10) + 92 + 84 + (-15) = 151$

Ans: D

10 $(-9) + 4 + (-6) + 3 = 7 - 15 = -8$

Ans: C

JEE MAINS LEVEL

01. $(-1)^{2n+1} = -1$, since $2n+1 \rightarrow \text{odd}$

Ans: B

NOTE: Please change the question as "which of the following expressions is equal to zero?"

Ans: D

03 Conceptual

Ans: C

04 Conceptual

Ans: B

65 $x = \frac{-50}{10} = -5$

Ans: B

06 $a < 0, b < 0, c < 0 \Rightarrow abc < 0$

Ans: A

07 Smallest negative integer = not defined (6)
Largest positive integer = not defined
Sum = not defined
Ans: D

08 $a+b+c+d=100$.
 a and c are multiples of 10.
let $a=10x$, $c=10y$
 b is the multiple of 5
let $b=5z$
Now $10x+5z+10y+d=100$
 $\Rightarrow d=100-10x-5z-10y$
 $=5(20-2x-z-2y)$
 $=5K$.
 $\therefore d$ is the multiple of 5
Ans: B

09 $xyz=105$
 xy is a multiple of 7
 $\Rightarrow xy=7K$
 $\therefore 7K \cdot z=105$
 $\Rightarrow z=\frac{15}{K}$, $K=1, 3, 5, 15$
The possible integer values of z are
1, 3, 5, 15
Ans: A, B

10.

$$2a + 2b + 2c = 48$$

$$\Rightarrow a + b + c = 24$$

$$\Rightarrow a + 28 = 24$$

$$\Rightarrow a = -4$$

Ans: A

11.

$$3x(5+x) = 33$$

$$\Rightarrow 5+x = 11$$

$$\Rightarrow x = 6$$

Ans: A

12

let $x=2, y=1$ satisfies given equation

Ans: A

13

$$x = -a$$

Ans: B

14

Conceptual

Ans: A

15

$$2x(8+9) = 2 \times 17 = 34$$

Ans: A

JEE ADVANCED LEVEL

01.

$$a^2 + b^2 = 25$$

$$(a,b) \in (3,4), (-3,-4), (5,0)$$

Ans: A, B, C

02

$$|x-3| < 5$$

$$\Rightarrow -5 < x-3 < 5$$

$$\Rightarrow -2 < x < 8$$

$$x \in \{-1, 0, 7\}$$

Ans: A, B, C

03

Conceptual

Ans: A, B

04 $a=1, b=7$, Satisfies the given equation (8)
Ans: A

05 Statement I: Conceptual (True)
Statement II: Conceptual (True) Ans: A

06 Statement I: Conceptual (~~True~~) (False)
Statement II: Conceptual (True) Ans: D

07. Statement I: Conceptual (True)
Statement II: Conceptual (False) Ans: C

08 Assertion: Conceptual (True)
Reason: Reason (True) Ans: A

09. Assertion: Conceptual (True)
Reason: Conceptual (True) Ans: A

10 $(a+b-1)+1 = a+b$ Ans: A

11 $(x-y)-1 = x-y-1$ Ans: C

12 $(x+1)+(x-1) = 2x$ Ans: C

13 $b = \frac{a+c}{2}$ let $a=1, b=2, c=3, d=4$ Ans: A

14 $c = \frac{b+d}{2} \Rightarrow b+d = 2c$ Ans: B

15 $a+d = b+c$ Ans: C

16.

$$x^2 = y^2 = 24$$

(9)

$$(-5, 1), (5, -1), (5, 1), (-5, -1), (7, 5), (7, -5)$$

$$(-7, -5), (-7, 5), (\boxed{-5, -1}) \rightarrow \text{total } 8 \quad \boxed{\text{Ans: } 8}$$

17.

$$1+2+3+\dots+100 = \frac{n(n+1)}{2} = \frac{100 \times 101}{2} = 5050$$

Ans: 5050

18

$$(-50) + (-49) + (-48) + \dots + 0 + 1 + 2 + \dots + 50 = 0$$

Ans: 0

19

a) Associative under addition (x)

b) Distributive (t)

c) Additive identity (p)

d) Multiplicative identity (q)

e) Distributive (t)

Ans: x, t, p, q, t

20

a) May not be an integer (p)

b) Always an integer (q)

c) Always an integer (x)

d) Not defined

Ans: p, q, x, -

$\Rightarrow$ THE END $\Leftarrow$