7th PINNACLE edition **DAYS** Self-- Preparation Module English Medium 6800+ TCS - MCQ ALL Latest TCS Questions asked in SSC Exams till Jan 2025 **Chapter-Wise Coverage** With detailed explanation & short Tricks

Useful for SSC CGL Tier 1, SSC CGL Tier 2, SSC CPO, SSC CHSL, SSC MTS, Selection post, GD, Delhi police and other Govt. exams

each book has multipurpose unique ID



Baljit Dhaka Sir Director

PINNACLE Publications

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			SSC CPO 2024 Tier 1 (27/06/2024 - 29/06/2024)	5		350
			SSC Selection Post (XII) (20/06/2024 - 26/06/2024)	7		350
			SSC CPO 2023 Tier 1 (03/10/2023 to 05/10/2023)	1		351
			SSC MTS 2023 Tier 1	5		351
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			SSC CGL 2023 Tier 1 (14.07.2023 to 27.07.2023)	3		397
			SSC MTS 2022 Tier 1 (02.05.2023 to 20.06.2023)	2		397
			SSC CHSL 2022 Tier 1 (09.03.2023 to 21.03.2023)	1		397
			SSC CGL 2022 Tier 2 (02.03.2023 to 07.03.2023)	1	58	397
			SSC CGL 2022 Tier 1 (01.12.2022 to 13.12.2022)	1	00	397
			SSC Selection Post (X) (01.08.2022 to 05.08.2022)	1		397
			SSC MTS 2021 Tier 1 (05.07.2022 to 26.07.2022)	1		397
			SSC CHSL 2021 Tier 1 (24.05.2022 to 10.06.2022)	2		397
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			SSC CGL 2020 Tier 1 (13.08.2021 to 24.08.2021)	1		398
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		SSC CGL 2021 Tier 2 (08.08.2022)	1		420
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			SSC Selection Post (XI) (26.06.2023 to 30.06.2023)	1		448
			SSC CHSL 2022 Tier 2 (26.06.2023)	1		448
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			SSC CGL 2022 Tier 1 (01.12.2022 to 13.12.2022)	3		448
			SSC CPO 2022 Tier 1 (09.11.2022 to 11.11.2022)	3		448
			SSC Selection Post (X) (01.08.2022 to 05.08.2022)	2		448
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			(02.05.2023 to 20.06.2023)	2		457
			SSC CHSL 2022 Tier 1	1		457
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			(02.03.2023 to 07.03.2023)	1		457
			SSC CGL 2022 Tier 1	3		457
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			(09.11.2022 to 11.11.2022)	2		457
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			SSC CHSL 2020 Tier 1	1		458
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			SSC CHSL 2023 Tier 1 (02/08/2023 to 17/08/2023)	9		476
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			SSC Selection Post (X)	6		480 - 481
			SSC MTS 2021 Tier 1 (05.07.2022 to 26.07.2022)	13		481 - 482
			SSC CHSL 2021 Tier 1 (24.05.2022 to 10.06.2022)	13	69	482
			SSC CGL 2021 Tier 1 (11.04.2022 to 21.04.2022)	4		482
			SSC CGL 2020 Tier 2 (29.01.2022 & 03.02.2022.)	3		483
			SSC MTS 2020 Tier 1 (5 10 2021 to 02 11 2021)	6		483
			SSC CGL 2020 Tier 1 (13.08.2021 to 24.08.2021.)	7		483
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			SSC CHSL 2022 Tier 2	1		519
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			SSC CPO 2022 Tier 1 (09.11.2022 to 11.11.2022)	7		521
			SSC CGL 2021 Tier 2 (08.08.2022)	2		522
			SSC Selection Post (X) (01.08.2022 to 05.08.2022)	4		522
			SSC MTS 2021 Tier 1	47		E00 E00
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			SSC CGL 2021 Tier 1 (11.04.2022 to 21.04.2022)	5		523
			SSC CGL 2020 Tier 2	1		523
			SSC MTS 2020 Tier 1 (5.10.2021 to 02.11.2021)	7		523 - 524
			SSC CGL 2020 Tier 1	3		524
			(13.08.2021 to 24.08.2021)	5		524
			SSC CHSL 2020 Tier 1 (12.04.2021 to 12.08.2021)	3		524
			SSC CPO 2020 Tier 1 (23.11.2020 to 26.11.2020)	1		524
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			SSC CGL 2021 Tier 1	7		557
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			SSC CGL 2020 Tier 2	4		558
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			SSC Selection Post (XII)	15		576 - 577
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			SSC CGL 2021 Tier 2 (08.08.2022)	1	00	580
			SSC Selection Post (X)	1		580
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			SSC CGL 2021 Tier 1 (11.04.2022 to 21.04.2022.)	1		581
			SSC CGL 2020 Tier 2	2		581
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			SSC CGL 2022 Tier 1 (01.12.2022 to 13.12.2022)	4		611
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			(01/07/2024 - 11/07/2024) SSC CPO 2024 Tier 1 (27/06/2024 - 29/06/2024) SSC Selection Post (XII) (20/06/2024 - 26/06/2024) SSC CPO 2023 Tier 1 (03/10/2023 to 05/10/2023) SSC MTS 2023 Tier 1 (01/09/2023 to 14/09/2023) SSC CHSL 2023 Tier 1 (02/08/2023 to 17/08/2023) SSC CGL 2023 Tier 1 (14.07.2023 to 27.07.2023) SSC Selection Post (XI) (26.06.2023 to 30.06.2023) SSC MTS 2022 Tier 1 (02.05.2023 to 20.06.2023) SSC CHSL 2022 Tier 1 (09.03.2023 to 21.03.2023) SSC CGL 2022 Tier 1 (01.12.2022 to 13.12.2022)	2 4 5 2 5 2 1 1 1 2 2 2 2	87	649 - 630 650 650 - 651 651 651 652 652 652 652 652 652 652
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Distribution of Questions



Number System

Basics of Number System

(1). Face Value : It is nothing but the number itself about which it has been asked.

Eg: In the number 23576, face value of 5 is 5 and face value of 7 is 7.

(2). Place Value : The place value of a number depends on its position in the number. Each position has a value 10ⁿ, the places to its right.

Eg: In the number 23576, place value of 5 is 500 and place value of 3 is 3000.

Types of Numbers

(1). Natural Numbers (N) :

All positive counting numbers. (0 is not included in it.) Examples: 1, 2, 3, 4 ... etc.

(2). Whole Numbers (W): All nonnegative numbers are all whole numbers. Examples: 0, 1, 2, 3, 4... etc.

(3). Integer Numbers (I): All positive numbers and negative numbers including zero. Positive numbers are called positive integers and negative numbers are called negative integers. I =, -4, -3, -2, -1, 0, 1, 2, 3, 4

(4). Even Numbers : 2, 4, 6, 8, 10..... [Divisible by 2 completely]

(5). Odd Numbers : 1, 3, 5, 7, 9, 11..... [Not divisible by 2 completely]

(6). Rational Numbers : Numbers whose exact value can be determined. Also a number which can be written in the form

 $\frac{p}{q}$, where p and q are integers and q \neq 0

is called a rational number. For example,

Examples : $\frac{3}{4}$ = 0.75, $\frac{4}{5}$ = 0.8 , $\frac{9}{-5}$, $\frac{22}{7}$

(7). Irrational Numbers : Numbers whose exact value cannot be determined.

Example : π = 3.142857142857 ...

(8). Prime number : A number which is divisible by 1 and itself. 2 is only an even prime number.

Example : 2, 3, 5, 7, 11, etc.

Note:-

Total prime no. between $1 - 50 \Rightarrow 15$ Total prime no. between $1 - 100 \Rightarrow 25$ Total prime no. between $1 - 500 \Rightarrow 95$ Total prime no. between $1 - 1000 \Rightarrow 168$

(9). Composite number : If we remove all prime numbers from natural numbers

then whatever is left is called Composite numbers. Example : 4, 6, 8, 9, 10, 12 etc.

Note :- 1 is neither prime nor composite.

(10). Co - prime number : Two numbers are called Co-prime numbers if their HCF is 1.

Example : (2 and 3), (6 and 11).

Note : Two prime numbers are always co-prime numbers to each other. Any two consecutive integers are always co-prime numbers to each other.

Factors

The factors of a number are the numbers that divide it completely without leaving any remainder.

Example: 24 can be completely divided by 1, 2, 3, 4, 6, 8, 12 and 24, so these numbers are factors of 24.

Prime factorisation of a number : When a number is written in the form of multiplication of its prime factors, it's called prime factorisation.

Prime factorisation of 24.

- 2 24 2 12 2 6
- $24 \rightarrow 2 \times 2 \times 2 \times 3 \text{ or } 2^3 \times 3^1$

Number of factors : To find the number of factors we write the number in the form of prime factors and then add +1 to the exponent of prime factors and multiply them.

For example: $24 = 2^3 \times 3^1$ Number of factors of $24 \rightarrow (3 + 1)(1 + 1) = 4 \times 2 = 8$. With the help of an example, we try to find the sum of all factors of a number. $24 = 2^3 \times 3^1$.

Sum of all factors = $(2^{0} + 2^{1} + 2^{2} + 2^{3}) \times (3^{0} + 3^{1}) = 15 \times 4 = 60.$

Number of even factors of a number : To find the number of even factors of a number, we add +1 to the exponents of prime numbers except 2. (Note : If a number doesn't have 2 as its

factor it will have 0 even factors) **Que**. Find the number of even factors of 120.

Ans. $120 = 2^3 \times 3^1 \times 5^1$ Number of even factors = $3 \times (1 + 1) \times (1 + 1) = 3 \times 2 \times 2 = 12$ Note :- To find the sum of even factors, we shall ignore 2^0 ,

Que. Find the sum of even factors of 120.

Sol:-Sum of even factors = $(2^1 + 2^2 + 2^3)$ $(3^0 + 3^1)(5^0 + 5^1) = 14 \times 4 \times 6 = 336$. **Number and Sum of odd factors of a number** : to find the number and sum of odd factors of a number, we have to ignore the exponents of 2.

Que. Find the number of odd factors 120.

Sol:- 120 = $2^3 \times 3^1 \times 5^1$ Required number = (1 + 1)(1 + 1) = 4The exponent of 2 is completely ignored. Sum of odd factors of 120 = $(3^0 + 3^1)($

 $5^{0} + 5^{1}$ = 4 × 6 = 24

Some Important Results of Factors:

 $1001 = 7 \times 11 \times 13$ $1001 \times abc = abcabc$ $1001 \times 234 = 234234$

Que: Which of the following is a factor of 531531? (a) 15 (b) 13 (c) 11 (d) both b and c

Sol:- 531531 = 1001 × 531

= $7 \times 11 \times 13 \times 531$ So, both 11 and 13 are factors of 531531.

111 = 37×3 , 1001 \times 111 = 111111, When a single digit is written 6 times, 3, 7, 11, 13, and 37 are factors of it.

Que. Which of the following is a factor of 222222?

(a) 17 (b) 57 (c) 68 (d) 74

Sol:- 222222 = 2 × 111111 = 2 × 3 × 7 × 11 × 13 × 37 Clearly, 2 × 37 = 74 is one of the factors.

→ If a, b and c are prime numbers, then the number of prime factors of $a^x \times b^y \times c^z$ is (x + y + z).

Recurring Decimal

Recurring decimals are referred to as numbers that are uniformly repeated after the decimal. Some rational numbers produce recurring decimals after converting them into decimal numbers, but all irrational numbers produce recurring decimals after converting them into decimal form. Examples :

$$(1) \frac{1}{3} = 0.3333333 \dots = 0.\overline{3}$$
$$(2) 0.\overline{9} = \frac{9}{9} = 1$$
$$(3) 0.53\overline{27} = \frac{5327 - 53}{9900} = \frac{5274}{9900}$$
$$(4) 2.53\overline{27} = 2 + \frac{5327 - 53}{9900} = 2\frac{5274}{9900}$$

Divisibility Test

By 2:- When last digit is 0 or an even

number eg: 520, 588

By 3:- Sum of digits is divisible by 3 eg: 1971, 1974

By 4:- When last two digits are divisible by 4 or, they are zeros eg: 1528, 1700

By 5 :- When last digit is 0 or 5 eg: 1725, 1790

By 6 :- When the number is divisible by 2 and 3 both. eg: 36, 72

By 7: - Subtract twice the last digit from the number formed by the remaining digits. Like 651 divisible by 7 $65 - (1 \times 2) = 63$. Since 63 is divisible by 7, so is 651.

By 8 :- When the last three digits are divisible by 8. eg: 2256

By 9 :- When sum of digit is divisible by 9 eg: 9216

By 10 :- When the last digit is 0. eg: 452600

By 11:- When the difference between the sum of odd and even place digits is equal to 0 or multiple of 11. eg: 217382

Sum of odd place digits = 2 + 7 + 8 = 17Sum of even place digits = 1 + 3 + 2 = 617 - 6 = 11, hence 217382 is divisible by 11.

By 13 : - If adding four times the last digit to the number formed by the remaining digits is divisible by 13, then the number is divisible by 13. Like 1326 is divisible by 13

132 + (6 \times 4) = 156. Repeat the same process for 156 .

 $15 + (6 \times 4) = 39.$ so 39 is divisible by 13

BY 17 :-The divisibility rule of 17 states, "If five times the last digit is subtracted from a number made up of the remaining digits and the remainder is either 0 or a multiple of 17, then the number is divisible by 17". Like 221: 22 - 1 \times 5 = 17.

LIKE $221: 22 - 1 \times 5 = 17.$

Prime Number Test

For finding whether any number is a prime number or not, we need to find the nearest square root of given number, then we need to find out whether the given number is divisible by any prime number less than the obtained number or not. If it is divisible then it is not a prime number and if not divisible then it is a prime number.

Example : Find whether 177 is a prime

Soln : Nearest square root of 177 is 13. Now we need to check whether 177 is divisible by prime numbers less than 13. On checking we find that 177 is divisible by 3. Hence, 177 is not a prime number.

Important Formulas

1. Sum of first n natural number s = $\frac{n(n+1)}{2}$

2. Sum of first n odd numbers = n^2

3. Sum of first n even numbers = n(n + 1)

4. Sum of square of first n natural numbers = $\frac{n(n+1)(2n+1)}{6}$

5. Sum of cubes of first n natural number = $(\frac{n(n+1)}{2})^2$

6. $(x^m - a^m)$ is divisible by (x - a) for every natural number m.

7. $(x^m - a^m)$ is divisible by (x + a) and (x - a) for even values of m.

8. $(x^m + a^m)$ is divisible by (x + a) for odd values of m.

9. Number of prime factors of a^{p} , b^{q} , c^{r} , d^{s} is p + q + r + s when a, b, c, d are all prime numbers.

10. HCF of $(a^m - 1)$ and $(a^n - 1) = [(a^{HCF(m,n)} - 1)]$

Number of Zeros in an expression

We shall understand this concept with the help of an example.

Let's find the number of zeros in the following expression: $24 \times 32 \times 17 \times 23$ $\times 19 = (2^3 \times 3^1) \times 2^5 \times 17 \times 23 \times 19$ Notice that a zero is made only when

there is a combination of 2 and 5. Since there is no '5' here there will be no zero in the above expression.

Example:-

 $8 \times 15 \times 23 \times 17 \times 25 \times 22 =$ $2^3 \times (3^1 \times 5^1) \times 23 \times 17 \times 5^2 \times 2^1 \times 11$ In this expression there are 4 twos and 3 fives. From this 3 pairs of 5×2 can be formed. Therefore, there will be 3 zeros in the final product.

Que. Find the number of zeros in the value of:

 $2^{2} \times 5^{4} \times 4^{6} \times 10^{8} \times 6^{10} \times 15^{12} \times 8^{14}$ $\times 20^{16} \times 10^{18} \times 25^{20}$. $\begin{array}{l} \textbf{Sol:-} \\ 2^2 \times 5^4 \times 4^6 \times 10^8 \times 6^{10} \times 15^{12} \times 8^{14} \\ \times 20^{16} \times 10^{18} \times 25^{20} \texttt{=} \\ 2^2 \times 5^4 \times 2^{12} \times 2^8 \times 5^8 \times 2^{10} \times 3^{10} \times 3^{12} \\ \times 5^{12} \times 2^{42} \times 2^{32} \times 5^{16} \times 2^{18} \times 5^{18} \times 5^{40} \\ \textbf{Zeros are possible with a combination of} \\ 2 \times 5 \text{ Here the number of 5's are less so} \\ \textbf{the number of zeros will be limited to the} \end{array}$

In this expression number of fives are: $5^4 \times 5^8 \times 5^{12} \times 5^{16} \times 5^{18} \times 5^{40}$;

i.e. 4 + 8 + 12 + 16 + 18 + 40 = 98

The number of Zeros in n!

To find the number of zeros in n!, we divide "n" by 5 until we get a number less than 5, and then we add all the quotients so obtained.

Que. Find the number of zeros in 36! .

5	36	
5	7	(1)
	1	(2)

number of 5's.

The number of zeros = 7 + 1 = 8.

Remainder Theorem

Que. What will be the remainder when 17×23 is divided by 12?

Ans :- We can express this as:

 $\begin{array}{rcl} 17 \times 23 & = & (12 + 5) \times (12 + 11) \\ = & 12 \times 12 + & 12 \times 11 + & 5 \times 12 + & 5 \times 11 \\ \text{In the above expression we will find that} \\ \text{remainder will depend on the last term} \\ \text{i.e. } 5 \times & 11 \end{array}$

Now,
$$rem.(\frac{5 \times 11}{12}) = 7.$$

So, $\frac{12 \times 12 + 12 \times 11 + 5 \times 12 + 5 \times 11}{12}$

and $\frac{5 \times 11}{12}$ remainder is same in both cases which is 7.

Example:- Remainder when

 $1421 \times 1423 \times 1425$ is divided by 12? $rem(\frac{1421 \times 1423 \times 1425}{1423 \times 1425})$

$$= rem(\frac{5 \times 7 \times 9}{12}) = rem(\frac{35 \times 9}{12})$$
$$= rem(\frac{11 \times 9}{12}) = 3$$

Negative Remainder

Taking a negative remainder will make our calculation easier. Examples

(i)
$$rem(\frac{7 \times 8}{9}) = rem(\frac{-2 \times -1}{9})$$

= $-2 \times -1 = 2$
(ii) $rem(\frac{55 \times 56}{57}) = rem(\frac{-2 \times -1}{57})$

$$= -2 \times -1 = 2$$
(iii) rem $(\frac{7 \times 10}{9}) = rem(\frac{-2 \times 1}{9})$

$$= -2 \times 1 = -2 \text{ or, } 7$$

Large Power Concepts

Look at the following examples:

(i) rem
$$(\frac{28^{12345}}{9}) = rem(\frac{(27+1)^{12345}}{9})$$

 $= rem(\frac{1^{12345}}{9}) = 1^{12345} = 1$
(ii) rem $(\frac{26^{12345}}{9})$
 $= rem(\frac{(27-1)^{12345}}{9})$
 $= rem(\frac{-1^{12345}}{9}) = -1^{12345} = -1 \text{ or } 8$

Application of Remainder Theorem

Que. Find the last two digits of the expression

 $22 \times 31 \times 44 \times 27 \times 37 \times 43?$

Sol:- If we divide the above expression by 100, we will get the last two digits as remainder.

,

$$\Rightarrow rem(\frac{22 \times 31 \times 44 \times 27 \times 37 \times 43}{100})$$

dividing by 4 to make it simple
$$= rem(\frac{22 \times 31 \times 11 \times 27 \times 37 \times 43}{25})$$

$$= rem(\frac{132 \times 22 \times 216}{25})$$

$$= rem(\frac{7 \times 22 \times 16}{25}) \Rightarrow rem(\frac{4 \times 16}{25})$$

$$= rem(\frac{14}{25}) = 14$$

Since we had divided by 4 initially now to get the correct answer, we need to multiply the remainder by 4.

So remainder will be $14 \times 4 = 56$, which will also be the last two digits of the expression.

Variety Questions

Q.1. The five - digit number 45yz0 is divisible by 40. What is the maximum possible value of (y + z)? SSC CGL 26/09/2024 (2nd Shift) (a) 15 (b) 18 (c) 16 (d) 17

Q.2. In a room, there are some chairs and some people. If on each chair, only one person is seated, then there is no chair for exactly one person. If on each chair, two persons sit, then there is one vacant chair. What is the number of chairs in the room?

SSC CGL 26/09/2024 (1st Shift) (a) 7 (b) 4 (c) 3 (d) 6 **Q.3.** Cindy bought 15 apples and 12 oranges and paid a sum of ₹447 for the purchase. Which of the statements given below is inconsistent with the information given in the previous statement, leading to no possible prices of the two fruits?

SSC CGL 25/09/2024 (3rd Shift)

- (a) Purchased 25 apples and 20 oranges and paid a sum of ₹745
- (b) Purchased 10 apples and 13 oranges and paid a sum of ₹353
- (c) Purchased 12 apples and 8 oranges and paid a sum of ₹340
- (d) Purchased 35 apples and 28 oranges and paid a sum of ₹1,029

Q.4. Aman has certain number of notes of denomination $\gtrless20$ and $\gtrless10$ which amount to $\gtrless390$. If the numbers of notes of each kind are interchanged, then the new amount is $\gtrless90$ less than before. Find the number of notes of $\gtrless20$ denomination.

