

## (A) :- NUMBER SYSTEM :- <6>

1. (a) Let the number be  $10x+y$  and  $y = x^2$

∴ According to the question:-

$$(10x+y) - (10y+x) = 54$$

$$\Rightarrow 9x - 9y = 54$$

$$\Rightarrow x - y = 6$$

$$\Rightarrow x - x^2 = 6$$

$$\Rightarrow x^2 - x + 6 = 0$$

$$\Rightarrow x = 2, 3$$

$$y = 4, 9$$

∴ The no is 39

$$\Rightarrow \therefore \text{Required ans} = \left(39 \times \frac{40}{100}\right) = \boxed{15.6}$$

2. (c) Let the Original number is  $\rightarrow (10x+y)$

$$\therefore (10x+y) - (10y+x) = 27$$

$$\Rightarrow (x-y) = 3 \quad \longrightarrow (i)$$

Now;  $\frac{y}{x} = \frac{1}{2} \Rightarrow x = 2y \quad \longrightarrow (ii)$

Now; solving eq<sup>n</sup> (i) and eq<sup>n</sup> (ii); We get  $x=6; y=3$

∴ Required answer is  $\boxed{63}$

3. (d) Only 27 Satisfies this Condition.

$$(27 + 45) = 72.$$

∴ Required answer is  $\rightarrow \boxed{27}$

4. (d) Let the Original number is  $\rightarrow 10x+y$

$$\therefore (10x+y) - (10y+x) = 27$$

$$\Rightarrow 9(x-y) = 27$$

$$\Rightarrow x-y = 3$$

All the given options not follow the condition

∴ Required answer is  $\boxed{\text{None of these}}$ .

[A] NUMBER SYSTEM :- <7>

5. (d) Let the odd numbers are  $\rightarrow (x-2); x; (x+2)$ .

Even numbers are  $\rightarrow (y-2); y; (y+2)$

$$\therefore 3x + 3y = 231$$

$$\Rightarrow x + y = 77 \rightarrow (i)$$

Now,  $(y-2) - (x-2) = 11$

$$\Rightarrow y - x = 11 \rightarrow (ii)$$

solving eq<sup>n</sup> (i) & eq<sup>n</sup> (ii);

We get  $\rightarrow x = 33$   
 $y = 44$

$\therefore$  Sum of largest even  
and odd number is  
 $= (46 + 35) = \boxed{81}$

6. (d) Let the number be  $\rightarrow 8370 + 79$

When this number is divided by 31; it leaves

remainder of  $\boxed{17}$  [837 is completely divisible]

7. (c) Let the fraction is  $\rightarrow (p-4)/p$

Now,  $(p-4+15)/(p-4) = 6$

$$\Rightarrow p = 7$$

$\therefore$  fraction =  $\boxed{\frac{3}{7}}$

8. (c) Let the 1st and 2nd number a and b respectively.

$$\therefore \left(a + \frac{20}{100}b\right) = \frac{150}{100}b$$

$$\Rightarrow a : b = \boxed{13 : 10}$$

9. (b) Divisor =  $\{(7+9) - 4\} = \boxed{12}$

10. (c) Let the number be a.

$$\therefore a - 24 = \frac{2a}{3}$$

$$\Rightarrow \frac{a}{3} = 24$$

$$\Rightarrow a = 72$$

$\therefore$  Required answer is =  $\left(\frac{72}{8}\right)$

$$= \boxed{9}$$

(A) :- NUMBER SYSTEM :- (8)

11. (b) According to the question the respective numbers are  $4x$ ,  $3x$  and  $5x$ .  
 $\therefore 3(5x) - (4x + 3x) = 64$   $\therefore$  Required answer  
 $\Rightarrow x = 8$   $(5x - 4x) = x = 8$

12. (c) LCM of 4, 6 and 8 is 24.  
Divide 1000 by 24; Negat quotient = 41 and the remainder is 16.  
So; the required answer is  $\boxed{41}$

13. (a)  $(58 \div 4) \rightarrow$  the remainder is 2.  
 $\therefore$  Unit place value =  $(9)^2 = 81 \rightarrow \boxed{1}$

14. (a) Required answer is:  $\frac{(R)^n}{5} \Rightarrow \frac{(4)^n}{5} \Rightarrow \frac{16}{5} \rightarrow \boxed{1}$

15. (c) Let the number be  $527 \div 17 + 21$   
When the number is divided by 17, 527 is divisible by 17 and leaves remainder as  $\boxed{4}$ .

