Number System

1. The sum of four times of an amount 'x' and (x – 9.75) is Rs. 442. Find the approximate value of x.
(A) Rs. 85 **(B)** Rs. 90
(C) Rs. 100 **(D)** Rs. 110
(E) Rs. 75

2. If we multiply fraction by itself and divide the product by its reciprocal then the fraction thus obtained is 1826272627. The fraction is.
(A) 827827 **(B)** 223223
(C) 113113 **(D)** 213213
(E) None of these

3. Tens digit of a three digit number is 6. If the number is written in reverse order then the number formed is 198 less than the original number. The sum of unit digit and hundredth digit is 12. Find the number
(A) 730 **(B)** 740
(C) 765 **(D)** 640
(E) 615

4. There are 4 consecutive odd number and difference between the reciprocal of first odd number and reciprocal of the third is $\frac{4}{525}$ Find the sum of last two odd number.
(A) 51 **(B)** 49
(C) 48 **(D)** 50
(E) 52

5. If the numerator of a fraction is increased by 20% and the denominator is diminished by 10%, then the value of the fraction is 16/21. The original fraction is:
(A) 3/4 **(B)** 4/7
(C) 2/3 **(D)** 5/7
(E) 3/5

6. The ten's digit of a three digit number is 3. If the digits of x interchanged thus the number formed is 396 more than the previous one. The sum of unit digit and hundred digit is 14, then what is the number?
(A) 480 **(B)** 539
(C) 593 **(D)** 935
(E) None of these

7. S_1 is a series of 4 consecutive even numbers. If the sum of reciprocal of first two numbers of S_1 is 11/60, then what is the reciprocal of third highest number of S_1
(A) 2/13 **(B)** 1/12
(C) 2/17 **(D)** 1/13
(E) None of these

8. Vishal has total 35 notes which consist of 2 rupee notes and 5 rupee notes. If he has an amount of Rs 115 with him, how many five rupee notes does he have?
(A) 20 **(B)** 25
(C) 10 **(D)** 15
(E) 30

9. A girl read 3/8th of a book on one day and 4/5th of remainder on another day. If there were 30 pages unread, how many pages did the book contain?
(A) 240 **(B)** 260
(C) 280 **(D)** 300
(E) data inadequate

10. On Republic Day sweets were to be equally distributed among 450 children. But on that particular day, 150 children remained absent. Thus, each child got 3 sweets extra. How many sweets did each child get?
(A) 6 **(B)** 12
(C) 9
(D) Cannot be determined
(E) None of these

11. Six traffic signals shows red light at intervals of 20, 30, 60, 90, 100 and 120

seconds respectively. In 2 hours, how many times do they show red light together if they all start at the same time with red light?
(A) 20 **(B)** 3
(C) 40 **(D)** 5
(E) 9

12. In a zoo there are rabbits and parrots. If heads are counted, the count is 200 and if their legs are counted then they are 580. Find the number of parrots in the zoo?
(A) 45 **(B)** 68
(C) 110 **(D)** 95
(E) 76

13. Sum of LCM and HCF of two numbers P and Q are 37.
Quantity A: Product of P and Q.
Quantity B: Sum of P and Q.
(A) Quantity A > Quantity B
(B) Quantity A < Quantity B
(C) Quantity A ≥ Quantity B
(D) Quantity A ≤ Quantity B
(E) Quantity A = Quantity B OR relationship cannot be determined.

14. If two is subtracted to the numerator while 3 is added to the denominator, ratio becomes 3 : 2. While if 7 is added to the denominator while 4 is subtracted form the numerator, ratio becomes 5:3. What is the fraction?
(A) 23/54 **(B)** (– 23)/64
(C) (– 89)/55 **(D)** (– 23)/55
(E) None of these

15. If one is added to the numerator while 7 is subtracted from the denominator, ratio becomes 5 : 3. While if one is added to the denominator while 3 is subtracted from the numerator , ratio becomes 4 : 5. What is the sum of the numerator and the denominator?
(A) 34 **(B)** 31
(C) 20 **(D)** 19
(E) 38

16. If 3 is added to the numerator while 1 is subtracted from the denominator, their ratio becomes 5 : 4 while if one is added to the denominator and 5 is subtracted from the numerator the ratio becomes 2 : 3. What is the original fraction?
(A) 11/14 **(B)** 12/13
(C) 17/17 **(D)** 17/15
(E) None of these

17. A certain sum is divided among X, Y and Z in a manner that for every rupee X gets, Y gets 50 paise and for every rupee Y gets, Z gets 25paise. If Z's share in the total sum is Rs.480, then find the share of X.
(A) 3820 **(B)** 3840
(C) 3740 **(D)** 3850
(E) 3480