SSC CGL 23/09/2024 (1st Shift) (a) 16 (b) 12 (c) 15 (d) 14

Q.5. 2 biscuits and 1 chocolate cost ₹69. 2 chocolates and 3 cups of coffee cost ₹127. 3 biscuits, 4 chocolates and 2 cups of coffee cost ₹229. Find the total cost (in ₹) of 5 biscuits, 5 chocolates and 5 cups of coffee.

SSC CGL 13/09/2024 (3rd Shift) (a) 304 (b) 375 (c) 345 (d) 355

Q.6. 8 apples and 10 oranges weigh 5 kg. 12 apples and 20 oranges weigh 9 kg. What is the weight (in kg, rounded off to the nearest integer) of 15 apples and 24 oranges ?

SSC CHSL 08/07/2024 (3rd Shift) (a) 16 (b) 11 (c) 13 (d) 10

Q.7. In an election, voters have the option to vote for one of three candidates. They also have the option to select 'None Of The Above' (NOTA) to reject all the candidates. All three candidates get 6 times the NOTA votes. The winner gets twice the votes of the second runner-up. The first runner-up gets 900 more votes than NOTA and defeats the second runner-up by 150 votes. Find the total number of votes cast. SSC CHSL 05/07/2024 (4th Shift)

(a) 15177 (b) 11577 (c) 11025 (d) 17715

Q.8. How many factors of 14,400 are divisible by 18 but not by 36 ? SSC CHSL 05/07/2024 (4th Shift) (a) 3 (b) 5 (c) 4 (d) 2

Q.9. Raju has ₹11,000 and starts saving ₹5,000 each week towards buying a new laptop. At the same time, Ramesh has

₹60,000 and begins spending ₹2,000 per week on supplies for his art class. Will there be a week when they have the same amount of money? SSC CHSL 05/07/2024 (1st Shift)

- (a) Yes, after 5 weeks
- (b) No, they will never have the same amount
- (c) Yes, after 7 weeks
- (d) Yes, after 6 weeks

Q.10. If 3c2933k is divisible by both 5 and 11, where c and k are single digit natural numbers, then c + k =_____. SSC CHSL 05/07/2024 (1st Shift) (a) 6 (b) 8 (c) 5 (d) 7

Q.11. If two numbers are each divided by the same divisor, then the remainders are 6 and 7, respectively. If the sum of the two numbers be divided by the same divisor, then the remainder is 5. The divisor is:

SSC CHSL 04/07/2024 (2nd Shift) (a) 6 (b) 4 (c) 13 (d) 8

Q.12. Find the lowest positive value of (c - b) such that the 7-digit number 1738b9c is divisible by 12. SSC CHSL 01/07/2024 (4th Shift) (a) 4 (b) 7 (c) 1 (d) 2

Q.13. Successive division of a number by 2, 3, 5 and 7 gives remainders 1, 4, 0 and 5, respectively. What will be the sum of the remainders if the same number is divided by 7, 5, 3 and 2 successively ? SSC CHSL 01/07/2024 (4th Shift) (a) 17 (b) 8 (c) 10 (d) 9

Q.14. Ram gives a six-digit number 468312 to Shyam to check the divisibility. Shyam tells Ram that the number is divisible by 57. Shyam asks Ram, "If we rearrange the digits of this number in descending order, then by which number will it be always divisible ?"

Graduate Level 21/06/2024 (Shift - 3) (a) 2 (b) 3 (c) 19 (d) 17

Q.15. A 4-digit number '34PQ' divisible by 3,5 and 7. Find the value of P + Q. Matriculation Level 20/06/2024 (Shift - 4)

(a) 11 (b) 12 (c) 10 (d) 13

Q.16. A six-digit number is divisible by 33. If 21 is added to the number, then the new number which formed is also divisible by:

Higher Secondary 20/06/2024 (Shift - 2) (a) 5 (b) 4 (c) 2 (d) 3

Q.17. A six-digit number 11p9q4 is divisible by 24. Then the greatest possible value for pq is: SSC CGL Tier II (26/10/2023)

(a) 56 (b) 68 (c) 42 (d) 32 **Q.18.** The remainder of the term $9 + 9^2 + \dots + 9^{(2n + 1)}$ when divided by 6 is: SSC CHSL 11/08/2023 (4th Shift)

(a) 1 (b) 4 (c) 2 (d) 3

Q.19. Two numbers, when divided by a certain divisor, leave the remainder 57. When sum of the two numbers is divided by the same divisor, the remainder is 49. The divisor is:

SSC CHSL 08/08/2023 (3rd Shift) (a) 56 (b) 57 (c) 49 (d) 65

Q.20. In a division sum, the divisor is 11 times the quotient and 5 times the remainder. If the remainder is 44, then the dividend is: SSC CHSL 07/08/2023 (4th Shift) (a) 8888 (b) 4448 (c) 8444 (d) 4444

Q.21. What is the least value of x + y, if 10 digit number 780x533y24 is divisible by 88 ?

SSC CHSL 03/08/2023 (4th Shift) (a) 4 (b) 3 (c) 1 (d) 2

Q.22. Suhas mistakenly took as dividend a number which was 10% less than the original dividend. He also mistakenly took as divisor a number which was 20% less than the original divisor. If the correct quotient of the original question of division was 24 and the remainder was 0, then what quotient did Suhas obtain, assuming there was no error in his calculations?

SSC CGL 19/07/2023 (1st shift) (a) 27 (b) 21.6 (c) 26.4 (d) 30

Q.23. During a division, Pranjal mistakenly took as the dividend a number that was 10% more than the original dividend. He also mistakenly took as the divisor a number that was 25% more than the original divisor. If the correct quotient of the original division problem was 25 and the remainder was 0, what was the quotient that Pranjal obtained, assuming his calculations had no error ?

(a) 21.75 (b) 21.25 (c) 28.75 (d) 22

Q.24. The six-digit number 7x1yyx is a multiple of 33 for non-zero digits x and y. Which of the following could be a possible value of (x + y)? Matriculation Level 30/06/2023 (Shift - 4) (a) 5 (b) 4 (c) 2 (d) 3

Q.25. A girl wants to plant trees in her garden in rows in such a way that the number of trees in each row to be the

same. There are 10 rows and the number of trees in each row is 12, what is the number of trees in each row, if there are 5 more rows ? SSC MTS 17/05/2023 (Evening) (a) 10 (b) 8 (c) 6 (d) 12

Q.26. What is the total number of factors of the number 720 except 1 and the number itself? SSC CHSL 10/03/2023 (4th Shift) (a) 29 (b) 27 (c) 32 (d) 28

Q.27. Which of the following is the smallest among $(14)^{\frac{1}{3}}$, $(12)^{\frac{1}{2}}$, $(16)^{\frac{1}{6}}$ &

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(25)^{\frac{1}{12}}?
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SSC CHSL 10/03/2023 (3rd Shift) (a) (14)^{$\frac{1}{3}$} (b) (25)^{$\frac{1}{12}$} (c) (16)^{$\frac{1}{6}$} (d) (12)^{$\frac{1}{2}$}

Q.28. How many terms of the series - 9, -6, - 3,must be taken so that the sum of all the terms is 45 ? SSC CHSL 10/03/2023 (1st Shift) (a) 11 (b) 8 (c) 10 (d) 9

Q.29. Which of the following statements is correct ? I.The Value of $100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + \dots + 22^2 - 21^2$ is 4840. II. The value of $(K^2 + \frac{1}{K^2})(K - \frac{1}{K})(K^4 - \frac{1}{K^4})(K + \frac{1}{K})(K^4 - \frac{1}{K^4})$ is $K^{16} - \frac{1}{K^{16}}$ SSC CGL 13/12/2022 (3rd Shift)

(a) Neither I nor II (b) Both I and II (c) Only II (d) Only I

Q.30. If the seven-digit number 52A6B7C is divisible by 33, and A, B, C are primes, then the maximum value of 2A + 3B+C is: SSC CGL 12/12/2022 (3rd Shift) (a) 32 (b) 23 (c) 27 (d) 34

Q.31. In a test (+ 5) marks are given for every correct answer and (-2) marks are given for every incorrect answer. Jay answered all the questions and scored (-12) marks, though he got 4 correct answers. How many of his answers were INCORRECT?

SSC CPO 11/11/2022 (Evening) (a) 8 (b) 32 (c) 16 (d) 20

Q.32. The number 150328 is divisible by 23. If the digits are rearranged in descending order and five times of 13 is subtracted from the new number thus formed, then the resultant number will be divisible by:

SSC CPO 10/11/2022 (Morning) (a) 3 (b) 5 (c) 11 (d) 2

Q.33. What is the sum of all the common terms between the given series S1 and

Nmber System

S2 ? S1 = 2, 9, 16,, 632 S2 = 7, 11, 15,, 743 SSC CGL Tier II (08/08/2022) (a) 6974 (b) 6750 (c) 7140 (d) 6860

Q.34. Let p, q, r and s be positive natural numbers having three exact factors including 1 and the number itself If q > p and both are two-digit numbers, and r > s and both are one-digit numbers, then the

value of the expression $\frac{p-q-1}{r-s}$ is: SSC CGL Tier II (03/02/2022) (a) - s - 1 (b) s - 1 (c) 1 - s (d) s + 1

Q.35. Three fractions x, y and z are such that x > y > z. When the smallest of them is divided by the greatest, the result is

 $\frac{9}{16}$ which exceeds y by 0.0625. If x + y +

 $z = 2\frac{3}{12}$, then what is the value of x + z ? SSC CGL Tier II (29/01/2022)

(a)
$$\frac{5}{4}$$
 (b) $\frac{1}{4}$ (c) $\frac{7}{4}$ (d) $\frac{3}{4}$

Q.36. How many numbers between 400 and 700 are divisible by 5, 6 and 7 ? SSC CPO 24/11/2020 (Evening) (a) 2 (b) 5 (c) 10 (d) 20

Q.37. Find the number of prime factors in the product $(30)^5 \times (24)^5$. SSC CGL Tier II (18/11/2020) (a) 45 (b) 35 (c) 10 (d) 30

Q.38. Let ab, a \neq b, is a 2-digit prime number such that ba is also a prime number. The sum of all such number is: SSC CGL Tier II (16/11/2020) (a) 374 (b) 418 (c) 407 (d) 396

Q.39. Given that $2^{20} + 1$ is completely divisible by a whole number. Which of the following is completely divisible by the same number ?

SSC CHSL 16/10/2020 (Afternoon) (a) 2^{15} + 1 (b) 5×2^{30} (c) 2^{90} + 1 (d) 2^{60} + 1

Q.40. Which of the following numbers will completely divide 7⁸¹ + 7⁸² + 7⁸³ ? SSC CHSL 17/03/2020 (Morning) (a) 399 (b) 389 (c) 387 (d) 397

Q.41. When a positive integer is divided by d, the remainder is 15. When ten times of the same number is divided by d, the remainder is 6. The least possible value of d is:

SSC CGL 05/03/2020 (Afternoon) (a) 9 (b) 12 (c) 16 (d) 18

Q.42. When 200 is divided by a positive integer x, the remainder is 8. How many values of x are there?

SSC CGL 03/03/2020 (Afternoon) (a) 7 (b) 5 (c) 8 (d) 6 **Q.43.** How many natural numbers less

than 1000 are divisible by 5 or 7 but NOT by 35 ? SSC CPO 11/12/2019 (Morning) (a) 285 (b) 313 (c) 341 (d) 243

Q.44. If r is the remainder when each of 4749, 5601 and 7092 is divided by the greatest possible number d (>1), then the value of (d + r) will be: SSC CPO 11/12/2019 (Morning) (a) 276 (b) 271 (c) 298 (d) 282

Q.45. Let x be the least 4-digit number which when divided by 2, 3, 4, 5, 6 and 7 leaves a remainder of 1 in each case. If x lies between 2800 and 3000, then what is the sum of digits of x ? SSC CPO 09/12/2019 (Evening) (a) 15 (b) 16 (c) 12 (d) 13

Q.46. If the six digit number 479xyz is exactly divisible by 7, 11 and 13 , then {(y + z) $\div x$ } is equal to :

SSC CPO 09/12/2019 (Morning)

(a) $\frac{11}{9}$ (b) 4 (c) $\frac{13}{7}$ (d) $\frac{7}{13}$

Q.47. Which among the following is the smallest ?

SSC CPO 09/12/19 (Morning) (a) √401 - √399 (b) √101 - √99 (c) √301 - √299 (d) √201 - √199

Q.48. Two positive numbers differ by 2001. When the larger number is divided by the smaller number, the quotient is 9 and the remainder is 41. The sum of the digits of the larger number is : SSC CGL Tier II (13/09/2019) (a) 15 (b) 11 (c) 10 (d) 14

Q.49. When a two - digit number is multiplied by the sum of its digits, the product is 424. When the number obtained by interchanging its digits is multiplied by the sum of the digits, the result is 280. The sum of the digits of the given number is :

SSC CGL Tier II (12/09/2019) (a) 6 (b) 9 (c) 8 (d) 7

Q.50. Let x be the least number which when divided by 15,18,20 and 27, the remainder in each case is 10 and x is a multiple of 31. What least number should be added to x to make it a perfect square ? SSC CGL Tier II (12/09/2019)

(a) 39 (b) 37 (c) 43 (d) 36

Q.51. When 12, 16, 18, 20 and 25 divide the least number x, the remainder in each case is 4 but x is divisible by 7. What is the digit at the thousands' place in x?

Day: 1st - 5th

SSC CGL Tier II (11/09/2019)(a) 5 (b) 8 (c) 4 (d) 3 **Q.52.** Let x = $(633)^{24} - (277)^{38} + (266)^{54}$ What is the unit digit of x ? SSC CGL Tier II (11/09/2019)(a) 7 (b) 6 (c) 4 (d) 8

Q.53. The sum of the digits of a two-digit number is $\frac{1}{7}$ of the number. The unit digit is 4 less than the tens digit. If the number obtained on reversing its digit is divided by 7, the remainder will be : SSC CGL Tier II (11/09/2019) (a) 4 (b) 5 (c) 1 (d) 6

Q.54. When 6892, 7105 and 7531 are divided by the greatest number x, then the remainder in each case is y. What is the value of (x - y)? SSC MTS 22/08/2019 (Afternoon) (a) 123 (b) 137 (c) 147 (d) 113

Q.55. Let x be the greatest number which when divides 6475, 4984 and 4132, the remainder in each case is the same. What is the sum of digits of x ? SSC MTS 22/08/2019 (Morning) (a) 4 (b) 7 (c) 5 (d) 6

Q.56. A gardener planted 1936 saplings in a garden such that there were as many rows of saplings as the columns. The number of rows planted is : SSC CPO 16/03/2019 (Afternoon) (a) 46 (b) 44 (c) 48 (d)42

Q.57. What is the difference between the largest and smallest numbers of the four digits created using numbers 2, 9, 6, 5? (Each number can be used only once) SSC CPO 14/03/2019 (Evening) (a) 6993 (b) 7056 (c) 6606 (d) 7083

Q.58. The square root of which of the following is a rational number ? SSC CPO 12/03/2019 (Morning) (a) 1250.49 (b) 6250.49 (c) 1354.24 (d) 5768.28

Practice Questions

SSC CHSL 2024 Tier - 2

Q.59. A number 37 is divided into two parts such that 5 times one part and 11 times the other is together equal to 227. Find the value of 9 times the smaller number.

SSC CHSL Tier II (18/11/2024) (a) 60 (b) 61 (c) 62 (d) 63

SSC MTS 2024 Tier - 1

Nmber System

Q.60. The number of heads on the farm, as determined by the farmer, was 60. When he counted, he discovered there were 150 legs. If all that was present were pigeons or horses, and every horse on the property had four legs while every pigeon had two, how many horses were there on the property ?

SSC MTS 07/10/2024 (Afternoon) (a) 14 (b) 12 (c) 15 (d) 10

Q.61. A length of a violin string varies inversely with respect to the frequency of its vibrations. The frequency of a 14-inch-long violin string is 450 cycles per second. Find the frequency of a 12-inch violin string.

SSC MTS 17/10/2024 (Evening)

(a) 515 cycles per second

(b) 525 cycles per second

(c) 520 cycles per second

(d) 510 cycles per second

Q.62. b is the sum of two quantities, one of which varies inversely as the square of a^2 , and the other of which varies directly as a. Identify the relationship between a and b if b = 49 when a = 3 or 5. SSC MTS 21/10/2024 (Morning) (a) a = 3b (b) a = 3b² - 7/a (c) b = 8a + 225/a² (d) b = 2a

Q.63. If p is directly proportional to q and is p = 7 when q = 6, then what is the value of p when q = 21? SSC MTS 21/10/2024 (Evening) (a) 24.0 (b) 24.5 (c) 23.5 (d) 25.0

Q.64. If P (P > 0) is the least possible number that must be subtracted from 7, 9, and 12 so that the resulting numbers are in continued proportion, then find the value of $P^2 + 1$.

SSC MTS 29/10/2024 (Evening) (a) 10 (b) 12 (c) 3 (d) 8

SSC CGL 2024 Tier - 1

Q.65. Which of the following can be the value of 'k' so that the number 217924k is divisible by 6? SSC CGL 09/09/2024 (1st Shift) (a) 4 (b) 6 (c) 2 (d) 0

Q.66. Without doing the actual division, find the remainder when 28735429 is divided by 9.

SSC CGL 09/09/2024 (2nd Shift) (a) 4 (b) 2 (c) 8 (d) 9

Q.67. If 7845K854 is divisible by 11, then what is the value of K? SSC CGL 09/09/2024 (3rd Shift) (a) 6 (b) 9 (c) 7 (d) 8 **Q.68.** Which of the following is the largest 5-digit number divisible by 47 ? SSC CGL 10/09/2024 (1st Shift) (a) 99999 (b) 98888 (c) 99969 (d) 10000

Q.69. Akshay purchased pens and notebooks from a shop for a total sum of ₹180. From the following data, what is the value of 'X'?

Items	Price per unit (in ₹)	Quantity		
Pens	10	Х		
Notebooks	20	6		
SSC CGL 10/09/2024 (2nd Shift)				
(a) 4 (b)	6 (c) 5 (d) 7			

Q.70. If (77⁷⁷ + 77) is divided by 78, then the remainder will be: SSC CGL 10/09/2024 (2nd Shift) (a) 76 (b) 77 (c) 78 (d) 1

Q.71. Which digits should come in the place of * and #, respectively, if the 7-digit number 62684*# is divisible by both 8 and 5 ?

SSC CGL 10/09/2024 (3rd Shift)

(a) 2 and 0 (b) 4 and 0 (c) 5 and 0 (d) 0 and 5

Q.72. Find the smallest number to be added to 999, so that 99 divides the sum exactly.

SSC CGL 11/09/2024 (1st Shift) (a) 99 (b) 0 (c) 90 (d) 9

Q.73. In a division problem, the divisor is 4 times the quotient and 2 times the remainder. If the remainder is 32, then find the dividend. SSC CGL 11/09/2024 (1st Shift) (a) 1056 (b) 1650 (c) 3240 (d) 1065

Q.74. Which of the following numbers is divisible by both 2 and 5 ? SSC CGL 11/09/2024 (2nd Shift) (a) 63840 (b) 20792 (c) 37915 (d) 37254

Q.75. Find the quotient, when the mean proportional of $7\frac{1}{5}$ and 245 is divided by an even prime number SSC CGL 11/09/2024 (2nd Shift) (a) 49 (b) 42 (c) 21 (d) 36

Q.76. Naman bought a few apples for ₹720 from a shop. He negotiated the price and the shopkeeper reduced it by ₹2 per apple. Due to this Naman could buy four more apples than what he had bought earlier. How many apples did he originally buy?

