# **Number System**

# **Self-Evaluation Test**

1. The additive inverse of - 45 is which of the following? (a) 45 (b) - 45

(u) 10		(0)
(c) 0		(d) 1
	C .1	

- (e) None of these
- 2. The value of  $(-16) \times (-3) \times (-15)$  is which of the following? (a) -720 (b) 720

	(1) 540
(c) 540	(d) -540
(e) None of these	

## 3. Which of the following is the value of

(- <b>3</b> )×	[(-5)	+ (·	- <b>7</b> )_	?
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(a) -36	(b) 36
(c) 22	(d) -22
(e) None of these	

4. The difference of additive inverse of – 35

and multiplicative inverse of  $\frac{1}{-97}$  is which

of the following?

(a) 62	(b) - 8
(c) 8	(d) - 62
(e) None of these	

5. The value of is  $\frac{3 \times [-5 - 9]}{[(-7) - (-5)]}$ (a) -21 (b) 21 (c)  $\frac{7}{2}$  (d)  $\frac{-7}{2}$ 

(e) None of these

# 6. The reciprocal of a negative rational number

- (a) is a positive rational number
- (b) is a negative rational number
- (c) can be either a positive or a negative rational number
- (d) does not exist
- (e) None of these

- 7. When  $\frac{5}{9}$  is expressed as a decimal to
  - (a) 0.125
  - (b) 0.850
  - (c) 0.625
  - (d) 1.25
  - (e) None of these
  - If  $\frac{16.75}{48.97} \times \left(\frac{1}{x}\right) = \frac{0.1675}{4.897}$ , then x equal to

8.

- (a) 0.01
- (b) 0.1
- (c) 10
- (d) 100
- (e) None of these
- 9. A monkey jump 5 yards every second on a 60 yards vertical pole and then falls down 2 yards over the next second. How many seconds will it take to climb the pole?
  - (a) 12 (b) 39 (c) 40 (d) 30 (e) None of these
- 10. The value which is to be replaced by y in the following expression
  - $2\frac{1}{3} + y + 3\frac{1}{6} + 4\frac{1}{2} = 13\frac{2}{5}$ (a)  $3\frac{1}{6}$  (b)  $4\frac{2}{3}$ (c)  $2\frac{1}{3}$  (d)  $3\frac{2}{5}$ (e) None of these

11. A container is filled with a liquid up to  $\frac{4}{\kappa}$ 

th of its volume. When 6 bottles of liquid are taken out and four bottles of liquid are poured back into it. It is  $\frac{3}{4}$  th of the volume

Find the number of bottles of liquid in the container when the container is full.

- (a) 15
- (b) 40
- (c) 39
- (d) 33
- (e) None of these

Peter has a rod such that  $\frac{1}{8}$  m of it is 12. yellow,  $\frac{1}{2}$  m of the remaining is green and  $3\frac{1}{2}$  m of the remaining is white: The length of rod is which of the following? (a) 8 m (b) 4 m (c) 3 m (d) 7 m (e) None of these

13. If 
$$\frac{37}{13} = 2 + \frac{1}{a + \frac{1}{b + \frac{1}{c}}}$$
 where a, b, c

natural numbers then the value of a, b and c are which of the following? (a) 1, 5, 3 (b) 1, 3, 5 (c) 1, 5, 2 (d) 1, 2, 5

are

(e) None of these

14.	The value of	$\frac{1}{3 + \frac{1}{3 + \frac{1}{3 - \frac{1}{3}}}}$	is which of the
		-	

following?

(a) 
$$\frac{8}{27}$$
 (b)  $\frac{27}{89}$   
(c)  $\frac{3}{24}$  (d)  $\frac{9}{25}$ 

(e) None of these

15. following Convert the number into percentage.  $0.35 \times 0.0015$  $0.25 \times 0.07$ 

(a)	0.3%	(b)	3%
(c)	30%	(d)	90%

- (e) None of these
- 16. If  $(-24)^{-1}$  is divided by  $(3^{-1})$  then the quotient will be as following.
  - (a)  $\frac{-1}{8}$ (b) (-8) (d)  $\frac{1}{8}$ (c) 8
  - (e) None of these