18. Neha has a certain number of 10-paise coin, 3 times as many 25-paise coins as 10-paise coins, and number of 50-paise coins are 5 more than the number of 25-paise coins. If the total value is Rs 120. How many 10-paise coins are there?
(A) 70 **(B)** 60
(C) 50 **(D)** 40
(E) 30

19. A bus starts with passengers filled completely to its capacity. At first stop, it drops one-third of the passengers and picks up 12 others. At the next stop, it drops half of the new total and picks up 3 others. On reaching the next station, the total number of passengers left is 18. What is the number of passengers it can fill at most?
(A) 27 **(B)** 35
(C) 52 **(D)** 32
(E) None of the Above

20. In a national park there are four different animals Tiger, Elephant, Deer and Zebra. It is known that, there are 191 animals except Tigers, 178 animals except Elephants, 169

animals except Deers and 161 animals except Zebras. What is the total number of animals in the national park?

(A) 221 **(B)** 233
(C) 254 **(D)** 245
(E) Can't be determined

Solution

1. Answer: (B)

ATQ,

$4x + x - 9.75 = 442$

$5x = 451.75$

$x = Rs.90$

2. Answer: (B)

Calculation:

Let the fraction be x

So, $(x \times x) = x^2$

And reciprocal of fraction = 1/x

So, $x^2 \div (1/x) = 512/27$

$\Rightarrow (x^2 \times x) = 512/27$

$\Rightarrow x^3 = 512/27$

$\Rightarrow x = 8/3$

∴ The fraction is 8/3

3. Answer: (C)

Let digit be xyz

y = 6

100x + 10y + z – 100z – 10y – x = 198

99x – 99z = 198

x – z = 2……..(i)

Given x + z = 12……..(ii)

Solving (i) & (ii)

x = 7

z = 5

Number is 765

4. Answer: (E)

Let consecutive odd number be x – 3, x – 1, x + 1, x + 3

$\frac{1}{x-3} - \frac{1}{x+1} = \frac{4}{525}$

$\frac{x+1-x+3}{(x-3)(x+1)} = \frac{4}{525}$

$\frac{4}{x^2-2x-3} = \frac{4}{525}$

$x^2 - 2x - 528 = 0$

$x^2 - 24x + 22x + 528 = 0$

$x = 24, -22$

Required sum = (x + 1) + (x + 3)

= 25 + 27

= 52

5. Answer: (B)

Let the fraction be $\frac{p}{q}$

$\therefore \frac{p + 20\%\ of\ p}{q - 10\%\ of\ q} = \frac{16}{21}$

$\Rightarrow \frac{p + \frac{p}{5}}{q - \frac{q}{10}} = \frac{16}{21}$

$\Rightarrow \frac{6p}{5} \times \frac{10}{9q} = \frac{16}{21}$

$\Rightarrow \frac{p}{q} = \frac{16}{21} \times \frac{9}{12} = \frac{144}{252} = \frac{4}{7}$

6. Answer: (B)

Let digit be xyz

So,

According to question

y = 3

$(100z - 10y - x) - (100x - 10y - z) = 396x$

$99z - 99x = 396$

$z - x = 4$

And it is given that

z + x = 14 ……(ii)

Solving (i) & (ii)

z = 9

x = 5

So, number is = 539

7. Answer: (B)

Let 4 consecutive even number is

x, x + 2, x + 4, x + 6

$\frac{1}{x} + \frac{1}{x+2} = \frac{11}{60}$

$\frac{x+2+x}{x(x+1)} = \frac{11}{60}$

$\frac{2(x+1)}{x^2+2x} = \frac{11}{60}$

$12x + 120 = 11x^2 + 22x$

$11x^2 - 98x - 120 = 0$

$x = \frac{-24}{22}, 10$
$= \frac{12}{11}, 10$
∴ third height number is 12 and reciprocal 3rd highest no. 1/12

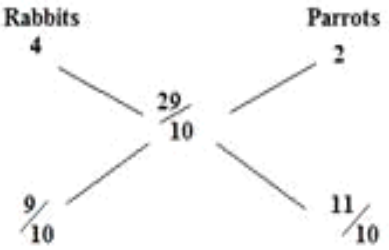
8. Answer: (D)
Let the number of 2 rupee and 5 rupee notes be m and n respectively.
Hence, m + n = 35 .... (1)
The total amount is Rs 115
hence, 2m + 5n = 115 ... (2)
From equation (1) and (2) we will get,
m = 20 and n = 15
Hence total number of 5 rupee notes = 15

9. Answer: (A)
let the number of pages be X.
so 3X/8 part read on 1st day.
So remainder = X - 3X/8 = 5X/8.
4/5th of remainder = 4/5 × 5X/8 = 4X/8.
So the rest unread pages are = X - (3X/8 + 4X/8) = X/8.
That implies X/8 = 30.
So X = 8 × 30 = 240.