SSC CGL 11/09/2024 (3rd Shift) (a) 48 (b) 44 (c) 36 (d) 40

Q.77. Replace * by the smallest digit so that 723*56* is divisible by 6 SSC CGL 11/09/2024 (3rd Shift) (a) 4 (b) 3 (c) 2 (d) 1 Day: 1st - 5th

Q.78. In a garden, there are 6 daisy plants the first year. Each year, a gardener adds 3 new daisy plants. He has 26 jasmine plants the first year and loses 2 each year. When will the number of daisy plants equal to the number of jasmine plants after the first year? SSC CGL 12/09/2024 (2nd Shift) (a) 5 years (b) 4 years (c) 2 years (d) 6 years

Q.79. Which of the following numbers is divisible by 2, 5, 10 and 11? SSC CGL 12/09/2024 (3rd Shift) (a) 203467 (b) 830942 (c) 589270 (d) 1234560

Q.80. Find the smallest value that must be assigned to number 'a' in order for 91876a2 to be divisible by 8. SSC CGL 12/09/2024 (3rd Shift) (a) 3 (b) 0 (c) 1 (d) 2

Q.81. If 321y72 is a multiple of 6, where y is a digit, what is the least value of y? SSC CGL 13/09/2024 (1st Shift) (a) 3 (b) 0 (c) 7 (d) 2

Q.82. At a cafe, Rama bought drinks for her 7 friends at ₹240. Some of them wanted coffee, while others wanted black tea. A regular cup of coffee cost ₹40 and a regular cup of black tea cost ₹ 30. How many cups of black tea did she purchase? SSC CGL 13/09/2024 (1st Shift) (a) 5 (b) 4 (c) 3 (d) 6

Q.83. Find the remainder: (17¹³ – 21) ÷ 18 SSC CGL 13/09/2024 (3rd Shift) (a) 15 (b) 17 (c) 14 (d) 21

Q.84. Find the least value of x for which 57x716 is divisible by 9. SSC CGL 17/09/2024 (2nd Shift) (a) 1 (b) 9 (c) 0 (d) 8

Q.85. If P is a digit such that 6954P is divisible by 11, then P equals: SSC CGL 17/09/2024 (3rd Shift) (a) 2 (b) 8 (c) 6 (d) 7

Q.86. When $f(m) = m^5 + 5m^4 - 3m + 7$ is divided by (m - 2), then the remainder is

SSC CGL 17/09/2024 (3rd Shift) (a) 7 (b) 5 (c) 0 (d) 113

Q.87. A number r when divided by 8 leaves remainder 3. What will be the remainder when $(r^2 + 6r + 7)$ is divided by 8? SSC CGL 18/09/2024 (1st Shift) (a) 2 (b) 3 (c) 1 (d) 4

Q.88. Find the remainder, if 19^{200} is divided by 20.

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SSC CGL 18/09/2024 (2nd Shift) (a) 2 (b) -1 (c) 1 (d) 3

Q.89. Which of the following fractions is the largest ?

$$\frac{2}{3}, \frac{6}{53}, \frac{79}{90}, \frac{33}{44}$$

SSC CGL 18/09/2024 (2nd Shift)

(a) $\frac{2}{3}$ (b) $\frac{33}{44}$ (c) $\frac{6}{53}$ (d) $\frac{79}{90}$

Q.90. If the 9-digit number 5x79856y6 is divisible by 36, then what is the negative value of $\sqrt{(2x + y)}$ for the largest possible value of y, given x and y are natural numbers?

SSC CGL 18/09/2024 (3rd Shift) (a) -7 (b) -2 (c) -4 (d) -5

Q.91. Anna and Ben each have a collection of marbles. If Anna gives one marble to Ben, they will both have an equal number of marbles. Conversely, if Ben gives one marble to Anna, she will end up with three times the number of marbles that Ben has. What is the total number of marbles they both have? SSC CGL 18/09/2024 (3rd Shift) (a) 10 (b) 8 (c) 11 (d) 9

Q.92. What number should be subtracted from $x^3 - 4x^2 - 8x + 11$ to make the number divisible by (x + 2)? SSC CGL 19/09/2024 (1st Shift) (a) 9 (b) 5 (c) 3 (d) 7

Q.93. Each of Ravi and Kavita had some marbles. Kavita had 12 more marbles than Ravi had. If each of them had one more marble, then three times the number of marbles Kavita would then have had would have been equal to four times the number of marbles Ravi would then have had. How many marbles did Kavita actually have ? SSC CGL 19/09/2024 (1st Shift)

(a) 43 (b) 47 (c) 51 (d) 48

Q.94. From the given numbers A, B, C and D, which number is NOT divisible by 11?

Q.95. Which of the following numbers is NOT divisible by 8 ? SSC CGL 19/09/2024 (3rd Shift) (a) 7344 (b) 5544 (c) 7497 (d) 4608

Q.96. For what least value of n, $2^{2n} + 2n$ is completely divided by 6, where n is an integer? SSC CGL 23/09/2024 (1st Shift) (a) 3 (b) 1 (c) 0 (d) 2 **Q.97.** The least number which must be subtracted from 7278745 so as to obtain a sum divisible by 11 is: SSC CGL 23/09/2024 (2nd Shift) (a) 3 (b) 1 (c) 5 (d) 2

Q.98. Ten chairs and six tables together cost ₹5,140; three chairs and two tables together cost ₹1,635. The cost of 1 chair and 1 table is: SSC CGL 23/09/2024 (2nd Shift) (a) ₹900 (b) ₹600 (c) ₹800 (d) ₹700

Q.99. The number 4,29,714 is divisible by: SSC CGL 23/09/2024 (3rd Shift)

(a) 3 and 5 (b) 6 and 5 (c) 4 and 6 (d) 3 and 6

Q.100. Find the greatest value of 'k' in a 6-digit number 6745k2 such that the number is divisible by 3.
SSC CGL 24/09/2024 (1st Shift)
(a) 8 (b) 6 (c) 9 (d) 7

Q.101. On dividing a number by 55, we get 28 as the remainder. On dividing the same number by 11, what is the remainder? SSC CGL 24/09/2024 (2nd Shift) (a) 5 (b) 8 (c) 7 (d) 6

Q.102. The ratio of two numbers is 2 : 5 and their difference is 210. The smaller number is ______. SSC CGL 24/09/2024 (3rd Shift) (a) 60 (b) 150 (c) 140 (d) 350

Q.103. If 436P5 is divisible by 3, then the largest value of P is: SSC CGL 24/09/2024 (3rd Shift) (a) 12 (b) 6 (c) 8 (d) 9

Q.104. Which composite number can divide the sum of the first 12 natural numbers? SSC CGL 24/09/2024 (3rd Shift) (a) 6 (b) 12 (c) 4 (d) 8

Q.105. If m is even, then (8^m - 1) is divisible by: SSC CGL 25/09/2024 (2nd Shift) (a) 63 (b) 42 (c) 65 (d) 8

Q.106. Which of the following numbers is divisible by 6? SSC CGL 25/09/2024 (3rd Shift) (a) 128530 (b) 12581 (c) 438750 (d) 62233

Q.107. A number whose fifth part increased by 5 is equal to its third part decreased by 7. Find half of the number. SSC CGL 26/09/2024 (1st Shift) (a) 45 (b) 150 (c) 80 (d) 60

Q.108. The sum of two consecutive even

is 174. Find the smaller

number. SSC CGL 26/09/2024 (2nd Shift) (a) 84 (b) 90 (c) 86 (d) 88

numbers

Q.109. $7^{15} + 7^{16} + 7^{17}$ is divisible by which of the following given numbers? SSC CGL 26/09/2024 (3rd Shift) (a) 3 (b) 5 (c) 2 (d) 4

SSC CHSL 2024 Tier - 1

Q.110. Find the number when successively divided by 3, 5 and 7 leaves remainder 2, 1 and 3, respectively, and the last quotient is 3. SSC CHSL 01/07/2024 (2nd Shift) (a) 367 (b) 365 (c) 362 (d) 360

Q.111. How many numbers lie between 2000 and 2020 that are divisible by 8 ? SSC CHSL 02/07/2024 (1st Shift) (a) 4 (b) 3 (c) 2 (d) 5

Q.112. On dividing a certain number by 304, we get 43 as the remainder. If the same number is divided by 16, what will be the remainder? SSC CHSL 02/07/2024 (2nd Shift) (a) 8 (b) 11 (c) 15 (d) 12

Q.113. The sum of the five consecutive even numbers is 2720. The sum of the third and fifth numbers is : SSC CHSL 02/07/2024 (2nd Shift) (a) 1392 (b) 1192 (c) 1092 (d) 1292

Q.114. What is the number of digits required for numbering a book with 428 pages ? SSC CHSL 02/07/2024 (4th Shift) (a) 1500 (b) 2000 (c) 988 (d) 1176

Q.115. An 8 digit number is divisible by 99. If the digits are shuffled, then the number is always divisible by _____. SSC CHSL 03/07/2024 (1st Shift) (a) 9 (b) 11 (c) 6 (d) 5

Q.116. When a number is divided by 512 it leaves a remainder 67. If the same number is divided by 32, then what will be the remainder? SSC CHSL 03/07/2024 (1st Shift) (a) 5 (b) 0 (c) 4 (d) 3

Q.117. Find the remainder when 179 × 172 × 173 is divided by 17. SSC CHSL 03/07/2024 (2nd Shift) (a) 2 (b) 9 (c) 3 (d) 6

Q.118. A seven-digit number 489y5z6 is divisible by 72. Which of the options gives the highest possible product of y and z ?

SSC CHSL 03/07/2024 (3rd Shift) (a) 3 (b) 42 (c) 30 (d) 21 **Q.119.** When the integer n is divided by 18, the quotient is x and the remainder is 6, When the integer n is divided by 25, the quotient is y and the remainder is 15. Which of the following is true? SSC CHSL 03/07/2024 (4th Shift) (a) 18x - 25y = 9 (b) 18x + 25y = 9(c) 25y - 18x = 9 (d) 25y + 18x = 9

Q.120. Which of the following numbers is divisible by 22 ? SSC CHSL 04/07/2024 (1st Shift)

JOG GI IOL 04/07/2024 (13t Onint)		
(a) 654320	(b) 893002	
(c) 602351	(d) 645372	

Q.121. The number nearest to 7658 and exactly divisible by 45 is : SSC CHSL 04/07/2024 (1st Shift) (a) 7645 (b) 7660 (c) 7640 (d) 7650

Q.122. The sum of two-digit number and the number obtained by interchanging the digit is 77. If the difference of digits is 1, then the number is: SSC CHSL 05/07/2024 (2nd Shift) (a) 67 (b) 34 (c) 12 (d) 45

Q.123. Write the smallest digit in the blank space of a number 7_7624, so that the number formed is divisible by 3. SSC CHSL 05/07/2024 (2nd Shift) (a) 2 (b) 1 (c) 3 (d) 0

Q.124. K being any odd number greater than 1, k^{33} –k is always divisible by: SSC CHSL 05/07/2024 (4th Shift) (a) 5 (b) 13 (c) 24 (d) 15

Q.125. How many numbers between 10 and 65 are divisible by 2, 3 and 4 ? SSC CHSL 08/07/2024 (1st Shift) (a) 5 (b) 7 (c) 9 (d) 3

Q.126. A's marks in Mathematics are directly proportional to practice time. In 6 hours of practice, A gets 70 marks. What should be the practice time (approximately) to get 90 Marks ? SSC CHSL 08/07/2024 (1st Shift) (a) 7.7 hours (b) 7 hours (c) 8.3 hours (d) 8 hours

Q.127. A two - digit number is 12 more than five times the sum of its digits. The number formed by reversing the digits is 9 less than the original number. The number is:

SSC CHSL 08/07/2024 (2nd Shift) (a) 96 (b) 78 (c) 87 (d) 69

Q.128. When the integer n is divided by 5, the remainder is 3. What is the remainder if 6n is divided by 5? SSC CHSL 08/07/2024 (2nd Shift) (a) 0 (b) 2 (c) 3 (d) 1

Q.129. Identify a single-digit number

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other than 1, which may exactly divide the number $17^3 + 18^3 - 16^3 - 15^3$ SSC CHSL 08/07/2024 (2nd Shift) (a) 3 (b) 5 (c) 7 (d) 2 **Q.130.** A natural number n divides 732

and leaves 12 as a remainder. How many values of n are possible? SSC CHSL 09/07/2024 (1st Shift) (a) 20 (b) 16 (c) 18 (d) 22

Q.131. The age of a tree depends on the number of rings in the trunk. The value of a such tree is proportional to its age. If a tree with 40 rings and 50 years of age has a value of ₹50,000, then a tree with 30 rings is _____ years of age and its value is ₹_____. SSC CHSL 09/07/2024 (2nd Shift) (a) 37.5, 57500 (b) 37.5, 37500 (c) 57.5, 37500 (d) 57.5, 57500

Q.132. $(8^6 + 1)$ when divided by 7, would leave a remainder of: SSC CHSL 10/07/2024 (1st Shift) (a) 1 (b) 4 (c) 2 (d) 6

Q.133. The sum of the digits of a two-digit number is 9. If the digits are reversed, then the number is increased by 27. Find the number. SSC CHSL 10/07/2024 (1st Shift) (a) 63 (b) 36 (c) 54 (d) 45

Q.134. A number is divisible by 11 if and only if the difference of the sum of the digits in the even and odd positions in the number is: SSC CHSL 10/07/2024 (4th Shift)

(a) 0 or multiple of 11 (b) 11 (c) 0 (d) 1

Q.135. When 2^{256} is divided by 17, the remainder would be: SSC CHSL 10/07/2024 (4th Shift) (a) 2 (b) 0 (c) 1 (d) 5

Q.136. The sum of two numbers is 76. Three times the larger number is 46 more than four times the smaller one. Find the two numbers.

 SSC CHSL 11/07/2024 (1st Shift)

 (a) 44 and 32
 (b) 50 and 26

 (c) 40 and 36
 (d) 35 and 41

Q.137. If the number 6p5157q is divisible by 88, then $p \times q =$ _____ where p and q are single digit numbers. SSC CHSL 11/07/2024 (1st Shift) (a) 12 (b) 18 (c) 20 (d) 15

Q.138. On dividing a certain number by 459, we get 19 as remainder. What will be the remainder, when the same number is divided by 17?

SSC CHSL 11/07/2024 (2nd Shift) (a) 11 (b) 1 (c) 13 (d) 2 Q.139. The sum of the digits of a two-digit number is 9. The number obtained by interchanging its digits exceeds the given number by 45, then the original number is :
SSC CHSL 11/07/2024 (2nd Shift) (a) 18 (b) 36 (c) 27 (d) 54
Q.140. Divide 25 into two parts such

Q.140. Divide 25 into two parts such that 6 times of the larger part added to 4 times of the smaller part is equal to 130. Find the larger part.
SSC CHSL 11/07/2024 (2nd Shift) (a) 13 (b) 20 (c) 15 (d) 14
Q.141. The number 611611611611 is:

(A) divisible by both 6 and 11
(B) neither divisible by 6 nor by 11
(C) divisible by 6 only
(D) divisible by 11 only
SSC CHSL 11/07/2024 (4th Shift)
(a) (B) (b) (D) (c) (A) (d) (C)

SSC CPO 2024 Tier - 1

Q.142. Arrange the following ratios in ascending order. 3:4,3:5,2:11,7:2 SSC CPO 28/06/2024 (3rd Shift) (a) 3:5<2:11<3:4<7:2 (b) 7:2<3:4<3:5<2:11 (c) 2:11<3:5<3:4<7:2 (d) 3:4<3:5<2:11<7:2

Q.143. 18 students of a class took part in a quiz. If the number of girls is 8 more than the number of boys, find the product of the number of boys and girls. SSC CPO 29/06/2024 (2nd Shift) (a) 56 (b) 36 (c) 63 (d) 65

SSC Selection Post (Phase - XII)

 Q.144. Which of the following numbers is divisible by 11?

 Matriculation Level 20/06/2024 (Shift - 1)

 (a) 908781
 (b) 969331

 (c) 701611
 (d) 611571

Q.145. The number 10000 is exactly divisible by which of the following numbers ? Matriculation Level 20/06/2024 (Shift - 1)

(a) 18 (b) 17 (c) 25 (d) 14

Q.146. If the number 3727x4 is completely divisible by 8, then the smallest integer in place of *x* will be Matriculation Level 21/06/2024 (Shift - 1) (a) 6 (b) 8 (c) 2 (d) 0

Q.147. Which of the following is a condition of divisibility of a number by six?

Matriculation Level 21/06/2024 (Shift - 4) (a) Sum of digits is divisible by 6

(b) Last digit is 3 or 6

- (c) Sum of digits is divisible by 3 and last digit is even
- (d) Sum of digits is divisible by 3 and first digit is even

Q.148. The largest 4 - digit number that is exactly divisible by 88 is: Matriculation Level 21/06/2024 (Shift - 4) (a) 9848 (b) 9988 (c) 8888 (d) 9768

Q.149. Find the least value digit which is assigned to x so that the number 1972x471 is divisible by 9. Matriculation Level 24/06/2024 (Shift - 1)

(a) 3 (b) 5 (c) 4 (d) 2

Q.150. If a number is divisible by both 11 and 13, then it must be :
Matriculation Level 24/06/2024 (Shift - 4) (a) divisible by (11 × 13)
(b) divisible by 42
(c) divisible by (11 + 13)
(d) divisible by (13 - 11)

Q.151. If a 9-digit number 937X728Y6 is divisible by 72, then one of the possible values of X + Y is : Matriculation Level 24/06/2024 (Shift - 4)

(a) 12 (b) 8 (c) 9 (d) 5
Q.152. A number when divided by a divisor leaves a remainder of 24. When

twice the original number is divided by the same divisor, the remainder is 13. What is the value of the divisor ? Matriculation Level 25/06/2024 (Shift - 1)

(a) 35 (b) 37 (c) 25 (d) 30

Q.153. If $(5)^{55}$ is divisible by 4, then the remainder is :

Matriculation Level 25/06/2024 (Shift - 1) (a) 5 (b) 1 (c) 3 (d) 2

Q.154. How many numbers less than1,000 are multiples of both 7 and 11 ?Matriculation Level 26/06/2024 (Shift - 1)(a) 13(b) 11(c) 12(d) 10

Q.155. Which of the following numbers is divisible by 4.

(i) 6792	20598	(ii) 61870	03592
(iii) 618	703594	(iv) 6792	0590
Matricu	lation Leve	l 26/06/202	24 (Shift - 1)
(a) (i)	(b) (iii)	(c) (iv)	(d) (ii)

Q.156. In a division sum, the divisor is 13 times the quotient and 6 times the remainder. If the remainder is 39, then the dividend is:

Higher Secondary 20/06/2024 (Shift - 2) (a) 4,800 (b) 4,576 (c) 4,251 (d) 4,240

Q.157. Which of the following numbers is divisible by 36 ?

Higher Secondary 21/06/2024 (Shift - 2) (a) 1542 (b) 96272 (c) 55512 (d) 8840

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Q.158. The number 1254216 is divisible by which of the following numbers? Higher Secondary 21/06/2024 (Shift - 2) (a) 8 (b) 11 (c) 5 (d) 16
Q.159. Find the sum of $3 + 3^2 + 3^3 + \dots$
Higher Secondary 24/06/2024 (Shift - 2) (a) 9840 (b) 6561 (c) 6560 (d) 3280
Q.160. The number 2918245 is divisibleby which of the following numbers?Higher Secondary 25/06/2024 (Shift - 2)(a) 3(b) 9(c) 11(d) 12
Q.161. $6^{25} + 6^{26} + 6^{27} + 6^{28}$ is divisible by : Higher Secondary 25/06/2024 (Shift - 2) (a) 254 (b) 259 (c) 256 (d) 255
Q.162. If a car covers 90 km using 4 litres of petrol, how much distance (in km) will it cover using 32 litres of petrol? Higher Secondary 25/06/2024 (Shift - 4) (a) 720 (b) 710 (c) 680 (d) 650
Q.163. In a division sum, the divisor is 10 times the quotient and 5 times the remainder. If the remainder is 12, then what is the dividend? Higher Secondary 25/06/2024 (Shift - 4) (a) 368 (b) 372 (c) 386 (d) 352
Q.164. Which of the following numberswill completely divide $4^{12} + 4^{13} + 4^{14} + 4^{15}$ Higher Secondary 25/06/2024 (Shift - 4)(a) 17(b) 11(c) 3(d) 7
Q.165. Without actual division, find the remainder when 379843 is divided by 3.Higher Secondary 26/06/2024 (Shift - 2)(a) 4(b) 1(c) 3(d) 2
Q.166. If the six-digit number $15x1y2$ is divisible by 44, then the minimum value of $(x + y)$ is equal to: Higher Secondary 26/06/2024 (Shift - 2) (a) 5 (b) 6 (c) 8 (d) 7
Q.167. If a 9-digit number $389x6378y$ is divisible by 72, then the value of $6x + 7y$ is:
(a) 64 (b) 32 (c) 16 (d) 28
Q.168. Which of the following numbers is divisible by 9? Graduate Level 20/06/2024 (Shift - 3) (a) 553986 (b) 350846 (c) 941201 (d) 132490
Q.169. The five-digit number 725yz is divisible by 15. What is the maximum possible value of the product of y and z? Graduate Level 21/06/2024 (Shift - 3) (a) 45 (b) 30 (c) 35 (d) 40
0 170 If the 6 digit number 7002 * 1 is

0.170. If the 6 digit number 7002 * 4 is completely divisible by 8, then the

Day: 1st - 5th smallest integer in place of * will be: Graduate Level 24/06/2024 (Shift - 3) (a) 0 (b) 2 (c) 4 (d) 6 Q.171. If 72 * 72 is divisible by 9, the missing * digit will be: Graduate Level 24/06/2024 (Shift - 3) (a) 5 or 8 (b) 0 or 9 (c) 2 or 4 (d) 3 or 6 Q.172. The number 7918378 is divisible by: Graduate Level 25/06/2024 (Shift - 3) (a) 13 (b) 9 (c) 11 (d) 4 Q.173. What least number must be subtracted from 2001 to get a number exactly divisible by 17? Graduate Level 25/06/2024 (Shift - 3) (b) 13 (a) 12 (c) 11 (d) 14 **Q.174.** If * is a digit such that 7235 * is divisible by 11, then the value of * is: Graduate Level 26/06/2024 (Shift - 3) (a) 9 (b) 6 (c) 5 (d) 8 Q.175. The average of 25 integers is zero. What is the maximum possible number of positive integers? Graduate Level 26/06/2024 (Shift - 4) (a) 12 (b) 20 (c) 13 (d) 24 Q.176. Find the largest number which should replace P in the 7- digit number 87893P4 to make the number divisible by 4. Graduate Level 26/06/2024 (Shift - 4) (b) 9 (c) 2 (d) 0 (a) 8 Q.177. Find the smallest non-zero value of k so that 7-digit number 48397k5 is divisible by 9 Graduate Level 26/06/2024 (Shift - 4) (a) 2 (b) 5 (c) 4 (d) 9