- Simplify  $\left[ 7^{-1} + \left(\frac{3}{2}\right)^{-1} \right]^{-1} \div \left[ 6^{-1} + \left(\frac{3}{2}\right)^{-1} \right]^{-1}$ 17. (a)  $\frac{34}{35}$ (b)  $\frac{35}{34}$ (c)  $\frac{21}{105}$ (d)  $\frac{5}{121}$ (e) None of these
- 18. Stephen has three boxes whose total weight is  $\frac{121}{2}$  pound. If the first box weight is  $3\frac{1}{2}$  pound more than the second box and third box weight  $5\frac{1}{3}$  pound more than the first box, then the weight of second box is
  - (a)  $\frac{289}{18}$  *Pound* (b)  $\frac{18}{289}$  *Pound* (c)  $\frac{279}{18}$  Pound (d)  $\frac{18}{279}$  Pound (e) None of these
- 19. The height of a triangle is three fifth of it corresponding base. If the height increased by 4% and base decreased by 2% then area of triangle remains same. The base of triangle is:

(a) 
$$\frac{43}{3}$$
 cm  
(b)  $\frac{33}{15}$  cm  
(c) Cannot be determined  
(d)  $\frac{15}{3}$  cm

- (e) None of these
- The perimeter is rectangle is  $3\frac{1}{3}$  more than 20. the perimeter of square. A triangle whose perimeter is  $\frac{1}{3}$  times of the circumference of the circle whose radius is 5 cm and is equal to the length of sides of the square. Find the perimeter of rectangle is:

(a) 
$$23.\overline{3}$$
 (b)  $15\frac{1}{3}$   
(c)  $15\frac{1}{9}$  (d)  $25\frac{1}{9}$ 

(e) None of these

# Answer – Key

<b>1.</b> (A)	<b>2.</b> (A)	<b>3.</b> (B)	<b>4.</b> (B)	<b>5.</b> (B)
<b>6.</b> (B)	<b>7.</b> (B)	<b>8.</b> (C)	<b>9.</b> (B)	<b>10.</b> (D)
<b>11.</b> (B)	<b>12.</b> (A)	<b>13.</b> (C)	<b>14.</b> (B)	<b>15.</b> (B)
<b>16.</b> (A)	<b>17.</b> (B)	<b>18.</b> (A)	<b>19.</b> (C)	<b>20.</b> (A)

# **Explanation for Selected Questions**

#### 4. Explanation

The additive inverse of - 35 is 35.

Similarly, the multiplicative inverse of

$$\frac{1}{-27}$$
 is  $-27$  .

Thus, the required sum = -35 - (-27) = -8.

#### 5. Explanation

$$\frac{3 \times [-5 - 9]}{[(-7) - (-5)]} = \frac{3 \times [-14]}{[(-7) + (5)]} = \frac{3 \times [-14]}{-2} = 21$$

#### 8. Explanation

$$\frac{16.75}{48.97} \times \left(\frac{1}{x}\right) = \frac{0.1675}{4.897} \implies x = \frac{16.75}{48.97} \times \frac{4.897}{0.1675}$$
$$= \frac{100}{10} = 10$$

#### 9. Explanation

After 2 second the monkey reaches at the height of 3 m. So, in 38 second, it will reach of 57 m at  $39^{\text{th}}$  second it will reach on the top.

#### 10. Explanation

$$2\frac{1}{3} + y + 3\frac{1}{6} + 4\frac{1}{2} = 13\frac{2}{5}$$
$$\Rightarrow \frac{7}{3} + y + \frac{19}{6} + \frac{9}{2} = \frac{67}{5}$$
$$\Rightarrow y + \frac{14 + 19 + 27}{6} = \frac{67}{5}$$
$$\Rightarrow y + \frac{\cancel{60}^{10}}{\cancel{6}_1} = \frac{67}{5}$$
$$\Rightarrow y = \frac{67}{5} = -10$$
$$\Rightarrow y = \frac{17}{5} \Rightarrow y = 3\frac{2}{5}$$

#### 11. Explanation

Liquid into container  $=\frac{4}{5} \times .$  Let a bottle contains y litre. The amount of liquid left in the container after 6 bottles are taken out and 4 bottles are poured back into it. According to question,

$$\frac{4}{5}x - 6y + 4y = \frac{3}{4}x \Rightarrow \frac{4}{5}x - 2y = \frac{3}{4}x$$
$$\Rightarrow 2y = \frac{4}{5}x - \frac{3}{4}x \Rightarrow 2y = \frac{1}{20}x \Rightarrow y = \frac{x}{\frac{1}{40}x}$$

The number of bottles required to completely empty the container is 40.