10. Answer: (C)
Let the number of sweets be n
300(n + 3) = 450 × n
n = 6
Number of sweets each children got
= n + 3 = 9

11. Answer: (D)
L. C. M of 20, 30, 60, 90, 100 and 120 seconds = 1800 sec = 30 min
i.e., traffic lights will show red lights together for every 30 minutes.
In 2 hours = 120 min, traffic lights will show red lights together = 120/30 + 1 = 5 times

12. Answer: (C)
Use rule of alligation to find the solution
Average number of legs per head
= 580/200 = 29/10



Rabbits: Parrots = 9:11
Number of parrots = (200 × 11)/(9 + 11)
= 110

13. Solution (E):
We know that LCM is always a multiple of HCF.
Let LCM = k(HCF)
⇒ HCF + k(HCF) = 37
⇒ (k + 1)(HCF) = 37
Possible values of k are 0 and 36.
If k = 0, HCF = 37, which is not possible as LCM will become 0.
If k = 36, HCF = 1, and LCM = 36.
So, P and Q can be 1 and 36, or 4 and 9.
If they are 1 and 36, their sum is 37 and product is 36.
If they are 4 and 9, their sum is 13 and product is 36.
So, sum can be lesser or greater than product.
No relation between A and B can be established.

14. Answer: (C)
$\frac{x-2}{y+3} = \frac{3}{2}$
or, $2x - 4 = 3y + 9$
or, $2x - 3y = 13$……..(i)
$\frac{x-4}{y+7} = \frac{5}{3}$
or, $3x - 12 = 5y + 35$
or, $3x - 5y = 47$……..(ii)
Solving (i) and (ii),
$x = 89, y = -55$
Fraction = $\frac{-89}{55}$

15. Answer: (E)
I. $\frac{x+1}{y-7} = \frac{5}{3} \Rightarrow 3x - 5y = -38$……(i)

II. $\frac{x-3}{y+1} = \frac{4}{5} \Rightarrow 5x - 4y = 19$……(ii)
From (i) & (ii)
$y = \frac{247}{13} = 19, x = \frac{257}{13} = 19$
Required sum = 19 + 19 = 38

16. Answer: (C)
Let fraction = $\frac{a}{b}$
$\frac{a+3}{b-1} = \frac{5}{4}$
$4a - 5b = -17$ ….(i)
$\frac{a-5}{b+1} = \frac{2}{3}$
$3a - 2b = 17$ …..(ii)
Solve both equation
$a = b = 17$
Fraction = $\frac{17}{17}$

17. Answer: (B)
As per the question ratio of X & Y is X : Y = 1: ½
Similarly ratio of Y & Z is Y : Z = 1: ¼
∴ X : Y : Z = 1 : ½ : 1/8
Simplifying, X : Y : Z = 8 : 4 : 1
It is given Z's share = 480
X's share is 8 × 480 = Rs.3840.

18. Answer: (C)
Let the number of 10-paise coins be x.
Number of 25-paise and 50-paise coins will be 3x and 3x + 5 respectively.
x × 0.10 + 3x × 0.25 + (3x + 5) × 0.50 = 120
2.35x + 2.50 = 120
2.35x = 117.50
x = 117.50/2.35 = 50

19. Answer: (A)
Let the capacity of the bus be m.
After dropping one-third and picking up 12 more passengers, the new total number of passengers is = m – m/3 + 12 = 2m/3 + 12 passengers.
At the second stop, half of them are dropped and 3 more are picked up then the number of passengers are = (2m/3 + 12) × ½ + 3 = m/3 + 9
At the last stop the total number of passengers left in the bus is = m/3 + 9 = 18
m = 27
Therefore the number of passengers it can maximum accommodate is m = 27.

20. Answer: (B)
Let's suppose number of Tiger, Elephant, Deer and Zebra in the national park be a, b, c and d respectively.
Hence according to the first condition,
b + c + d = 191 .. (1)
Similarly, a + c + d = 178 .. (2)
Also, a + b + d = 169 .. (3)
And, a + b + c = 161 .. (4)
Adding all the above four equations we will get,
=> 3(a + b + c + d)
= 191 + 178 + 169 + 161
=> a + b + c + d = 233