SSC CHSL 2023 Tier - 1

Q.178. What is the least number that must be added to the greatest 6-digit number so that the sum will be exactly divisible by 294? SSC CHSL 07/08/2023 (2nd Shift) (a) 234 (b) 194 (c) 269 (d) 189

Q.179. Which of the following sets is such that all its elements are divisors of the number 2520? SSC CHSL 08/08/2023 (1st Shift) (a) 12, 49, 18 (b) 8, 9, 7 (d) 21, 10, 25 (c) 16, 15, 14

Q.180. What will be the greatest number 32a78b, which is divisible by 3 but NOT divisible by 9 ? (Where a and b are single digit numbers). SSC CHSL 09/08/2023 (2nd Shift) (b) 329787 (a) 324781 (c) 326787 (d) 329784

Q.182. The six-digit number N = 4a6b9c is divisible by 99, then the maximum sum of the digits of N is: SSC CHSL 17/08/2023 (1st Shift) (a) 18 (b) 36 (c) 45 (d) 27

SSC CGL 2023 Tier - 1

Q.183. What will be the remainder when (265)⁴⁰⁸¹ + 9 is divided by 266 ? SSC CGL 14/07/2023 (1st shift) (a) 8 (b) 6 (c) 1 (d) 9

Q.184. A and B have some toffees. If A gives one toffee to B, then they have an equal number of toffees. If B gives one toffee to A, then the toffees with A are double with B. The total number of toffees with A and B are SSC CGL 14/07/2023 (3rd shift) (a) 12 (b) 10 (c) 14 (d) 15

Q.185. Find the smallest number that can be subtracted from 148109326 so that it becomes divisible by 8. SSC CGL 17/07/2023 (1st shift) (a) 4 (b) 8 (c) 6 (d) 10

Q.186. The largest 5-digit number exactly divisible by 88 is: SSC CGL 17/07/2023 (2nd shift) (a) 99990 (b) 99984 (c) 99978 (d) 99968

Q.187. A six - digit number is divisible by 33. If 54 is added to the number, then the new number formed will also be divisible by :

SSC CGL 17/07/2023 (4th shift) (a) 3 (b) 2 (c) 5 (d) 7

Q.188. The cost of 32 pens and 12 pencils is ₹790. What is the total cost (in ₹) of 8 pens and 3 pencils together? SSC CGL 18/07/2023 (2nd shift) (a) 200.5 (b) 197.5 (c) 180.5 (d) 220.5

Q.189. The sum of the two numbers is 98. The difference between the two numbers is 28, Find one of the two numbers. SSC CGL 19/07/2023 (3rd shift)

(a) 32 (b) 62 (c) 58 (d) 35

Q.190. What is the sum of the divisors of 484 that are perfect squares? SSC CGL 20/07/2023 (1st shift) (a) 125 (b) 35 (c) 610 (d) 13

Q.191. The square of 72 is equal to the product of 216 and a number. Find the number. SSC CGL 20/07/2023 (3rd shift) (a) 35 (b) 18 (c) 24 (d) 48

Q.192. Find the remainder when $8^8 + 6$ is divided by 7. SSC CGL 25/07/2023 (1st shift) (a) 0 (b) 2 (c) 3 (d) 1

Q.193. A four-digits number abba is divisible by 4 and a < b. How many such numbers are there? SSC CGL 26/07/2023 (1st shift) (a) 10 (b) 8 (c) 12 (d) 6

Q.194. A 9 - digit number 846523X7Y is divisible by 9, and Y - X = 6. Find the value of $\sqrt{2X + 4Y}$. SSC CGL 26/07/2023 (2nd shift) (a) 4 (b) 2 (c) 6 (d) 8

Q.195. When a number is divided by 45, the remainder is 21. What will be the remainder when the number is divided by 15?

SSC CGL 26/07/2023 (3rd shift) (a) 6 (b) 5 (c) 3 (d) 0

Q.196. Which of the following is the smallest 5 - digits number that is exactly divisible by 526 ? SSC CGL 27/07/2023 (1st shift) (a) 10520 (b) 11046 (c) 10516 (d) 10426

Q.197. A 6 - digit number has digits as consecutive natural numbers. The number is always divisible by _____. SSC CGL 27/07/2023 (2nd shift) (a) 4 (b) 5 (c) 2 (d) 3

Q.198. How many of the following numbers are divisible by 3 but NOT by 9 ? 5826, 5964, 6039, 6336, 6489, 6564, 6867 and 6960 SSC CGL 27/07/2023 (3rd shift) (a) 5 (b) 3 (c) 4 (d) 6

SSC Selection Post (Phase - XI)

Q.199. Which of the following is a prime number ? Graduate Level 30/06/2023 (Shift - 1) (a) 161 (b) 171 (c) 193 (d) 177

Q.200. The sum of two numbers 10373 + 24871 is divisible by : Matriculation Level 27/06/2023 (Shift - 1) (a) 7 (b) 8 (c) 6 (d) 13

Q.201. What is the remainder when 4⁹⁹⁹ is divided by 7 ? Matriculation Level 27/06/2023 (Shift - 2) (a) 2 (b) 4 (c) 1 (d) 3 **Q.202.** Which of the following numbers is divisible by 120 ? Matriculation Level 28/06/2023 (Shift - 4) (a) 170280 (b) 140240 (c) 156200 (d) 170360

SSC CHSL 2022 Tier - 2

Q.203. How many whole numbers lie between 11² and 12² ? SSC CHSL Tier II (26/06/2023) (a) 23 (b) 24 (c) 21 (d) 22

Q.204. A number is divisible by 3 only when:

SSC CHSL Tier II (26/06/2023)

- (a) the difference of the sum of the odd and the even digits is divisible by 3
- (b) the sum of its digits is divisible by 3 (c) the last digit is either 0 or an even
- number (d) the last two digits are divisible by 3

SSC MTS 2022 Tier - 1

Q.205. What is the smallest three - digit number which when divided by 2, 3 and 4 leaves remainder 1 in each case ? SSC MTS 19/05/2023 (Evening) (a) 111 (b) 105 (c) 101 (d) 109

Q.206. Which is the smallest three-digit number which when increased by 5 becomes divisible by both 2 and 3 ? SSC MTS 13/06/2023 (Morning) (a) 102 (b) 105 (c) 103 (d) 108

SSC CHSL 2022 Tier - 1

Q.207. What is the value of the expression 1 - 2 + 3 - 4 + 5 - 6 to 100 terms ? SSC CHSL 09/03/2023 (2nd Shift) (a) - 50 (b) - 55 (c) - 49 (d) - 60

Q.208. What is the sum of the first 200 terms of the given series? 1 + 5 + 6 + 10 + 11 + 15 + 16 + 20 +...... SSC CHSL 10/03/2023 (1st Shift) (a) 49400 (b) 49600 (c) 50100 (d) 48300

Q.209. How many prime numbers are there between 20 and 50? SSC CHSL 10/03/2023 (2nd Shift) (a) 8 (b) 5 (c) 6 (d) 7

Q.210. The sum of three consecutive even numbers is 126. What is the product of the smallest and the largest numbers ? SSC CHSL 10/03/2023 (3rd Shift) (a) 1840 (b) 1950 (c) 1760 (d) 1620

Q.211. What is the sum of all three digit numbers which are divisible by 15?

rs is SSC CHSL 13/03/2023 (2nd Shift) (a) 32850 (b) 36825 (c) 41200 (d) 28750

Q.212. If the sum of three consecutive composite numbers is 36. then what is the product of the three numbers? SSC CHSL 14/03/2023 (3rd Shift) (a) 1460 (b) 1750 (c) 1680 (d) 1820

Q.213. What are the last three digit of the multiplication 654321 × 123456 ? SSC CHSL 14/03/2023 (4th Shift) (a) 376 (b) 344 (c) 324 (d) 352

Q.214. What is the sum of all two digit even numbers? SSC CHSL 15/03/2023 (1st Shift) (a) 2520 (b) 2470 (c) 2430 (d) 2410

Q.215. XY7B is a 4 digit number divisible by 4. What is the largest value of B ? SSC CHSL 15/03/2023 (3rd Shift) (a) 6 (b) 2 (c) 8 (d) 0

Q.216. How many numbers are there from 17 to 457 which are divisible by both 5 and 3 ? SSC CHSL 16/03/2023 (2nd Shift) (a) 29 (b) 35 (c) 30 (d) 33

Q.217. The product of two consecutive prime numbers is 7387. What is the difference between the two numbers ? SSC CHSL 16/03/2023 (2nd Shift) (a) 3 (b) 6 (c) 2 (d) 4

Q.218. How many numbers are there between 201 and 401 which are divisible by 5 but not by 4 ? SSC CHSL 16/03/2023 (4th Shift) (a) 30 (b) 20 (c) 40 (d) 45

Q.219. What is the sum of all two digit odd numbers ? SSC CHSL 17/03/2023 (1st Shift) (a) 2375 (b) 2475 (c) 2325 (d) 2425

Q.220. If the sum of a number and its reciprocal is 4, find the sum of their squares, SSC CHSL 17/03/2023 (2nd Shift)

(a) 12 (b) 16 (c) 14 (d) 18

Q.221. What is the value of $98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + \dots 12^2 - 11^2$ SSC CHSL 17/03/2023 (4th Shift) (a) 4725 (b) 4796 (c) 4851 (d) 4926

Q.222. If the sum of squares of two real numbers is 12 and the product of the numbers is 4, find the difference between the numbers.

SSC CHSL 20/03/2023 (3rd Shift) (a) 4 (b) 8 (c) 1 (d) 2

Q.223. Which of the following is largest among $(125)^{\frac{1}{6}}$, $(11)^{\frac{1}{3}}$, $(12)^{\frac{1}{6}}$, $(5)^{\frac{1}{4}}$?

SSC CHSL 21/03/2023 (3rd Shift) (a) $(12)^{\frac{1}{6}}$ (b) $(11)^{\frac{1}{3}}$ (c) $(125)^{\frac{1}{6}}$ (d) $(5)^{\frac{1}{4}}$ **Q.224.** Which of the following statements is true? I. $\frac{5}{11} > \frac{5}{6}$ II. $\frac{5}{9} > \frac{8}{9}$ III. $\frac{5}{6} > \frac{4}{5}$ SSC CHSL 21/03/2023 (4th Shift) (a) Only III (b) Both I and II (c) Only II (d) Only I

SSC CGL 2022 Tier - 2

Q.225. The number 5769116 is divisible by which of the following numbers? SSC CGL Tier II (02/03/2023) (a) 4 (b) 5 (c) 12 (d) 8

SSC CGL 2022 Tier - 1

Q.226. What will be the remainder when 27²⁷ + 27 is divided by 28 ? SSC CGL 01/12/2022 (3rd Shift) (a) 28 (b) 27 (c) 25 (d) 26

Q.227. In a class of students, the first student has 2 toffees, second has 4 toffees, third has 6 toffees and so on. If the number of students in the class is 25, then the total number of toffees are divisible by______. SSC CGL 02/12/2022 (2nd Shift) (a) 5 and 7 (b) 5 and 13 (c) 11 and 13 (d) 7 and 11

Q.228. The difference of two numbers is 1564. After dividing the larger number by the smaller, we get 6 as quotient and 19 as remainder. What is the smaller number?

SSC CGL 02/12/2022 (3rd Shift) (a) 456 (b) 287 (c) 623 (d) 309

Q.229. The nearest number which is greater to 87501, and is completely divisible by 765 is : SSC CGL 03/12/2022 (1st Shift) (a) 88975 (b) 87975 (c) 87966 (d) 87775

Q.230. Which of the following pairs of non-zero values of p and q make 6 - digit number 674pq0 divisible by both 3 and 11?

SSC CGL 05/12/2022 (1st Shift) (a) p = 2 and q = 2 (b) p = 5 and q = 4 (c) p = 4 and q = 2 (d) p = 5 and q = 2

Q.231. The largest five-digit number which when divided by 7, 9 and 11, leaves the same remainder as 3 in each case, is:

SSC CGL 05/12/2022 (2nd Shift) (a) 95840 (b) 98685 (c) 96720 (d) 99795

Q.232. Find the greatest number that will

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divide 49, 147 and 322 to leave the same remainder in each case. SSC CGL 06/12/2022 (1st Shift) (a) 9 (b) 5 (c) 7 (d) 8 **Q.233.** If a number K = $42 \times 25 \times 54 \times 135$ is divisible by 3^a , then find the

maximum value of a. SSC CGL 07/12/2022 (1st Shift) (a) 6 (b) 7 (c) 4 (d) 5

Q.234. 9435 is added to 7593, then 2607 is subtracted from the sum. The result is divisible by: SSC CGL 07/12/2022 (3rd Shift)

(a) 4 (b) 10 (c) 3 (d) 5 Q.235. 7 is added to a certain number

and the sum is multiplied by 5. The product is then divided by 3 and 4 is subtracted from the quotient. If the result comes to 16, then what is the original number? SSC CGL 08/12/2022 (3rd Shift)

(a) 3 (b) 1 (c) 5 (d) 4

Q.236. If 7 - digit number 678p37q is divisible by 75 and p is not a composite, then the values of p and q are: SSC CGL 08/12/2022 (4th Shift) (a) p = 5, q = 5 (b) p = 3, q = 0(c) p = 3, q = 5 (d) p = 2, q = 5

Q.237. Any six - digit number that is formed by repeating a three-digit number, is always divisible by:

SSC CGL 12/12/2022 (2nd Shift) (a) 111 (b) 1001 (c) 19 (d) 101

Q.238. Choose the option in which the numbers are in correct ascending order. SSC CGL 13/12/2022 (2nd Shift)

(a)
$$\frac{4}{5}$$
, $\frac{2}{3}$, $\frac{1}{11}$ and $\frac{2}{9}$
(b) $\frac{1}{11}$, $\frac{2}{9}$, $\frac{2}{3}$ and $\frac{4}{5}$
(c) $\frac{2}{9}$, $\frac{1}{11}$, $\frac{4}{5}$ and $\frac{2}{3}$
(d) $\frac{2}{3}$, $\frac{4}{5}$, $\frac{1}{11}$ and $\frac{2}{9}$

Q.239. The sum of two numbers is 680.If the bigger number is decreased by 15%and the smaller number is increased by15%, then the resultant numbers areequal. Find the smaller number.SSC CGL 13/12/2022 (2nd Shift)(a) 307(b) 289(c) 291(d) 304

Q.240. A four-digit pin, say abcd, of a lock has different non-zero digits. The digits satisfy b = 2a, c = 2b, d = 2c. The pin is divisible by ______. SSC CGL 13/12/2022 (2nd Shift) (a) 2, 3, 5 (b) 2, 3, 7 (c) 2, 3, 13 (d) 2, 3, 11

SSC CPO 2022 Tier - 1

Q.241. A number, when divided by 15 and 18 every time, leaves 3 as a remainder, the least possible number is: SSC CPO 09/11/2022 (Morning) (a) 83 (b) 103 (c) 39 (d) 93

Q.242. Find the sum of the numbers between 550 and 700 such that when they are divided by 12, 16 and 24, leave remainder 5 in each case. SSC CPO 09/11/2022 (Evening) (a) 1980 (b) 1887 (c) 1860 (d) 1867

Q.243. If the 9 - digit number 72x8431y4 is divisible by 36, what is the value of

 $\left(\frac{x}{y} - \frac{y}{x}\right)$ for the smallest possible value of y, given that x and y are natural numbers?

SSC CPO 09/11/2022 (Evening)

(a)
$$1\frac{5}{7}$$
 (b) $2\frac{1}{10}$ (c) $1\frac{2}{5}$ (d) $2\frac{9}{10}$

Q.244. What are the values of R and M, respectively, if the given number is perfectly divisible by 16 and 11 ? 34R05030M6

SSC CPO 10/1	1/2022 (Morning)
(a) 4 and 6	(b) 7 and 5
(c) 5 and 5	(d) 5 and 7

Q.245. If the number 476 ** 0 is divisible by both 3 and 11, then in the hundredth and tenth places, the non-zero digits are, respectively:

SSC CPO 10/1	1/2022 (Evening)
(a) 2 and 3	(b) 3 and 2
(c) 5 and 8	(d) 8 and 5

Q.246. Ramu had to select a list of numbers between 1 and 1000 (including both), which are divisible by both 2 and 7. How many such numbers are there? SSC CPO 11/11/2022 (Morning) (a) 142 (b) 71 (c) 97 (d) 642

Q.247. The sum of the odd divisors of 216 is:

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SSC CPO 11/11/2022 (Morning)
(a) 16 (b) 14 (c) 40 (d) 600
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Q.248. A six - digit number is divisible by 198. If the digits are rearranged, even then the number will be divisible by: SSC CPO 11/11/2022 (Afternoon) (a) 3 (b) 6 (c) 2 (d) 66

Q.249. A six-digit number 763254 is divisible by 18. If we subtract five times of 41 from the number, then the new number which is formed will be divisible by: SSC CPO 11/11/2022 (Afternoon) (a) 2 (b) 7 (c) 5 (d) 3 **Q.250.** Two positive numbers differ by 3951. When the larger number is divided by the smaller number, the quotient is 12 and the remainder is 13. The sum of the digits of the larger number is: SSC CPO 11/11/2022 (Evening) (a) 12 (b) 16 (c) 18 (d) 14

SSC CGL 2021 Tier - 2

Q.251. If $\sqrt[3]{N}$ lies between 6 and 7, where N is an integer then how many values N can take? SSC CGL Tier II (08/08/2022) (a) 126 (b) 127 (c) 128 (d) 125

Q.252. If the digits of a two digit number is reversed, then the number is decreased by 36. Which of the following is correct regarding the number? I. The difference of the digits is 4. II. The value of number can be 84. III. Number is always a composite number. SSC CGL Tier II (08/08/2022) (a) I, II and III (b) II and III

(c) I and III (d) I and II

Q.253. x, y and z are distinct prime numbers where x < y < z. If x + y + z = 70, then what is the value of z? SSC CGL Tier II (08/08/2022) (a) 29 (b) 43 (c) 31 (d) 37

Q.254. How many numbers are there from 400 to 700 in which the digit 6 occur exactly twice ? SSC CGL Tier II (08/08/2022) (a) 19 (b) 18 (c) 21 (d) 20

Q.255. What is the sum of the first 20 terms of the following series ? $1 \times 2 + 2 \times 3 + 3 \times 4 + 4 \times 5$ SSC CGL Tier II (08/08/2022) (a) 3160 (b) 2940 (c) 3240 (d) 3080

Q.256. What is the value of $\frac{7}{2} + \frac{11}{3} + \frac{7}{6}$ + $\frac{11}{15} + \frac{7}{12} + \frac{11}{35} + \dots + \frac{7}{156} + \frac{11}{575}$? SSC CGL Tier II (08/08/2022) (a) $\frac{3917}{355}$ (b) $\frac{3816}{325}$ (c) $\frac{3714}{345}$ (d) $\frac{3216}{315}$

SSC Selection Post (Phase - X)

Q.257. Which of the following is not a pair of co-prime numbers? Graduate Level 01/08/2022 (Shift - 4) (a) 22, 24 (b) 1, 4 (c) 3,7 (d) 21, 22

Q.258. The sum of three prime numbers is 90. If one of them exceeds another by 30, then one of the numbers is: Graduate Level 05/08/2022 (Shift - 3)

(a) 41 (b) 67 (c) 47 (d) 59 Q.259. If 608xy0 is divisible by both 3 and 11, the nonzero digit in the hundred's place and ten's places, respectively, are: Higher Secondary 02/08/2022 (Shift - 2) (a) 5 and 6 (b) 5 and 8 (c) 8 and 5 (d) 6 and 5

Q.260. If the 5-digit number 743pq, is divisible by 90, then $\frac{q}{p}$ = ? Higher Secondary 05/08/2022 (Shift - 2)

(a) 0 (b) 5 (c) 10 (d) 1

SSC MTS 2021 Tier - 1

Q.261. Ishita can read a newspaper in 'n' minutes. What part of the newspaper can she read in 7 minutes? (n > 7) SSC MTS 12/07/2022 (Morning)

(a) $\frac{n}{7}$ (b) $7n^2$ (c) 7n (d) $\frac{7}{n}$

Q.262. How many multiples of 7 are there between 100 and 200 ? SSC MTS 22/07/2022 (Evening) (a) 14 (b) 15 (c) 12 (d) 16

SSC CHSL 2021 Tier - 1

Q.263. On dividing 8675123 by a certain number, the quotient is 33611 and the remainder is 3485. The divisor is _____. SSC CHSL 25/05/2022 (Afternoon) (a) 538 (b) 258 (c) 248 (d) 356

Q.264. The difference between a number and the square root of the number is 2. The number is: SSC CHSL 26/05/2022 (Afternoon)

(a) 1 (b) 2 (c) 3 (d) 4

Q.265. Which of the following can be a rationalizing factor of $(\sqrt{2} + \sqrt{3} + \sqrt{5})$? SSC CHSL 27/05/2022 (Afternoon) (a) $(\sqrt{2} - \sqrt{3} - \sqrt{5}) \sqrt{6}$ (b) $(\sqrt{2} + \sqrt{3} - \sqrt{5}) \sqrt{6}$ (c) $(\sqrt{2} - \sqrt{3} + \sqrt{5}) \sqrt{6}$ (d) $(\sqrt{2} + \sqrt{3} + \sqrt{5}) \sqrt{6}$

Q.266. When $f(x) = 15x^3 - 14x^2 - 4x + 10$ is divided by (3x + 2), then the remainder is: SSC CHSL 27/05/2022 (Afternoon) (a) - 1 (b) 1 (c) - 2 (d) 2

Q.267. If a positive integer N is divided by 7, the remainder is 3. Which of the following numbers yields a remainder of 0 when it is divided by 7 ? SSC CHSL 27/05/2022 (Evening) (a) N + 5 (b) N + 2 (c) N + 4 (d) N + 3 **Q.268.** The sum of the first 78 natural numbers from 1 to 78 is divisible by SSC CHSL 01/06/2022 (Evening)

(a) 79 (b) 61 (c) 29 (d) 30

Q.269. A number x is three times another number y. If the sum of both the numbers is 20, then x and y, respectively, are:

SSC CHSL 10/06/2022 (Evening)			
(a) 8 and 12	(b) 15 and 5		
(c) 5 and 15	(d) 2 and 18		

SSC CGL 2021 Tier - 1

Q.270. How many numbers are there from 500 to 650 (including both) which are neither divisible by 3 nor by 7 ? SSC CGL 11/04/2022 (Afternoon) (a) 21 (b) 121 (c) 87 (d) 99

Q.271. If each of the two numbers 5^{16} and 5^{25} are divided by 6, the remainder are R_1 and R_2 , respectively. What is the

value of
$$\frac{R_1 + R_2}{R_2}$$
?