#### 12. Explanation

Let the length of rod be x

Part of rod which is yellow  $=\frac{1}{8}x = \frac{x}{8}$ Part of rod which is green  $=\frac{1}{2}x - \frac{7x}{8} = \frac{7x}{16}$ Remaining part of rod  $= x - \left(\frac{x}{8} + \frac{7x}{16}\right) = x - \frac{9x}{16} = \frac{7x}{16}$ According to question,  $\Rightarrow \frac{7x}{16} = \frac{7}{2} \Rightarrow x = 8$  m.

#### 13. Explanation

$$\frac{37}{13} = 2 + \frac{1}{a + \frac{1}{b + \frac{1}{c}}}$$

Put a = 1, b = 5, c = 2 we get the result.

#### 14. Explanation

$$\frac{1}{3 + \frac{1}{3 + \frac{1}{3 - \frac{1}{3}}}} = \frac{1}{3 + \frac{1}{3 + \frac{3}{8}}} = \frac{1}{3 + \frac{8}{27}} = \frac{27}{89}$$

15. Explanation  $\frac{0.35 \times .0015}{0.25 \times .07} = \frac{35 \times 15}{25 \times 700} = \left(\frac{3}{100} \times 100\right)\% = 3\%$ 

#### 16. Explanation

$$(-24)^{-1} \div (3^{-1}) = \frac{1}{-24} \div \frac{1}{3} = \frac{3}{-24} = \frac{-1}{8}$$

## 17. Explanation

$$\left\{ \frac{1}{7} + \frac{2}{3} \right\}^{-1} \div \left\{ \frac{1}{6} + \frac{2}{3} \right\}^{-1} = \left\{ \frac{3+14}{21} \right\}^{-1} \div \left\{ \frac{1+4}{6} \right\}^{-1}$$
$$= \frac{21}{17} \div \frac{6}{5} = \frac{21 \times 5}{17 \times 6} = \frac{105}{102} = \frac{35}{34}$$

#### 18. Explanation

Let the weight of second box be x pound. Then according to question

Weight of Ist box = 
$$\left(x + \frac{7}{2}\right)$$
 Pounds  
Weight of IIIst box =  $\left(x + \frac{7}{2} + \frac{16}{3}\right)$  Pounds  
Then,  $x + x + \frac{7}{2} + x + \frac{7}{2} + \frac{16}{3} = \frac{121}{2}$   
 $\Rightarrow 3x = \frac{121}{2} - \frac{16}{3} - 7$   
 $\Rightarrow 3x = \frac{263 - 32 - 42}{6} \Rightarrow 3x = \frac{289}{6} \Rightarrow x = \frac{289}{18}$ 

#### 19. Explanation

Let the base of the triangle be  $\boldsymbol{x}$ 

Then the height of the triangle  $=\frac{3}{5}x$ 

Area = 
$$\frac{1}{2} \times \frac{3}{5} \mathbf{x} \times \mathbf{x} = \frac{3}{10} \mathbf{x}^2$$

Now new height

$$=\frac{\cancel{4}}{\cancel{100}}\times\frac{3}{5}x+\frac{3}{5}x=\frac{3}{5}x+\frac{3}{125}x\frac{75x+3x}{125}=\frac{78x}{125}$$

Base =  $x - \frac{2x}{100} = \frac{98x}{100}$ So we have,  $\frac{1}{2} \times \frac{78x}{125} \times \frac{98x}{100} = \frac{3}{10}x^2$ Thus, we cannot determine the value of 'x'.

#### 20. Explanation

Perimeter of square =  $4 \times 5$  cm

Perimeter of rectangle =  $20 + 3\frac{1}{3} = 23\frac{1}{3} = 23.\overline{3}$ .