16. (a) Check the options in the number  $10x47y$ .  
If the the number is divisible by 5; then it is end with 5 or 0.

If the number is divisible by 11; then we can write  $\rightarrow (y + 4 + 0) - (7 + x + 1) = 0$  or should be divisible by 11.

$\therefore$  from the option (a)  $\rightarrow x = 1$  and  $y = 5$ ,

Satisfied the given conditions.

$\therefore$  Required answer is  $\boxed{1 \text{ and } 5}$

## (A) :- NUMBER SYSTEM :- <9>

17. (c) Let the number be  $x$ .  
 $\therefore$  According to the question  $\rightarrow (13x+13)$  which is divisible by 5 or  $13(x+1)$  should be divisible by 5. The smallest value of  $x=4$  to be put here to make it divisible by 5. So the number is  $13(4+1)$  or  $\boxed{65}$

18. (b)  $\left(\frac{103876}{16}\right) \rightarrow$  the remainder is 4; so  $\boxed{4}$  should be subtracted.

19. (b) Let she attend  $x$  correct answers out of 40 question; then incorrect =  $(40-x)$ .

$\therefore$  According to the question:

$$\begin{aligned} (x \times 3) - \{(40-x) \times 1\} &= 96 & \Rightarrow 4x &= 136 \\ \Rightarrow 3x - 40 + x &= 96 & \Rightarrow x &= \boxed{34} \end{aligned}$$

20. (b)  $1^2 + 2^2 + 3^2 + \dots + 24^2$

$$\begin{aligned} \text{Sum} &= \frac{n(n+1)(2n+1)}{6} \quad \left[ \text{Here } n = 24 \right] \\ &= \left( \frac{24 \times 25 \times 49}{6} \right) = \boxed{4900} \end{aligned}$$

21. (b) Number of row =  $\left(\frac{68 \times 40}{20}\right) = \boxed{136}$

22. (d) Required answer :  $\{(1.25 \times 10) + (2.75 \times 24)\}$   
 $= (12.5 + 66) = \boxed{78.50}$

[A] :- NUMER SYSTEM :- <10>

23. (d)  $x^p \cdot x^q \cdot x^r = 1$

$\Rightarrow x^{p+q+r} = x^0$

$\Rightarrow (p+q+r) = 0$

Now, We know that  $\rightarrow p^3 + q^3 + r^3 - 3pqr = (p+q+r)$   
 $(p^2 + q^2 + r^2 - pq - qr - rp)$

$\therefore p^3 + q^3 + r^3 = \boxed{3pqr} \left[ \because (p+q+r) = 0 \right]$

24. (c)  $\therefore$  Divisor =  $5Q$  and Divisor =  $6R$

Now, According to the question  $\rightarrow$  Divisor is 30.

$\therefore 5Q = 30 \Rightarrow Q = 6.$

Now, Dividend =  $(\text{Divisor} \times Q) + R$   
 $= \{(30 \times 6) + 5\} = \boxed{185}$

25. (b) Let the numbers are  $x$  and  $(x+2)$ .

$\therefore x(x+2) = 1224$

$\Rightarrow x^2 + 2x + 1 = (1224 + 1)$

$\Rightarrow (x+1)^2 = 1225$

$\Rightarrow (x+1) = 35 \Rightarrow x = 34$

$\therefore$  One of the even number is  $(34+2) = \boxed{36}$