SSC CGL 19/04/2022 (Morning)

(a) $\frac{1}{6}$ (b) $\frac{5}{6}$ (c) $\frac{1}{5}$ (d) $\frac{6}{5}$

SSC CGL 2020 Tier - 2

Q.272. If the sum of two positive numbers is 65 and the square root of their product is 26, then the sum of their reciprocals is:

(a)
$$\frac{3}{52}$$
 (b) $\frac{1}{52}$ (c) $\frac{5}{52}$ (d) $\frac{7}{52}$

Q.273. Let $x = (433)^{24} - (377)^{38} + (166)^{54}$. What is the unit digit of x ? SSC CGL Tier II (29/01/2022) (a) 9 (b) 6 (c) 8 (d) 7

Q.274. The sum of the digits of the least number which when divided by 36, 72, 80 and 88 leaves the remainders 16, 52, 60 and 68, respectively, is: SSC CGL Tier II (03/02/2022) (a) 17 (b) 11 (c) 14 (d) 16

Q.275. Let p, q, r and s be positive natural numbers having three exact factors including 1 and the number itself If q > p and both are two-digit numbers, and r > s and both are one-digit numbers, then the

value of the expression $\frac{p-q-1}{r-s}$ is:

SSC CGL Tier II (03/02/2022) (a) - s - 1 (b) s - 1 (c) 1 - s (d) s + 1

Q.276. The sum of three fractions A, B

and C, A > B > C , is $\frac{121}{60}$. When C is
divided by B, the resulting fraction is $\frac{9}{10}$,
which exceeds A by $\frac{3}{20}$. What is the
difference between B and C ?
SSC CGL Tier II (03/02/2022)
(a) $\frac{1}{15}$ (b) $\frac{1}{10}$ (c) $\frac{3}{10}$ (d) $\frac{7}{15}$

SSC MTS 2020 Tier - 1

Q.277. Let x be the largest 4-digit number which is divisible by each of 16, 21, 24 and 28. The sum of the digits of x is:

SSC MTS 05/10/2021 (Evening) (a) 19 (b) 21 (c) 24 (d) 16

Q.278. Let x be the least number which on being divided by 8, 12, 15, 24, 25 and 40 leaves a remainder of 7 in each case. What will be the remainder when x is divided by 29?

SSC MTS 06/10/2021 (Afternoon) (a) 18 (b) 27 (c) 19 (d) 20

Q.279. Let x be the least number between 56,000 and 60,000 which when divided by 40, 45, 50 and 55 leaves a remainder of 23 in each case. What is the sum of the digits of x ? SSC MTS 08/10/2021 (Afternoon) (a) 23 (b) 21 (c) 26 (d) 19

Q.280. The difference between a positive number and its reciprocal increases by a factor of $\frac{175}{144}$ when the number is made to increase by 20%. What is the number? SSC MTS 12/10/2021 (Afternoon) (a) 7.5 (b) 6 (c) 2.5 (d) 5

Q.281. Let x be the greatest number by which when 448, 678 and 908 are divided, the remainder in each case is 11. When 147 is divided by x, the remainder is: SSC MTS 14/10/2021 (Afternoon)

(a) 4 (b) 5 (c) 9 (d) 3

SSC CGL 2020 Tier - 1

Q.282. The average of squares of five consecutive odd natural numbers is 233. What is the average of the largest number and the smallest number? SSC CGL 20/08/2021 (Morning) (a) 11 (b) 17 (c) 13 (d) 15

Day:	1st -	5th	
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Q.283. When (2²⁴ - 1) is divided by 7, the

(c) 4

Q.284. When a positive integer n is divided by 12, the remainder is 5. What

will be the remainder if $8n^2 + 7$ is

(c) 3

SSC CPO 2020 Tier - 1

Q.285. The remainder when 75 \times 73 \times

Q.286. What is the least number of

soldiers that can be drawn up in troops

of 10, 12, 15, 18 and 20 soldiers, and also

3.(d)

7.(c)

11.(d)

15.(a)

19.(d)

23.(d)

27.(b)

31.(c)

35.(c)

39.(d)

43.(a)

47.(a)

51.(b)

55.(d)

59.(d)

63.(b)

67.(b)

71.(b)

75.(c)

79.(c)

83.(c)

87.(a)

91.(b)

95.(c)

4.(a)

8.(a)

12.(c)

16.(d)

20.(d)

24.(a)

28.(c)

32.(b)

36.(a)

40.(a)

44.(a)

48.(d)

52.(d)

56.(b)

60.(c)

64.(a)

68.(c)

72.(c)

76.(c)

80.(a)

84.(a) 88.(c)

92.(c)

96.(b)

(d) 1

(d) 4

SSC CHSL 04/08/2021 (Evening)

SSC CHSL 06/08/2021 (Evening)

(b) 0

(b) 5

 78×76 is divided by 34 is:

in form of a perfect square?

Answer Kev :-

1.(c)

5.(d)

9.(d)

13.(d)

17.(a)

21.(d)

25.(b)

29.(d)

33.(a)

37.(b)

41.(c)

45.(b)

49.(c)

53.(d)

57.(d)

61.(b)

65.(c)

69.(b)

73.(a)

77.(c)

81.(b)

85.(a)

89.(d)

93.(b)

SSC CPO 24/11/2020 (Evening)

2.(c)

6.(b)

10.(a)

14.(b)

18.(d)

22.(a)

26.(d)

30.(b)

34.(a)

38.(b)

42.(c)

46.(b)

50.(a)

54.(b)

58.(c)

62.(c)

66.(a)

70.(a)

74.(a)

78.(b)

82.(b)

86.(d)

90.(d)

94.(b)

(a) 180 (b) 625 (c) 900 (d) 400

SSC CPO 23/11/2020 (Evening)

(a) 18 (b) 12 (c) 22 (d) 15

remainder is:

divided by 12?

(a) 2

(a) 2

SSC CHSL 2020 Tier - 1

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97.(b)	98.(d)	99.(d)	100.(c)
101.(d)	102.(c)	103.(d)	104.(a)
105.(a)	106.(c)	107.(a)	108.(c)
109.(a)	110.(b)	111.(c)	112.(b)
113.(c)	114.(d)	115.(a)	116.(d)
117.(c)	118.(b)	119.(a)	120.(b)
121.(d)	122.(b)	123.(b)	124.(c)
125.(a)	126.(a)	127.(c)	128.(c)
129.(d)	130.(a)	131.(b)	132.(c)
133.(b)	134.(a)	135.(c)	136.(b)
137.(b)	138.(d)	139.(c)	140.(c)
141.(b)	142.(c)	143.(d)	144.(b)
145.(c)	146.(d)	147.(c)	148.(d)
149.(b)	150.(a)	151.(a)	152.(a)
153.(b)	154.(c)	155.(d)	156.(c)
157.(c)	158.(a)	159.(a)	160.(c)
161.(b)	162.(a)	163.(b)	164.(a)
165.(b)	166.(d)	167.(a)	168.(a)
169.(d)	170.(b)	171.(b)	172.(a)
173.(a)	174.(d)	175.(d)	176.(a)
177.(d)	178.(d)	179.(b)	180.(d)
181.(a)	182.(d)	183.(a)	184.(a)
185.(c)	186.(d)	187.(a)	188.(b)
189.(d)	190.(c)	191.(c)	192.(a)
193.(b)	194.(c)	195.(a)	196.(a)
197.(d)	198.(c)	199.(c)	200.(c)
201.(c)	202.(a)	203.(d)	204.(b)
205.(d)	206.(c)	207.(a)	208.(c)
209.(d)	210.(c)	211.(a)	212.(c)
213.(a)	214.(c)	215.(a)	216.(a)
217.(b)	218.(a)	219.(b)	220.(c)
221.(b)	222.(d)	223.(c)	224.(a)
225.(a)	226.(d)	227.(b)	228.(d)
229.(b)	230.(d)	231.(d)	232.(c)
233.(b)	234.(c)	235.(c)	236.(c)
237.(b)	238.(b)	239.(b)	240.(c)
241.(d)	242.(b)	243.(b)	244.(c)
245.(d)	246.(b)	247.(c)	248.(a)
249.(b)	250.(b)	251.(a)	252.(d)
253.(d)	254.(d)	255.(d)	256.(b)
257.(a)	258.(d)	259.(c)	260.(a)
261.(d)	262.(a)	263.(b)	264.(d)
265.(b)	266.(d)	267.(c)	268.(a)
269.(b)	270.(c)	271.(d)	272.(c)
273.(c)	274.(d)	275.(a)	276.(a)
277.(c)	278.(b)	279.(a)	280.(d)

281.(c)	282.(d)	283.(b)	284.(c)
285.(b)	286.(c)		

Solutions :-

Sol.1.(c) 45yz0 For divisibility of 40 number must be divisible by 8 and 5 Divisibility of 5:- A number is divisible by 5 if its last digit is 0 or 5 Divisibility of 8 :- if the last three digits of the number are either all zeros or are divisible by 8: Maximum possible value of y and z be 8 and 8 respectively, So, the value of (y + z) = 8 + 8 = 16Sol.2.(c) Let number of chairs = x When one person is seated on each chair then Total number of men = $x + 1 \dots (i)$ When two person is seated on each chair then Total number of men = 2x - 2...(ii) From (i) and (ii) $x + 1 = 2x - 2 \Rightarrow x = 3$ Hence number of chairs = 3 Sol.3.(d) According to question 15 A + 12 O = 447 ... (i) For inconsistent and no possible solutions $\frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$ By checking options one by one we find that only option (d) satisfies the condition. In option (d) 35 A + 28 O = 1029 ... (ii) From (i) and (ii) $\frac{a1}{a2} = \frac{15}{35} = \frac{3}{7}$ $\frac{b1}{h^2} = \frac{12}{28} = \frac{3}{7}$ $\frac{c1}{c2} = \frac{447}{1029} = \frac{149}{343}$ hence, $\frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$ Sol.4.(a) Let the number of notes ₹20 and ₹10 be x and y respectively, According to the guestion, 20*x* + 10*y* = ₹ 390(i) 10x + 20y = ₹ 300(ii) Add eq. (i) and (ii) 30x + 30y = 690 $x + y = 23 \Rightarrow y = 23 - x$ Put the value of y in eq. (i) 20x + 230 - 10x = 390 $10x = 160 \Rightarrow x = 16$ Sol.5.(d) Let cost of 1 biscuit, 1

chocolate, 1 cup coffee be *x*, *y*, *z* respectively. According to question, Nmber System

Sol.9.(d) According to guestion,

Day: 1st - 5th $2x + y = 69 \dots$ (i) 2y + 3z = 127... (ii) 3x + 4y + 2z = 229... (iii) Adding (i) and (iii) 5x + 5y + 2z = 69 + 2295x + 5y + 2z = 298... (iv) now, Multiply eq . (i) by 2 and then subtracting eq. (ii) we get 4x - 3z = 138 - 127 $4x - 3z = 11 \dots (v)$ Multiply eq. (ii) by 2 and then subtracting eq. (iii) we get -3x + 4z = 254 - 229 $-3x + 4z = 25 \dots$ (vi) By solving eq. (v) and (vi) we get z = 19 From eq. (iv) adding 3z we get $5x + 5y + 5z = 298 + 19 \times 3$ = 298 + 57 = 355 Sol.6.(b) Let the weight of apples and oranges is 'a' and 'b' respectively. According to the question, 8a + 10b = 5.....(i) 12a + 20b = 9.....(ii) Multiply by 2 in e.q .(i) then subtract e.q . (ii) from (i) we get, 4a = 1 $a = \frac{1}{4}$ (put the value in e.q.(i) we get, $8 \times \frac{1}{4} + 10b = 5 \Rightarrow 10b = 3 \Rightarrow b = \frac{3}{10}$ Weight of 15 apples and 24 oranges $= 15 \times \frac{1}{4} + 24 \times \frac{3}{10} = 3.75 + 7.2$ = 10.95 kg (approx 11 kg) Sol.7.(c) Let winner = A, 1st runner up = B, 2nd runner up = C and nota = N According to question A = 2C, B = N + 900 and C = N + 900 - 150 Now, A + B + C = 6N2C + B + C = 6N3C + B = 6N3C + N + 900 = 6N 3(N + 900 - 150) + N + 900 = 6N 3N + 2250 + N + 900 = 6N $3150 = 2N \Rightarrow N = 1575$ Hence, B = N + 900 = 2475 $C = N + 900 - 150 = 2325 \Rightarrow A = 2C = 4650$ Total votes = A + B + C + N = 4650 + 2475 + 2325 + 1575 = 11025 **Sol.8.(a)** Factor of $14400 = 2^6 \times 3^2 \times 5^2$ $\Rightarrow 2^{6} \times 3^{2} \times 5^{2} = 18 \times (2^{5} \times 5^{2})$ Divisible by 18 then remaining factor = 6 × 3 = 18 $\Rightarrow 2^6 \times 3^2 \times 5^2 = 36 \times (2^4 \times 5^2)$ Divisible by 36 then remaining factor

Amount of Raju after 6 weeks = 11000 + 7 × 5000 = ₹ 46000 Now Amount of Ramesh after 6 weeks = ₹60000 - 7 × 2000 = ₹ 46000 Sol.10.(a) Divisibility of 11: The difference of the sum of digits at odd position and sum of digits at even position in a number is 0 or divisible by 11. Now, (3 + 2 + 3 + k) - (c + 9 + 3) = 0 \Rightarrow (8 + k) = (c + 12)(i) Divisibility of 5 : If the last digit of the number should be 0 or 5 then that number will be divisible by 5. Value of k = 5 (given we take only natural no.) Put value of k in equation (i), we get \Rightarrow (8 + 5) = (c + 12) \Rightarrow c = 13 - 12 = 1 So. c + k = 1 + 5 = 6Sol.11.(d) Let the numbers be a and b and the divisor be d. The remainders when a and b are divided by d are 6 and 7 respectively. Thus, $a = dq_1 + 6, b = dq_2 + 7$ For their sum $a + b = d(q_1 + q_2) + 13 \dots (i)$ When a + b is divided by d, the remainder is 5, a + b = dq + 5 ... (ii)Equating (i) and (ii) we get, $d(q_1 + q_2) + 13 = dq + 5$ $d(q_1 + q_2 - q) = -8$ Thus, d must divide 8. Testing values, we find that d = 8 satisfies the condition. Therefore, the divisor is 8 Sol.12.(c) 1738b9c is divisible by 12 (i.e. 4×3) Now, divisibility of 3 :- sum of digits of number be divisible by 3 1738b9c = 1 + 7 + 3 + 8 + b + 9 + c = 28 + b + cSo, possible values of (b + c)= 2, 5, 8, 11, 14 etc

Now, **Divisibility of 4** :- last two digit of number be divisible by $4 \Rightarrow$ number = 9c Possible values of c = 2 and 6 So, for least value of (c - b) We should take c = 6 and b = 5 {b + c = 5 + 6 = 11} Hence, required value of (c - b) = 6 - 5 = 1

Sol.13.(d)

 $7 \underbrace{\frac{369}{35}}_{19} \underbrace{52}_{r=2} 5 \underbrace{52}_{r=2} \underbrace{10}_{r=5} \\ 3 \underbrace{\frac{14}{r=5}}_{r=1} \underbrace{32 \underbrace{52}_{r=2}}_{r=1} \underbrace{32 \underbrace{52}_{r=2}}_{r=1} \underbrace{10}_{r=1} \underbrace{10}$

= 5 × 3 = 15

36 = 18 - 15 = 3

Required factor divisible by 18 but not by

Hence, sum of remainder = 5 + 2 + 1 + 1 = 9

Sol.14.(b) Divisibility rule of 3 :

For any no to be divisible by 3, the sum of its digits should be divisible by 3.

57 = 19 × 3

Given that , 468312 is divisible by (19×3) On arranging it in descending order , digits remain the same . so it will always be divisible by 3.

Sol.15.(a) If the number is divisible by 5 means the last digit is either 0 or 5. Let Q = 0Now we have to find the value of P. For divisibility by 3, the sum of the digits should be divisible by 3. $\Rightarrow P = 2, 5, 8$ But the numbers 3420, 3450 and 3480 are not divisible by 7. Now, take the value of Q = 5. For divisibility by 3, we get, P = 3, 6, 9But by checking for divisibility by 7, we get P = 6. Hence, P + Q = 6 + 5 = 11.

Sol.16.(d) Let six digit number = $33 \times x$ New number = $33 \times x + 21$ = $3\{(11 \times x) + 7\}$ We can say that new number is divisible

by 3

Sol.17.(a) 24 = 8 × 3

For 11p9q4 to be divisible by 8, its last 3 digits i.e. 9q4 should be divisible by 8 Then, the possible values of q are 4, 8. But for the greatest value, q should be 8. For 11p984 to be divisible by 3, the sum of its digits i.e. 1 + 1 + p + 9 + 8 + 4 = 23+ p should be divisible by 3. For greatest value, p should be 7 Hence, pq = 7 × 8 = 56

Sol.18.(d) Given :-
$$\frac{9+9^2+...+9^{(2n+1)}}{6}$$

 $\frac{9}{6}$ = Rem 3, $\frac{9^2}{6}$ = Rem 3, $\frac{9^{2n+1}}{6}$
= Rem 3
So, $\frac{3 \times (2n+1)}{6}$ = $\frac{6n+3}{6}$ = Rem 3

Sol.19.(d) Remainder when sum of these numbers are divided by same divisor = 57 + 57 = 114According to the question , $\frac{114}{divisor}$ = Rem.(49) Required divisor = (114) - 49 = 65 **Sol.20.(d)**

Divisor = 5 × Remainder = 5 × 44 = 220 Quotient = $\frac{220}{11}$ = 20 Dividend = 220 × 20 + 44 = 4444 Nuber System

Sol.21.(d) Co-prime factor of 88 = (8 and 11) Least value of y, when y24 divisible by 8 :- y = 0 Now, checking divisibility of 11 $\Rightarrow (7+0+5+3+2) - (8+x+3+0+4) = 0$ $\Rightarrow 17 - (15+x) = 0 \Rightarrow 2-x = 0 \Rightarrow x = 2$ Now, value of (x + y) = 2 + 0 = 2

Sol.22.(a) We know that:-Dividend = Divisor × Quotient + Remainder Ratio \rightarrow initial : final Dividend \rightarrow 10 : 9 Divisor \rightarrow 5 : 4

Initial quotient = 24 Initial number = 24 × 5 = 120 120 which is equal to $10x. \Rightarrow x = 12$ Final dividend (9x) = 108 Final quotient = $\frac{108}{4}$ = 27

Sol.23.(d)

Ratio :- initial : final Divisor :- 4 : 5 Dividend :- 10 : 11 Initial quotient = 25 Initial dividend (10 units) = 25 × 4 = 100 Then final dividend (11 units) = 110 Final quotient = $\frac{110}{5}$ = 22

Sol.24.(a) Divisibility of 33: the given number must be divisible by 11 and 3. **Divisibility of 11**: the difference between the sum of odd place digit and the sum of even place digit is either 0 or 11. **Divisibility of 3**: the sum of all digits of the given number must be divisible by 3. The given number = 7x1yyx(7 + 1 + y) - (x + y + x) = 0 or 11 $8 - 2x = 0 \Rightarrow x = 4$ Now, (7 + 4 + 1 + y + y + 4) = 16 + 2yPutting value of y = 116 + 2y = 18 [divisible by 3] So, required sum = 4 + 1 = 5

Sol.25.(b) According to the question, $10 \times 12 = (10 + 5) \times x$ Number of tree in each row(x) $= \frac{12 \times 10}{15} = 8$

Sol.26.(d) $720 = 2^4 \times 3^2 \times 5^1$ Total no of factors = $5 \times 3 \times 2 = 30$ Removing 1 and 720 = 30 - 2 = 28

Sol.27.(b) $(14)^{\frac{1}{3}} = (14)^{\frac{4}{12}}, (12)^{\frac{1}{2}}$ = $(12)^{\frac{6}{12}}, (16)^{\frac{1}{6}} = (16)^{\frac{2}{12}} \& (25)^{\frac{1}{12}}$ = $(25)^{\frac{1}{12}}$

Therefore, $(25)^{\frac{1}{12}}$ is smallest fraction

Sol.28.(c)

series = - 9, - 6, - 3, ...(series is in the A.P.) So, a = -9, d = 3 Sum of n number $S_n = \frac{n}{2} [2a + (n-1)d]$ $\Rightarrow 45 = \frac{n}{2} [-18 + (n - 1)3]$ $\Rightarrow 3n^2 - 21n - 90 = 0 \Rightarrow n = 10 \text{ and } -3$ (no of terms never be -ve) Therefore, no. of terms in the given series = 10 term Sol.29.(d) $I.(100^2 - 99^2) + (98^2 - 97^2) + (96^2 - 95^2)$ $+ (94^{2} - 93^{2}) \dots + 22^{2} - 21^{2} = 4840$ =(100+99)(100-99)+(98-97)(98+97) + (96 - 95)(96 + 95)+ (22 -(21)(22 + 21)= (100 + 99 + 98 + 97 + 96 + 9521) $=\frac{1}{2} \times 80 \times (21 + 100) = 40 \times 121 = 4840$ So, LHS = RHS **II.** $(k^{2} + \frac{1}{v^{2}})(K - \frac{1}{K})(K^{4} + \frac{1}{v^{4}})(K + \frac{1}{K})$ $(K^4 - \frac{1}{\kappa^4}) = K^{16} - \frac{1}{\kappa^{16}}$ Taking L H S

$$= (k^{2} + \frac{1}{K^{2}})(k^{2} - \frac{1}{K^{2}})(K^{4} + \frac{1}{K^{4}})(K^{4} - \frac{1}{K^{4}})$$
$$= (K^{4} - \frac{1}{K^{4}})(K^{4} + \frac{1}{K^{4}})(K^{4} - \frac{1}{K^{4}})$$
$$= (K^{8} - \frac{1}{K^{8}})(K^{4} - \frac{1}{K^{4}})$$

So, LHS \neq RHS Clearly, we can see that only statement 1 is correct .

Sol.30.(b) $33 = 11 \times 3$ For 52A6B7C to be divisible by 11, the difference of the sum of its alternate digits i.e.(5 + A + B + C) - (2 + 6 + 7)

= A + B + C - 10, should be divisible by 11. For this, we have: A + B + C - 10 = 0/11... \Rightarrow A + B + C = 10

As we know, the sum of three odd no's are always odd. It suggests that there should be 1 even prime no i.e.2. So, we get A, B, C

as 2, 3, 5

For 52A6B7C to be divisible by 3, the sum of its digits i.e. 5+2+A+6+B+7+C=20+A+B+C, should be divisible by 3. Now, putting A+B+C=10, we get : 20 + 10 = 30, divisible by 3. For maximum value of 2A+3B+C; A=3, B=5, and C=2So, $2A+3B+C=2\times3+3\times5+2$ = 6+15+2=23

Sol.31.(c) Jay answered 4 correct answers and + 5 marks are given for every correct answer that means he scored 20 marks for his correct answer But Jay scored - 12 marks that means he loses his 20 marks of correct answers also.

Total marks deducted due to incorrect answers = 20 + 12 = 32

For every incorrect answer 2 marks are deducted.

So, no of incorrect answers = $\frac{32}{2}$ = 16

Sol.32.(b) After arranging the digits in descending order and subtracting 65 from the new no, we get :

853210 → 853210 - 65 = 853145, which is divisible by 5 (:last digit is 5)

Sol.33.(a)

$$\begin{split} & S_1 = 2, 9, 16, \textbf{23}, 30, 37, 44, \textbf{51}, \dots, 632 \\ & S_2 = 7, 11, 15, 19, \textbf{23}, 27, 31, 35, 39, 43, \\ & 47, \textbf{51}, \\ & \text{Common terms between given series} \\ & = 23, 51, \dots, \\ & \text{Common difference}(d) = 51 - 23 = 28 \\ & \text{ATQ}, \\ & 23 + (n - 1)28 \leq 632 \\ & (n - 1)28 \leq 609 \Rightarrow n - 1 \leq 21.75 \\ & n \leq 22.75 \Rightarrow so, n = 22 \\ & \text{Now, S} = \frac{22}{2} [2 \times 23 + (22 - 1)28] \\ & \text{S} = 11[46 + 21 \times 28] \\ & \text{S} = 11 [46 + 588] = 11 \times 634 = 6974 \end{split}$$

Sol.34.(a)

As prime numbers have 2 factors Only the squares of prime numbers will have three factors. \Rightarrow Let r = 9 and s = 4 And q = 49 and p = 25 $\frac{p-q-1}{r-s} = \frac{25-49-1}{9-4} = \frac{-25}{5} = -5$ Putting s = 4 in all options we find only option (a) satisfies this value.

Sol.35.(c) $0.0625 = \frac{1}{16}$, So , y = $\frac{9}{16} - \frac{1}{16} = \frac{8}{16} = \frac{1}{2}$ Again, x + y + z = $2\frac{3}{12} = \frac{27}{12}$ x + z = $\frac{27}{12} - \frac{1}{2} = \frac{27 - 6}{12} = \frac{7}{4}$

Sol.36.(a) LCM of 5, 6 and 7 = 210 Numbers divisible by 210 between 400 and 700 = 420, 630 So, there are 2 such numbers.

Sol.37.(b) $(30)^5 \times (24)^5$ = $(2 \times 3 \times 5)^5 \times (2^3 \times 3)^5$ = $2^{20} \times 3^{10} \times 5^5$ Number of prime factors = (20 + 10 + 5)Number of prime factors = 35

Sol.38.(b) HINT : ab and ba both can be prime only and only when both are odd number

79, 97 Sum = 13 + 31 + 17 + 71 + 37 + 73 + 79 + 97 = 418

Sol.39.(d) The whole number which divides $2^{20} + 1$ also divides the multiple of $2^{20} + 1 \Rightarrow 2^{60} + 1 = (2^{20} + 1)(2^{40} + 1 - 2^{20})$ Using formula : $a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$ $2^{60} + 1$ is the multiple of $2^{20} + 1$ so, $2^{60} + 1$ is completely divisible by that whole number.

Sol.40.(a)

 $7^{81} + 7^{82} + 7^{83} = 7^{81} \times (1 + 7 + 7^2) = 7^{81} \times (1 + 7 + 49) = 7^{81} \times (57) = 7^{80} \times (7 \times 57) = 7^{80} \times (399)$ Option (a) follows.

Sol.41.(c) Let N be the number which gives Q as quotient and 15 as remainder when divided by d. Thus, d > 15N = d × Q + 15 10N = 10(d × Q) + 144 + 6 clearly d is a multiple of 144 which are: 2, 3, 4, 6, 8, 9, 12, 16, 18, 24 and so on. The least possible value of d is 16. (d > 15)

Sol.42.(c) When 200 is divided by x, the remainder is 8. So, the number exactly divisible by x is 192. Factors of 192 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 64, 96, 192 The remainder is always less than the divisor, so x > 8 \Rightarrow Desired values are 12, 16, 24, 32, 48, 64, 96, 192. **Sol.43.(a)** Total no's less than 1000 which is divisible by 5 = $\frac{1000}{5}$ - 1 = 200 - 1 = 199

Total no's less than 1000 which is divisible by $7 = \frac{1000}{7} = 142$ Total no's less than 1000 which is divisible by $35 = \frac{1000}{35} = 28$ Required no = 199 + 142 - (2 × 28) = 285

Sol.44.(a) Difference :-

4749 5601 7092 852 1491 639

As per question, the greatest possible number is taken that divides the three numbers 4749, 5601 and 7092 giving same remainder i.e. r Now, 5601 - 4749 = 852 7092 - 5601 = 1491 Nmber System

There is no common factor between 852 and 1491 Then again we will take their difference that comes out to be 639 639 can be further break down into 213 that divides 852, 4 times And 1491, 7 times 'd' is 213 22

And 'r' = 63As per question,

$$(d + r) = 213 + 63 = 276$$

Sol.45.(b)

Now, the LCM of 2, 3, 4, 5, 6 and 7 = 420

On Subtracting , 420 - 280 = 140Now, Adding 140 to 2800 2800 + 140 = 2940 As per question, 1 is the remainder that we get in each case but 2940 is completely divisible by 2, 3, 4, 5, 6 and 7 Therefore, the number = 2940 + 1 = 2941

Now, the sum of the digits is 16.

Sol.46.(b) Now, we know that the number that is divisible by 7, 11 and 13 is 1001 if 1001 is multiplied with a three digit number say, 'abc' then the product comes out to be abcabc $\Rightarrow x = 4$, y = 7, z = 9Putting these values in the equation $\{(y + z) \div x\}$ $= \{(7 + 9) \div 4\} = 16 \div 4 = 4$

Sol.47.(a) As per the options the difference between all the two values of the given four options is '2'

Thus, in such cases : if there is the same difference between the numbers then, The greatest value with the square root of the given options fetches the smallest value. So $\sqrt{401} - \sqrt{399}$ will give the smallest value.

Sol.48.(d) Let the numbers be x and y. According to the question $x - y = 2001 \dots (1)$ And $9y + 41 = x \dots (2)$ Put the value of x in eq (1) $9y + 41 - y = 2001 \Rightarrow 8y = 1960$ $y = 245 \Rightarrow x = 9(245) + 41 = 2246$ Required sum = 2 + 2 + 4 + 6 = 14**Sol.49.(c)** Let the number = 10x + yAccording to the question $(10x + y)(x + y) = 424 \dots (1)$

Pinnacle (10y + x)(x + y) = 280(2) Divide equation (1) by (2) $\Rightarrow \frac{(10x+y)}{(10y+x)} = \frac{424}{280} \Rightarrow \frac{(10x+y)}{(10y+x)} = \frac{53}{35}$ \Rightarrow 350x + 35y = 530y + 53x $\Rightarrow 297x = 495y \Rightarrow \frac{x}{y} = \frac{5}{3}$ Put this value in any of the equations $(10x + y)(x + y) = [\{10(5) + 3\}(5 + 3)] = 424$ Or $(10y + x)(x + y) = [\{10(3) + 5\}(5 + 3)] = 280$ Clearly 5 and 3 are the desired values and the sum of the digits = 5+3 = 8Sol.50.(a) 15 = 3 × 5 18 = 2 × 3 × 3 ;20 = 2 × 2 × 5 $27 = 3 \times 3 \times 3$ LCM of 15, 18, 20 and 27 $= 2 \times 2 \times 3 \times 3 \times 3 \times 5 = 540$ $\Rightarrow x must be = 540k + 10$ Where 540k + 10 is multiple of 31 The condition gets satisfied when k = 4 Required number = 540(4) + 10 = 2170Nearest square to 2170 = 2209 Required number = 2209 - 2170 = 39 **Sol.51.(b)** 12 = 2 × 2 × 3 ;16 = 2 × 2 × 2 × 2 18 = 2 × 3 × 3; 20 = 2 × 2 × 5 $25 = 5 \times 5$ LCM of 12,16,18,20 and 25 = 2 × 2 × 2 × 2 $\times 3 \times 3 \times 5 \times 5 = 3600$ $\Rightarrow x must be = 3600k + 4$ Where 3600k + 4 is multiple of 7 The condition gets satisfied when k = 5 Required number = 3600(5) + 4 = 18004 \Rightarrow digit at the thousands' place in x = 8Sol.52.(d) Given, $x = (633)^{24} - (277)^{38} + (266)^{54}$ Unit digit of (633)²⁴ = 3⁴ = 1 Unit digit of $(277)^{38} = 7^2 = 9$ Unit digit of $(266)^{54} = 6^2 = 6$ Unit digit of x = 1 - 9 + 6 = - 2 But unit digit can't be negative so, required unit digit = 10 + (-2) = 8**Sol.53.(d)** Let the number = 10x + y According to the question $(x + y) = \frac{1}{7}(10x + y)$ (1) And y = x - 4Put this value in equation (1) $(x + x - 4) = \frac{1}{7}(10x + x - 4)$ 14x - 28 = 11x - 4x = 8 and y = 8 - 4 = 4the number obtained on reversing the digit = 10y + x = 10(4) + 8 = 48

Required remainder = $\frac{48}{7}$ = 6

Sol.54.(b) If the number 'a' and 'b' are divisible by a number 'n' then, a + b and a - b are also divisible by n. Here the numbers are 7531, 7105 and 6892

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the required number then becomes H.C.F of 7531 - y, 6892 - y and 7105 - y or the HCF of (7531 - y) - (7105 - y) and (7105 y) - (6892 - y) (7531 - y) - (7105 - y) = 426(7105 - y) - (6892 - y) = 213 $213 = 3 \times 71 \implies 426 = 2 \times 3 \times 71$ So, HCF of 426 and 213 $x = 3 \times 71 = 213$ The remainder = $\frac{7531}{213} = \frac{7105}{213} = \frac{6892}{213} = y = 76$ $\Rightarrow (x - y) = 213 - 76 = 137$ Sol.55.(d) x will be the HCF of the differences of the three numbers. 6475 - 4984 = 1491 4984 - 4132 = 852 6475 - 4132 = 2343

RHS = 8a + $\frac{225}{a^2}$ $= 8 \times 5 + \frac{225}{25} = 40 + 9 = 49$ Hence, LSH = RHS Sol.63.(b) According to question, \Rightarrow 6 unit = 21 HCF of 2343, 1491 and 852 = 3 × 71 = 213 \Rightarrow 7 unit = $\frac{21}{6}$ × 7 = 24.5

Sol.64.(a) If a, b and c are in continue proportion then it can be write as

 $\Rightarrow 14 = \frac{K}{450} \Rightarrow K = 6300$

 \Rightarrow F = $\frac{6300}{12}$ = 525 cycles per second

Sol.62.(c) In this type question solving by

On checking all options one by one, only

Now, $\Rightarrow 12 = \frac{6300}{F}$

the help of options,

option (c) satisfies.

 \Rightarrow b = 8a + $\frac{225}{a^2}$

LHS = b = 49

a:b::b:c $\Rightarrow b^2 = ac$ Let least possible number be P and subtracted from each other ⇒ $(9 - P)^2 = (7 - P) (12 - P) \Rightarrow P = 3$ ∴ P² + 1 = 9 + 1 = 10

> Sol.65.(c) A number is divisible by 6 if it is divisible by both 2 and 3: Divisibility of 2 : A number is divisible by 2 if it is an even number, Divisibility of 3 : A number is divisible by 3 if the sum of all digits of that number is divisible by 3. Now, 217924k \Rightarrow 2 + 1 + 7 + 9 + 2 + 4 + k = 25 + k The possible value of k can be 0, 2, 4, 6, 8 But the sum of number must be multiple of 3 so the value of k will be 2 Sol.66.(a) Divisibility of 9:- sum of digits of number either be 0 or divisible by 9. Given number = 28735429 2+8+7+3+5+4+2+9=40 For making given number divisible by 9 we get remainder 4 i.e. 36 + 4 = 40

> Sol.67.(b) Divisibility of 11:- difference of the sum of odd and even places digits be 0 or divisible by 11 Given number :- 7845K854 8 + 5 + 8 + 4 - (7 + 4 + K + 5) = 0 or divisible by 11 25 - (16 + K) = 0 or divisible by 11

So, sum of digit = 2 + 1 + 3 = 6

So.

 $1491 = 3 \times 7 \times 71$

852 = 2 × 2 × 3 × 71

 $2343 = 3 \times 11 \times 71$

Sol.56.(b) 44 1 44

	44
4	1 <u>936</u>
+ 4	-16
84	336
	-336
	0

Sol.57.(d) Difference between the largest and the smallest number 9652 - 2569 = 7083

Sol.58.(c) Since, $\sqrt{1354.24} = 36.8$

Sol.59.(d)

Let one part = x, Second part = 37 - x According to question, \Rightarrow 5x + 11 (37 - x) = 227 \Rightarrow 5x + 407 - 11x = 227 \Rightarrow - 6x = -180 \Rightarrow x = 30 : one part = 30, second part = 7 Hence, 9 times of smaller number = 9 × 7 = 63

Sol.60.(c) To solve this type of question, one is taken. Now, The total number of legs of all the horses

on the farm = $4 \times 60 = 240$ Given:- number of pigeon legs = 2 and number of horse leas = 4 According to question, (4 - 2) = 2 unit = 240 - 150 1 unit = $\frac{90}{2}$ = 45

Hence, number of horses in the farm = 60 - 45 = 15

Sol.61.(b) According to question,

9 - K = 0 or divisible by 11 K = 9

Sol.68.(c)

Largest 5-digit number = 99999 On dividing 99999 by 47, we get 30 as a remainder.

So, the required no which is divisible by 47 = 99999 - 30 = 99969

Sol.69.(b) According to the question, \Rightarrow 10x + 20 × 6 = 180 \Rightarrow 10x = 180 - 120 $\Rightarrow x = \frac{60}{10} = 6$

 $\frac{(77^{77}+77)}{79} = \frac{[(78-1)^{77}+77]}{78}$ $=\frac{78^{77}+(-1)^{77}}{78}+\frac{77}{78}$ Remainder = $\frac{77 - 1}{78}$ = 76

Sol.71.(b) Divisibility rule of 8: last three digits should be divisible by 8. Divisibility rule of 5: last digit is either 0 or 5. If last digit is 5: The 62684*5 is not divisible by 8. If last digit is 0: 62684*0 The value of * can be 0, 4, 8. By checking options, option (b) satisfied the given condition.

Sol.72.(c) Remainder $(\frac{999}{99}) = 9$

Hence, required smallest number = 99 - 9 = 90

Sol.73.(a) According to the question, Remainder = 32 Divisor = 4 × quotient Divisor = $2 \times \text{remainder} = 2 \times 32 = 64$ So, divisor = 64, quotient = 16 \Rightarrow dividend = divisor × quotient + remainder \Rightarrow dividend = 64 × 16 + 32 = 1056

Sol.74.(a) 10 = 2 × 5 Divisibility rule of 10 : number is divisible by 10, when its unit place is 0 From the given option, only option (a) is divisible by 10.

Sol.75.(c) Even prime number = 2

Mean proportional of $\frac{36}{5}$ & 245

$$=\sqrt{\frac{36}{5}} \times 245 = 42$$

Then, the quotient when 42 is divisible by 2 = 21

Sol.76.(c) Let the initial price of apples be $\mathbf{E} \mathbf{x}$ According to question

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 $\frac{720}{x-2} - \frac{720}{x} = 4$ $720(\frac{2}{x(x-2)}) = 4$ x(x - 2) = 360 $x^2 - 2x - 360 = 0$ $x^2 - 20x + 18x - 360 = 0$ x(x - 20) + 18(x - 20) = 0 $(x - 20)(x + 18) = 0 \Rightarrow x = 20$ the no of apples originally bought $=\frac{720}{20}=36$ Sol.77.(c) 6 = 2 × 3 Using the given options, we have ; (a) 7234564, which is not divisible by 3. (b)7233563, which is not divisible by 2 (c) 7232562, which is divisible by 2 and 3 both (d) 7231561, which is not divisible by 2 So, the correct option is (c) Sol.78.(b) After checking options one by one we get, After 4 years, Daisy plants = 6 + 3 + 3 + 3 + 3 = 18 And Jasmine plants = 26 - 2 - 2 - 2 - 2 = 18 Hence, after 4 years daisy plants and jasmine plants become equal. Sol.79.(c) LCM of (2,5,10 and 11) = 110 After checking all the options one by one, only option (c) satisfies. $\Rightarrow \frac{589270}{110} = \text{Rem.}(0)$ So, 589270 is divisible by 2, 5, 10 and 11 Sol.80.(a) Divisibility rule of 8 : Last

three digit should be divisible by 8 Now given , 91876a2

 $\div \frac{6a2}{8}$, by checking option one by one ,

option (a) satisfy this condition

 $\frac{632}{8} = 79$

Hence , smallest value of a = 3

Sol.81.(b) A number is divisible by 6 if it is divisible by both 2 and 3: Divisibility of 2 : A number is divisible by 2 if it is an even number, Divisibility of 3 : A number is divisible by 3 if the sum of all digits of that number is divisible by 3. Now, 321y72 \Rightarrow 3 + 2 + 1 + y + 7 + 2 = 15 + y The least value of y is 0

Sol.82.(b)

The cost of drinks for 7 friends = ₹240 A regular cup of coffee cost = ₹40 A regular cup of black tea cost = ₹30 Assume that all friends drink a coffee, So the price of 7 cup of coffee = 7 × 40 = ₹ 280 Then, Cups of tea she purchase

 $=\frac{280-240}{40-30}=\frac{40}{10}=4$ Sol.83.(c) (17¹³ - 21) ÷ 18 Concept : Rem $\{\frac{(a-1)^n}{a}\} \rightarrow (a -1) \text{ or } -1$; $\frac{(18-1)^{13}}{18} - \frac{21}{18} \Rightarrow 17 - 3 = 14 \text{(rem)}$

Sol.84.(a) Divisibility rule of 9 : Sum of the digit of the number should be divisible by 9 Given . number =57x716Sum of digit : 5 + 7 + x + 7 + 1 + 6 = 26 + xPut the value of x = 1 so sum of digit is

Sol.85.(a) A number is divisible by 11 if the difference between the sum of the digits at odd and even positions is 0 or multiple of 11. So, 6954P

 \Rightarrow (6 + 5 + p) - (9 + 4) = 0 or multiple of 11 \Rightarrow 11 + p = 13 \Rightarrow p = 2

Sol.86.(d)

divisible by $9 \therefore x = 1$

Given: $f(m) = m^5 + 5m^4 - 3m + 7$ According to the question, $m - 2 = 0 \Rightarrow m = 2$ Remainder = $2^5 + 5 \times 2^4 - 3 \times 2 + 7$ = 32 + 80 - 6 + 7 = 113

Sol.87.(a) Number (r) \div 8 \rightarrow 3 (rem)

Number
$$(r^2 + 6r + 7) \div 8$$

$$\frac{3^2 + 6(3) + 7}{8} = \frac{34}{8} \rightarrow 2 \text{ (rem)}$$

Sol.88.(c) Given: 19200 $=\frac{19^{200}}{20}$ \Rightarrow Remainder = $(-1)^{200}$ = 1

Sol.89.(d)
$$\frac{2}{3} = 0.66, \frac{6}{53} = 0.11,$$

 $\frac{79}{90} = 0.87, \frac{33}{44} = 0.75$

It is clear that, $\frac{79}{90}$ is the largest fraction.

Sol.90.(d) Number = 5x79856y6 For divisibility of 36 a number must be divisible by 9 and 4. For divisibility of 4 :- last 2 digit must be divisible by 4. Hence, possible value of y = 1, 3, 5, 7, 9We need largest possible value of y = 9For divisibility of 9 :- sum of number must be divisible by 9. Hence, sum of number = 5 + x + 7 + 9 + 8

+5+6+y+6 = 46+x+yOn putting largest value of y = 9= 46 + x + 9 = 55 + xNow, Number next to 55 that is divisible by 9 is 63 Hence, Required value of x = 63 - 55 = 8Now.

 $\sqrt{(2x + y)} = \sqrt{(2 \times 8 + 9)} = \pm 5$ Hence negative value of $\sqrt{(2x + y)} = -5$ **Sol.91.(b)** Let Anna and Ben has *x* and *y* marbles respectively. According to question, $x - 1 = y + 1 \Rightarrow x - y = 2$ x = 2 + y ... (i) and x + 1 = 3(y - 1)2 + y + 1 = 3y - 3 $2y = 6 \Rightarrow y = 3$ Put y = 3 in equation (i) x = 2 + 3 = 5Hence, Total marbles both have = 5 + 3 = 8

Sol.92.(c)

When $x^3 - 4x^2 - 8x + 11 \div (x + 2)$, we get 3 as remainder, so if 3 is subtracted from $x^3 - 4x^2 - 8x + 11$ than it is divisible by (x + 2)

Sol.93.(b)

Let number of marbles Ravi had = x Number of Marbles Kavita had = x + 12According to question, $\Rightarrow 3 (x + 13) = 4 (x + 1)$ $\Rightarrow 3x + 39 = 4x + 4 \Rightarrow x = 35$ \therefore Number of Marbles Kavita had (x + 12) = 35 + 12 = 47

Sol.94.(b) Divisibility rule of 11 : Difference between sum of digit odd places and sum of digits at even places is either 0 or multiple of 11 By checking all options one by one option (b) does not satisfy this condition 756148 = (7+6+4) - (5+1+8) $= 17 - 14 = 3 \neq 0$, *Multiple of* 11 \therefore Option (b) is not divisible by 11

Sol.95.(c) Divisibility of 8 : A number is divisible by 8 if the last three digits of the number are either zeros or are divisible by 8

So, 7344, 5544 and 4608 are divisible by 8 except for **7497**.

Sol.96.(b) Givn: $2^{2n} + 2n$ Put n = 3, $\Rightarrow 2^{2 \times 3} + 2 \times 3 = 64 + 6$ = 70 (not divisible by 6) Put n = 1 $\Rightarrow 2^{2 \times 1} + 2 \times 1 = 4 + 2 = 6$ Day: 1st - 5th

It is clear that the correct answer is

difference between the sum of the digits

at odd places and the sum of the digits

at even places is 0 or multiple of 11

It is clear that if 1 is subtracted from this

number (786452), then this number will

Sol.98.(d) Let the price of one chairs and

On multiply by 3 in equation (ii) then

one tables be x and y respectively,

⇒ 10*x* + 6y = ₹5140(i)

⇒ 3x + 2y = ₹1635(ii)

subtract equation (i) from (ii)

Put the value of x in equation (ii)

Now, The value of 1 chair and 1 table

Option (b) 6 and 5 (not correct)

Option (c) 4 and 6 (not correct)

Option (d) 3 and 6 (correct)

Sol.99.(d)Option (a) 3 and 4 (not correct)

429714 is divisible by 3 but not divisible

429714 is divisible by 6 but not divisible

429714 is divisible by 6 but not divisible

429714 is divisible by both numbers 3

Sol.100.(c) Divisibility rule of 3 : Sum of

the digit of the given number should be

If k = 9, then 24 + 9 = 33 (which is

Here, 6 + 7 + 4 + 5 + k + 2 = 24 + k

Number \div 55 \rightarrow 28 (remainder)

Two numbers = 2 unit and 5 unit

Difference = 5 - 2 = 3 unit

Number $\div 11 \rightarrow \frac{28}{11} = 6$ (remainder)

⇒ x = 5140 - 4905 = ₹235

⇒ 3 × 235 + 2y = ₹1635

⇒ 2y = 1635 - 705

⇒ y = $\frac{930}{2}$ = ₹465

= 235 + 465 = ₹700

bv 4

by 5

by 4

and 6

divisible by 3

divisible by 3)

Sol.101.(d)

Sol.102.(c)

∴ Greatest value of k = 9

Sol.97.(b) Divisible of 11 :

 \Rightarrow (7 + 7 + 7 + 5) - (2 + 8 + 4)

become divisible by 11.

(divisible by 6)

 $2^{2 \times 0} + 2 \times 0 = 1 + 0 = 1$

 $2^{2 \times 2} + 2 \times 2 = 16 + 4 = 20$

(not divisible by 6)

(not divisible by 6)

Put n = 0

Put n = 2

option (b)

7278745

⇒ 26 - 14 = 12

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3 unit = 210 Smaller number (2 unit) = $\frac{210}{3} \times 2 = 140$

Sol.103.(d) For divisibility of 3 the sum of digits must be divisible by 3. Hence, Sum of digits of number = 4 + 3 + 6 + P + 5 = 18 + pValue of P can be 3, 6, 9 but for largest value P = 9

Sol.104.(a)

if the

Sum of first *n* natural number = $\frac{n(n+1)}{2}$

Sum of first 12 natural number = $\frac{12(12+1)}{2}$ = 6 × 13

Hence, 6 can divide the sum of first 12 natural numbers.

Sol.105.(a) $8^m - 1$ Put m = 2 (smallest even number) $8^2 - 1 \Rightarrow 64 - 1 = 63$ Hence, $8^m - 1$ is divisible by 63 when m is even.

Sol.106.(c) For divisibility of 6 a number must be divisible by 2 and 3. Among the options only option (c) is divisible by 3 and 2 both.

Sol.107.(a) Let the number is 15x (LCM of 5 and 3) According to question

 $\frac{1}{5} \text{ of } 15x + 5 = \frac{1}{3} \text{ of } 15x - 7$ $3x + 5 = 5x - 7 \Rightarrow 2x = 12 \Rightarrow x = 6$ Hence, number = $15x = 15 \times 6 = 90$ Half of number = 45

Sol.108.(c) Let two consecutive even no. = x, x + 2According to question, $x + x + 2 = 174 \Rightarrow 2x = 172 \Rightarrow x = 86$

Sol.109.(a) $7^{15} + 7^{16} + 7^{17}$ $7^{15}(1 + 7 + 7^{2})$ $7^{15}(1 + 7 + 49) \Rightarrow 7^{15}(57)$ Among the options 57 is divisible by 3 only.

Sol.110.(b) In this type of questions, we start the calculation from the last and come towards the initial position. The number which when divided by 7 leaves remainder 3 and quotient is $3 = 7 \times 3 + 3 = 24$ When a number is divided by 5, the remainder is $1 = 24 \times 5 + 1 = 121$ When a number is divided by 3, the remainder is $2 = 121 \times 3 + 2 = 365$ Hence, required number = 365**Short trick :-**

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Sol.111.(c) Numbers that are divisible by 8 between 2000 and 2020 is 2008, 2016 (2 numbers)

Sol.112.(b)

Let number = (304 + 43) = 347Now, required remainder = $\frac{347}{16} = 11$

Sol.113.(c)

Let five consecutive number be x - 4, x - 2, x, x + 2, x + 4 respectively Their sum = 5 xAccording to the question, $5x = 2720 \Rightarrow x = 544$ Required sum = (x + x + 4) $= 2 \times 544 + 4 = 1092$

Sol.114.(d) According to the question, Number of digits required = $(9 \times 1) + (90 \times 2) + (329 \times 3) = 1176$

Sol.115.(a) Divisibility rule of 9 :- sum of digits is divisible by 9

When any 8 digit number is divisible by 99 it means that number is also divisible by 9 and 11.

Even if we shuffle the digits the number will be divisible by 9 but not by 11

Sol.116.(d)

Required remainder = $\frac{67}{32}$ = 3 Sol.117.(c) $\frac{179 \times 172 \times 173}{17}$ $\frac{9 \times 2 \times 3}{17}$ = $\frac{18 \times 3}{17}$ = $\frac{1 \times 3}{17}$ = 3

Hence, 3 will be the remainder.

rience, 5 will be the remainder.

Sol.118.(b) Given number 489y5z6 is divisible by 72 (8 × 9) Divisibility of 9 :- sum of the digit of number be divisible by 9 \Rightarrow 489y5z6 = 4 + 8 + 9 + y + 5 + z + 6 = y + z + 32So, possible values of (y + z) = 4, (4 + 9)= **13**), (13 + 9 = 22) etc. Now, divisibility of 8 :- last three digit of the number be divisible by 8 Last three digit = 5z6 Possible value of z = 3, 7 For highest possible product of y and z We take , y = 6 and z = 7 $\{y + z = 6 + 7 = 13\}$ Hence, required product of $(y \times z)$ $= 7 \times 6 = 42$

Sol.119.(a) Dividend = divisor × quotient + remainder

When, n is divided by 18, the quotient is x and the remainder is 6 \Rightarrow n = 18x + 6 -----(i) When, n is divided by 25, the quotient is y and the remainder is 15 \Rightarrow n = 25y + 15 ------(ii) Equate equation (i) and (ii) we get; 18x + 6 = 25y + 15 \Rightarrow 18x - 25y = 9

Sol.120.(b) Checking option one by one the correct option is (b) Divisibility rule of 11 - difference of sum of odd and even places sum is equal to 0 or multiple of 11. Now, $893002 \rightarrow$ Even places' digit = 9 + 0 + 2 = 11Odd places' digit = 8 + 3 + 0 = 1111 - 11 = 0So the number 893002 is completely divisible by 11.

Sol.121.(d) $\frac{7658}{45}$ = 8 (remainder) So the nearest number of 7658 which is exactly divisible by 8 will be 7658 - 8 = 7650

Sol.122.(b) To solve these kinds of questions we take help of the options, Option (a) 67 + 76 = 143 (not satisfied) **Option (b) 34 + 43 = 77 (satisfied)** Option (c)12 + 21 = 33 (not satisfied) Option (d) 45 + 54 = 99 (not satisfied) So number will be 34

Sol.123.(b) Divisibility rule of 3 = sum ofdigits is divisible by 37 + x + 7 + 6 + 2 + 4 = 26 + xPut x = 126 + 1 = 27 (which is divisible by 3) So the smallest number will be 1

Sol.124.(c) Given: $k^{33} - k$ = $k(k^{32} - k)$ = $k(k^{16} - 1)(k^{16} + 1)$ = $k(k^8 - 1)(k^8 + 1)(k^{16} + 1)$ = $k(k^4 - 1)(k^4 + 1)(k^8 + 1)(k^{16} + 1)$ = $k(k^2 - 1)(k^2 + 1)(k^4 + 1)(k^8 + 1)(k^{16} + 1)$ = $k(k - 1)(k+1)(k^2 + 1)(k^4 + 1)(k^8 + 1)(k^{16} + 1)$ Put the value of k = 3, 5, 7....= $3 \times 2 \times 4[(3^2 + 1)(3^4 + 1)(3^8 + 1)(3^{16} + 1)]$ = $24 \times [(3^2 + 1)(3^4 + 1)(3^8 + 1)(3^{16} + 1)]$ From the above expression it is clear that k^{33} - k will always be divisible by 24.

Sol.125.(a) LCM of 2, 3, 4 = 12 Numbers between 10 to 65 which is divisible by 2, 3, 4 = 12, 24, 36, 48, 60 Hence, the required numbers will be 5.

Sol.126.(a) Practice time to get 70 marks = 6 hours Practice time to get 90 marks

 $=\frac{6}{70} \times 90 = 7.7$ hours (approx)

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Sol.127.(c) Let number = 10x + yAccording to the question, Number is 12 more than five times the sum of its digits 10x + y = 5(x + y) + 125x - 4y = 12 ------(i) Number formed by reversing the digits is 9 less than the original number 10y + x = 10x + y - 9x - y = 1 ------(ii) Equation [(i) - 5 × (ii)] we get; y = 7Put y = 7 in equation (ii) we get; $x - 7 = 1 \implies x = 8$ Hence, number = $10 \times 8 + 7 = 87$

Sol.128.(c) Let n = (5 + 3) = 8Then, 6n = $6 \times 8 = 48$ Hence, rem. $\frac{6n}{5}$ = rem. $\frac{48}{5}$ = 3

Sol.129.(d) 17³ + 18³ - 16³ - 15³ 4913 + 5832 - 4096 - 3375 = 3274 Clearly, the number is divisible by 2.

Sol.130.(a) *n* divides 732 and leaves 12 as a remainder Then, number *n* divides (732 - 12)= 720 completely Now, factor of 720 = $2^4 \times 3^2 \times 5^1$ Number of factor = $(4 + 1) \times (2 + 1) \times (1 + 1) = 30$ Since, remainder is 12 then, value of n must be greater than 12 Number of factors of 720 which are less or equal to 12 = (1, 2, 3, 4, 5, 6, 8, 9, 10, 12)= 10 factor So the possible number of n = 30 - 10 = 20

Sol.131.(b) age of a tree depends on the number of rings in the trunk 40 rings = 50years \Rightarrow 1 rings = 1.25 years Then, 30 rings = $30 \times 1.25 = 37.5$ years The value of tree is proportional to age of tree

50 years = Rs. 50000 \Rightarrow 1 years = Rs. 1000 Then, 37.5 years = 37.5 × 1000 = Rs. 37500 Hence, tree with 30 rings is 37.5 years of age and its value is Rs. 37500

Sol.132.(c)
$$\frac{(8^6+1)}{7} = \frac{(1^6+1)}{7} = 2$$

Sol.133.(b) Let the original number be (10x + y)On reversing its digits, no will be (10y + x)y + x = 9 ------- (i) According to the question, $(10y + x) - (10x + y) = 27 \Rightarrow 9y - 9x = 27$ y - x = 3 ------- (ii) On solving eqn(i) and (ii) we have ; y = 6, x = 3 So, the number = $10 \times 3 + 6 = 36$

Sol.134.(a) Number is divisible by 11 if and only if the difference of the sum of the digits in the even and odd positions in the number is 0 or multiple of 11

Rem $\left(\frac{2^{256}}{17}\right)$ = Rem $\left(\frac{(2^4)^{64}}{17}\right)$ = $\frac{(-1)^{64}}{17}$ = $\frac{1}{17}$ = 1

Sol.136.(b) Let the larger no and smaller no be x and y respectively x + y = 76 ------ (i) 3x - 4y = 46 ------ (ii) Solving eqn. (i) & (ii) we have ; x = 50, y = 26

Sol.137.(b) $88 = 11 \times 8$ For 6p5157q to be divisible by 8, its last 3 digits i.e. 57q must be divisible by 8. For this q must be 6 Now, For 6p5157**6** to be divisible by 11, the difference of the sum of its alternate digits i.e. (6 + 5 + 5 + 6) - (7 + 1 + p)= 14 - p, must be divisible by 11. For this, P must be 3. So, p × q = 3 × 6 = 18

Sol.138.(d) Let divisor be x. Then, no will be (459x + 19)Now, remainder $(\frac{459x + 19}{17})$

$$= \operatorname{rem}(\frac{19}{17}) = 2$$

Sol.139.(c) Let the no of unit and tens digits be y and x respectively Then, number will be (10x + y)On interchanging its digits, we get (10y + x)According to the question, x + y = 9 ------- (i) (10y + x) - (10x + y) = 459y - 9x = 45 \Rightarrow y - x = 5 ------ (ii) Solving equation (i) & (ii) we have ; x = 2, y = 7So, the original number = $10 \times 2 + 7 = 27$

Sol.140.(c) Let the larger and smaller parts be x and y respectively According to question, x + y = 25 ------- (i) 6x + 4y = 130 ------ (ii) Solving eqn(i) & (ii) we have ; y = 10, x = 15So, the larger part = 15

Sol.141.(b) 611611611611 As per question check divisibility by 6 and 11 For divisibility of 6 it must be divisible by 2 and 3 611611611611 is not divisible by 2 hence it is not divisible by 6 also now, for divisibility of 11, sum of alternate digits 1+6+1+1+6+1=166+1+1+6+1+1=16Difference of sum of alternate digits = 16-16=0Hence it is divisible by 11 only.

Sol.142.(c)

3: 4, 3: 5, 2: 11, 7: 2 $\frac{3}{4}$, $\frac{3}{5}$, $\frac{2}{11}$, $\frac{7}{2}$ 0.75, 0.6, 0.18, 3.5 Hence, correct ascending order is 2:11 < 3: 5 < 3: 4 < 7: 2

Sol.143.(d) Girls - Boys = 8 ... (i) Girls + Boys = 18 ... (ii) On solving eq . (i) and (ii), we get Girls = 13 and Boys = 5 Product of Girls and Boys = $13 \times 5 = 65$

Sol.144.(b) Divisibility rule of 11: The difference of the sum of the alternate digits of any number is either 0 or multiple of 11. Now, after checking all the options, only option (b) gets satisfied. $969331 \rightarrow (3 + 9 + 9) - (1 + 3 + 6) = 21 - 10 = 11$, which is divisible by 11.

Sol.145.(c)

From the given option, we have ; (a)18 \rightarrow 10000 is not divisible by 18 (b)17 \rightarrow 10000 is not divisible by 17 (c)25 \rightarrow 10000 is divisible by 25 (d)14 \rightarrow 10,000 is not divisible by 14 Clearly, we can see that only option (c) is correct.

Sol.146.(d) For divisibility by 8, the last three digits should be divisible by 8. Here 7x4 will be divisible by 8. The value of *x* will be 0, 4, 8. Here the smallest value is 0.

Sol.147.(c) Condition for the divisibility of 6; Sum of digits is divisible by 3 and last digit is even.

Sol.148.(d) 88 = 11 × 8 From the given option, we have ; (a) 9848 \rightarrow 9848 is divisible by 8 but not divisible by 11 (b) 9988 \rightarrow 9988 is divisible by 11 but not divisible by 8 (c) 8888 \rightarrow 8888 is divisible by 8 and 11. (d) 9768 \rightarrow 9768 is also divisible by 8 and 11. Clearly, we can see that 9768 is the largest 4-digit number, which is divisible by 88.

Sol.149.(b) For 1972*x*471 to be divisible

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by 9, the sum of its digits i.e. 1 + 9 + 7 + 2+ x + 4 + 7 + 1 = 31 + x, should be divisible by 9. Now, putting x = 5, we get 36, which is

divisible by 9 So, x = 5

Sol.150.(a) If a number is divisible by both 11 and 13, then it must be divisible by (11×13) .

Sol.151.(a) 72 = 9 × 8 For 937X728Y6 to be divisible by 8, its last 3 digits i.e.8Y6 should be divisible by 8. For this y can be 1 or 5. For 937X728Y6 to be divisible by 9, the sum of its digits i.e. 9 + 3 + 7 + X + 7 + 2+ 8 + Y + 6 = 42 + Y + X should be divisible by 9. Putting **y** = 1, we get ; 42 + 1 + X = 43 + X ⇒ X = 2 Then, X + Y = 2 + 1 = 3 Putting **y** = 5, we get ; 42 + 5 + X = 47 + X ⇒ X = 7 Then, X + Y = 7 + 5 = 12From the above option, we get one of the possible values of X + Y = 12.

Sol.152.(a) Let the original number be x and divisor be d dq + 24 = x Multiplying both side by 2, 2dq + 48= 2x (2dq + 35)+13 = 2xSo, d is either 35 or factor of 35 but greater than 24 \Rightarrow d = 35

Sol.153.(b) Rem
$$(\frac{5^{55}}{4}) = \frac{1^{55}}{4} = 1$$

77 + (n - 1)77 = 924 ⇒ (n - 1)77 = 847 n - 1 = 11 ⇒ n = 12

Sol.155.(d) Divisibility rule of 4 :

For any no. to be divisible by 4, its last 2 digits should be divisible by 4. Now, after going through all the options, we get only 618703592 is divisible by 4. Hence, option(d) is the correct one.

Sol.156.(c) Let

Divisor = n, quotient = q, remainder = r (Dividend)N = n.q + r Given: n = 13.q, n = 6.r, r = 39 \Rightarrow n = 39 × 6 = 234 \Rightarrow q = 18 \Rightarrow N = n × q + r \Rightarrow N = 234 × 18 + 39 \Rightarrow N = 4212 + 39 = 4251

Sol.157.(c) For divisible by 36 the

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number must be divisible by both 9 and 4. To check divisibility by 9 sum of all the numbers divisible by 9. and for divisibility by 4 the last two digits should be divisible by 4. By checking option one by one option (c) satisfies. i.e. Option (c) 55512 5 + 5 + 5 + 1 + 2 = 18 (divisible by both 9 and 4)

Sol.158.(a) By checking option one by one option (a) satisfies. Option (a) 8 For divisibility by 8, last three digits should be divided by 8. And here 216 is divisible by 8. Hence the given number is divisible by 8.

Sol.159.(a) $3 + 3^2 + 3^3 + \dots + 3^8$ ⇒ 3 (1 + 3 + 3² + 3³ + + 3⁷) ⇒ 3 (1 + 3 + 9 + 27 + 81 + 243 + 729 + 2187) ⇒ 3 (3280) = 9840

Sol.160.(c) (a) For divisibility by 3 2 + 9 + 1 + 8 + 2 + 4 + 5 = 31 (not divisible by 3)

(b) Since the number is not divisible by 3, the number is not divisible by 9.(c) For divisibility by 21.

(c) For divisibility by 11

Difference between the sum of the digits placed at odd places and even places is either divisible by 11 or 0.

For 2918245

(2 + 1 + 2 + 5) - (9 + 8 + 4) = 10 - 21 = -11 (divisible by 11)

(d) For divisibility by 12 , the number should be divisible by 4 and 3 , but the given number is not divisible by 4 and 3 ,hence it is not divisible by 12 .

Sol.161.(b) $6^{25} + 6^{26} + 6^{27} + 6^{28}$ = $6^{25} (1 + 6 + 6^2 + 6^3)$ = $6^{25} (1 + 6 + 36 + 216) = 6^{25} (259)$ Hence the given expression is divisible by 259.

Sol.162.(a) $\frac{90}{4} = \frac{Distance}{32}$ \Rightarrow Distance = 90 × 8 = 720 km

Sol.163.(b) We know

Dividend (N) = divisor × quotient + remainder

Given

Divisor (n) = 10 × quotient (q) And Divisor (n) = 5 × remainder (R) R = 12 \Rightarrow n = 60 and q = 6 Now, N = 60 × 6 + 12 = 372

Sol.164.(a) $4^{12} + 4^{13} + 4^{14} + 4^{15}$ $\Rightarrow 4^{12} (1 + 4^{1} + 4^{2} + 4^{3})$ $\Rightarrow 4^{12} (1 + 4 + 16 + 64) \Rightarrow 4^{12} (85)$ 85 is divisible by 17 and hence 17 is the

answer. Sol.165.(b) For divisibility by 3, The sum of digits of the number should be divisible by 3. Here 3 + 7 + 9 + 8 + 4 + 3 = 34 And 34 ÷ 3 remainder is 1. Hence, When 379843 is divided by 3 the remainder is 1. Sol.166.(d) For divisibility by 4, the last two digits should be divisible by 4. Hence the possible value of y can be 1, 3, 5.7.9 For divisibility by 11, The difference between the sum of the digits at odd places and even places should be zero or divisible by 11. \Rightarrow (1 + x + y) - (5 + 1 + 2) = x + y + 1 - 8 \Rightarrow x + y -7 For minimum value of x and y Take y = 1 \Rightarrow x = 6 (to make it 6 + 1 - 7 = 0) Hence, x + y = 6 + 1 = 7Sol.167.(a) 72 = 9 × 8

For 389x6378y to be divisible by 8, its last 3 digit no i.e.78y should be divisible by 8.

For this , y = 4

Now, For 389x63784 to be divisible by 9, the sum of its digits i.e. 3 + 8 + 9 + x + 6+ 3 + 7 + 8 + 4 = 48 + x, should be divisible by 9. For this, we have x = 6Hence, $6x + 7y = 6 \times 6 + 7 \times 4$ = 36 + 28 = 64

Sol.168.(a) Divisibility rule of 9 :

For any no to be divisible by 9, the sum of its digits should be divisible by 9. From the given options, we have ; (a) $553986 \rightarrow 5 + 5 + 3 + 9 + 8 + 6 = 36$, which is divisible by 9. (b) $350846 \rightarrow 3 + 5 + 0 + 8 + 4 + 6 = 26$, which is not divisible by 9. (c) $941201 \rightarrow 9 + 4 + 1 + 2 + 0 + 1 = 17$, which is not divisible by 9. (d) $132490 \rightarrow 1 + 3 + 2 + 4 + 9 + 0 = 19$, which is not divisible by 9. Clearly, we can see that 553986 is the only number which is divisible by 9.

Sol.169.(d) 15 = 5 × 3

For 725yz to be divisible by 5, unit digit i.e.z should be 0 or 5. For 725yz to be divisible by 3, the sum of digits i.e.7 + 2 + 5 + y + z = 14 + y + z should be divisible by 3. But for the maximum value of yz, we have to put z = 5. then we get 19 + y \Rightarrow y = 8 Then, yz = 8 × 5 = 40 Sol.170.(b) Divisibility rule of 8 ; For any number to be divisible by 8, its last 3 digits should be divisible by 8. For 7002x4, 2x4 should be divisible by 8 For this, x must be 2.

Sol.171.(b) Divisibility rule of 9,

For any number to be divisible by 9, the sum of its digits should be divisible by 9. For 72x72, 7 + 2 + x + 7 + 2 = 18 + x, should be divisible by 9. For this, the value of *x* must be 0 or 9

Sol.172.(a) After checking all the options one by one , only option(a) satisfied. So, 7918378 is divisible by 13.

Sol.173.(a) Dividing 2001 by 17, we get 12 as remainder. So, On subtracting **12** from 2001, we get 1989 which is exactly divisible by 17.

Sol.174.(d) Divisibility rule of 11 :

For any no to be divisible by 11, the difference of the sum of its alternate digits should be divisible by 11.

For 7235x to be divisible by 11, (7 + 3 + x)- (2 + 5) = 3 + x, should be divisible by 11. For this, x must be 8.

Sol.175.(d) Average of 1 negative number = average of 24 positive numbers

{Because here maximum (+ive) integers are asked whereas the average of 25 numbers is zero.}

So the maximum positive integers will be 24

Sol.176.(a) Divisibility rule of 4,

For any no to be divisible by 4, its last 2 digit should be divisible by 4 Then, For 87893P4, **P4** should be divisible by 4 For this , P can be 2, 4, 6 or 8 But for the maximum value of P, it must be 8.

Sol.177.(d) For 48397k5 to be divisible by 9, the sum of its digits i.e.4 + 8 + 3 + 9+ 7 + k + 5 = 36 + k, should be divisible by 9 For non zero value of k \Rightarrow k = 9

Sol.178.(d) $\frac{9999999}{294}$ = Rem. (105) So , required number = 294 - 105 = 189

Sol.179.(b)

Factor of $2520 = 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7$ Clearly 8, 9 and 7 are the divisors of number 2520.

Sol.180.(d) Sum of digits should be divisible by 3 not by 9. 3+2+a+7+8+b = 20+a+bFor greatest number, a should by

maximum. Max. possible value for (a + b) = 13So , a = 9 and b = 4Required no. = 329784

Sol.181.(a) Given, $a^3 + b^3 = 10234$ a + b = 34 - equ. (1)We know $(a + b)^3 = a^3 + b^3 + 3ab (a + b)$ $(34)^3 = 10234 + 3ab (34)$ $39304 - 10234 = 102 \times ab \Rightarrow ab = 285$ Then, $(a - b)^2 = (a + b)^2 - 4ab$ $(a - b)^2 = 34^2 - 4 \times 285$ $(a - b)^2 = 16$ (a - b) = 4 - equ. (2)Now, Add equation (1) and (2) 2a = 38Where, a = 19 and b = 15, So that $a^3 - b^3 = 19^3 - 15^3 = 6859 - 3375 = 3484$

Sol.182.(d) Given :- N = 4a6b9c N is divisible by 99 therefore it must be divisible by both 9 and 11 $(4+6+9) - (a+b+c) \Rightarrow 19 - (a+b+c)$ if a + b + c = 8 then N is divisible by both 11 and 9 Hence, sum of digits of N = 19 + 8 = 27

Sol.183.(a)
$$\frac{(265)^{4081} + 9}{266}$$
 = Rem
 $\frac{(266 - 1)^{4081} + 9}{266}$ = Rem
 $\frac{(-1)^{4081} + 9}{266}$ = Rem
 $\frac{(-1) + 9}{266}$ = Rem. (8)

Sol.184.(a) Let A has x no. of toffees and B has y no. of toffees. According to the question, Condition 1 :x - 1 = y + 1x = y + 2e.q.(1) Condition 2 : $x + 1 = 2 \times (y - 1)$ x - 2y = -3y + 2 - 2y = -3 (from eq 1) y = 5 and x = 7Total no. of toffees = 5 + 7 = 12

Sol.185.(c) Divisibility rule of 8 = last 3 digits of the number will be divisible by 8. Last 3 digit of the number =326 - 6 = 320 (divisible of the 8) So the required number will be = 6

Sol.186.(d) Largest 5 - digit number = 99999 According to question, $\frac{99999}{88} \Rightarrow$ Remainder = 31 Required number = 99999 - 31 = 99968

Sol.187.(a) Let six digit number which is divisible by 33 (11 × 3) is 111111 After adding 54 on it New number = 111165 Now, by checking the option, Number (111165) be divisible by 3

Sol.188.(b) Cost of 32 pens and 12 pencils = 790 Rs. On dividing by 4, we get Cost of $\frac{32 pens}{4}$ and $\frac{12 pencils}{4} = \frac{790 Rs.}{4} = 197.5 Rs.$ Cost of 8 pens and 3 pencils = 197.5 Rs.

Sol.189.(d)

Let the numbers are a and b , then According to the question , a + b = 98 ------- Eq (1) And a - b = 28 ------- Eq (2) on adding both the equations , we get $2a = 98 + 28 \Rightarrow a = \frac{126}{2} = 63$ Second number (b) = 98 - 63 = 35

Sol.190.(c)

Factor of 484 = $1 \times 2 \times 2 \times 11 \times 11$ Required sum = $1 \times (2^{0} + 2^{2}) \times (11^{0} + 11^{2}) = 1 \times 5 \times 122 = 610$

Sol.191.(c) According to the question, $72 \times 72 = x \times 216$ Number (x) = $\frac{72 \times 72}{216} = 24$

Sol.192.(a)
$$\frac{8^8 + 6}{7}$$
 = Rem. $\frac{(+1)^8 + 6}{7}$

= Rem. $\frac{1+6}{7}$ Remainder = 0

Sol.193.(b) According to the question, abba is divisible by 4 Then , last two digit (ba) be divisible by 4 {where a < b} So, possible values of ba = (32, 52, 64, 72, 76, 84, 92, 96) = 8

Sol.194.(c) Given number = 846523X7Y Divisibility of 9 : sum of all digits should be divisible by 9. Hence, Y + X = 10(1) and Y - X = 6(2) By solving equation (1) and (2) we get, X = 2 and Y = 8 Now, $\sqrt{2X + 4Y} = \sqrt{4 + 32} = \sqrt{36} = 6$ Sol.195.(a) Let the number be x.

According to question, $\frac{x}{45} = \frac{x}{15 \times 3} \rightarrow \text{Remainder} = 21$ $\frac{x}{15} \rightarrow \text{Remainder} = 21 - 15 = 6$

Sol.196.(a) Smallest 5-digit no = 10,000

When 10,000 is divided by 526 , gives the remainder 6. So, the required no = 10000 + (526 - 6)= 10520

Sol.197.(d) 6 digit consecutive natural numbers = 123456, 234567, 345678...... Clearly, we can see that the sum of its digits is always multiple of 3. So, the no is always divisible by 3.

Sol.198.(c)

Sum of digits of the given number, 5826 = 21, 5964 = 24, 6039 = 18, 6336 = 18, 6489 = 27, 6564 = 21, 6867 = 27 and 6960 = 21. Clearly, the numbers whose sum of digits are 18 and 27 are also divisible by 9. So, 4 numbers are divisible by 3 but not by 9.

Sol.199.(c) Clearly, 193 is the prime number.

Sol.200.(c) 10373 + 24871 = 35244 Clearly , it is divisible by 6.

Sol.201.(c) Rem.
$$(\frac{4^{999}}{7})$$
 = Rem. $(\frac{64^{333}}{7})$
Rem. $(\frac{(1)^{333}}{7})$ = Remainder (1)

Sol.202.(a) Divisibility of 120 :- no. should be divisible by 3, 8 and 5 Checking divisibility of 3, from the given option, only, option (a) satisfies the condition. So, 170280 is divisible by 120.

Sol.203.(d) Number of whole number between 12^2 and 11^2 :- $\{144 - 121\} - 1 = 22$

Sol.204.(b) Divisibility of 3 :- sum of digits should always be divisible by 3.

Sol.205.(d) LCM(2, 3, 4) = 12 (12 \times 9) smallest three - digit number which is divisible by 2, 3 and 4. (108 + 1) = 109, smallest three - digit number which when divided by 2, 3 and 4 leaves remainder 1 in each case

Sol.206.(c) in this type of question go through option (c) get satisfied (103 + 5) = 108, is divisible by 2 and 3

Sol.207.(a) $1 - 2 + 3 - 4 + 5 - 6 \dots \text{ to } 100 \text{ terms}$ $\Rightarrow (1 - 2) = -1, (3 - 4) = -1 \text{ and so on}$ Total terms = 50 Therefore, $1 - 2 + 3 - 4 + 5 - 6 \dots \text{ to } 100$ $= 50 \times -1 = -50$

Sol.208.(c) Series = 1 + 5 + 6 + 10 + 11 + 15 + 16 + 20 + = (1 + 6 + 11 + 16 +) + (5+10 + 15 +...)

 $S_{200} = \frac{100}{2} [2 + (99) \times 5] + \frac{100}{2} [10 + (99) \times 5] = 50[497] + 50[505] = 50 \times 1002$ = 50100

Sol.209.(d) Prime numbers between 20 and 50 = (23, 29, 31, 37, 41, 43, 47) = 7 prime numbers

Sol.210.(c) Let the three consecutive even number x, x + 2 and x + 4According to the question, (x + x + 2 + x + 4) = 126 $\Rightarrow 3x = 120 \rightarrow x = 40$ Then, smallest number (x) = 40 and greatest number (x + 4) = 44 Therefore, product of smallest and greatest number = $40 \times 44 = 1760$

Sol.211.(a)

All three digit number divisible by 15 105, 120, 135,,990 Sum = $\frac{n}{2}(a + l)$

Where a = first term and l = last term No. of terms = $(\frac{990 - 105}{15} + 1) = 60$

Therefore,

their sum = $\frac{60}{2}(105 + 990) = 32850$

Sol.212.(c) The average of three consecutive composite numbers

 $=\frac{36}{3}=12$

so , the composite numbers = 10, 12, 14 So ,

product of the numbers = $10 \times 12 \times 14 = 1680$

Sol.213.(a) 654321 × 123456

On multiplying the given number, the unit digit will be 6 . From the given option , only option (a) has unit digit 6. So , 376 will be the last three digits.

Sol.214.(c)

Two digit even numbers= 10, 12, 1498 Sum = $\frac{n}{2}(a + l)$ Where a = first term and l = last term No. of terms = $(\frac{98 - 10}{2} + 1) = 45$ Therefore, their sum = $\frac{45}{2}(98 + 10) = 2430$ Sol.215.(a) Divisibility of 4 :- when the last two digits of the given number are

last two digits of the given number are divisible by 4, then the given number is also divisible by 4. For, XY7B to be divisible by $4 \rightarrow 7B$ should be divisible by 4 Possible value of B = 2, and 6 So largest possible value of B = 6. Sol.216.(a) Numbers between 17 and 457 that are divisible by both 5 and 3 \rightarrow 30, 45, 60450 Formula: $a_n = a + (n - 1) \times d$ 450 = 30 + $(n - 1) \times 15$ $n = \frac{435}{15} = 29$ terms.

 $\begin{array}{l} \textbf{Sol.217.(b)} \mbox{ First , we do the square root} \\ \mbox{of } 7387 \rightarrow \sqrt{7387} &\approx 86 \\ \mbox{Now,} \\ \mbox{prime numbers will be present near 86.} \\ \mbox{That is 83 and 89 .} \\ \mbox{Required difference = 6 .} \end{array}$

Sol.218.(a) Number divisible by 5 between 201 and 401 = 40 Number divisible by both 4 and 5 between 201 and 401 = (220, 240, 260, 280, 300, 320, 340, 360, 380, 400) = 10 numbers So, Required Number = 40 - 10 = 30

Sol.219.(b)

Formula :- Sum of n odd numbers = n^2 There are 50 odd numbers between 1 to 100 So the sum of 50 odd numbers = 50^2 = 2500 According to the question, Sum of odd 2 digit numbers, So, 2500 - (1 + 3 + 5 + 7 + 9) = 2475

Sol.220.(c) Let the number be x According to the question,

x + $\frac{1}{x}$ = 4 then, sum of their squares ⇒ $x^2 + \frac{1}{x^2}$ = 16 - 2 = 14

Sol.221.(b) $98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 98^2 +$ = (98 + 97) (98 - 97) + (96 + 95) (96 - 95) $+ (94 + 93) (94 - 93) + \dots (12 + 11)$ (12 - 11)= 98 + 97 + 96 + 95 + 94 + 93......12 + 11 Total term (n) = 88 Sum of given series = $\frac{n}{2}$ (first term + last term) = $\frac{88}{2}(98 + 11) = 44 \times 109 = 4796$ **Sol.222.(d)** Let the numbers be *x* and *y*. $\Rightarrow x^{2} + y^{2} = 12$. xy = 4 $\Rightarrow (x - y)^{2} = x^{2} + y^{2} - 2xy = 12 - 8 = 4$ $\Rightarrow x - y = 2$ **Sol.223.(c)** $(125)^{\frac{1}{6}}$ $(11)^{\frac{1}{3}}$ $(12)^{\frac{1}{6}}$ $(5)^{\frac{1}{4}}$ (multiplying by 12 in the power) $(125)^{2}, (11)^{4}, (12)^{2}, (5)^{3}$ \rightarrow (125)², (121)², (144) , (125) Now we can see $(125)^{\frac{1}{6}}$ is the largest value.

II. $\frac{-9}{9} = 0.55$ and $\frac{-9}{9} = 0.88$ $\Rightarrow \frac{-5}{9} > \frac{-8}{9}$ (wrong statement) III. $\frac{-5}{6} = 0.83$ and $\frac{-4}{5} = 0.8$ $\Rightarrow \frac{-5}{6} > \frac{-4}{5}$ (right statement)

Sol.225.(a) 5769116 is divisible by 4 as its last two digits are divisible by 4.

Sol.226.(d) Concepts :-

Remainder $\left(\frac{(x-1)^n}{x}\right) = (-1)^n$ Rem. $\left(\frac{(27^{27}+27)}{28}\right) = \text{Rem.}\left(\frac{(-1)^{27}+27}{28}\right)$ $= \frac{-1+27}{28} = 26$

Sol.227.(b) Total number of toffee students have = 2 + 4 + 6 + 8 25 terms

Sum = $\frac{n}{2}$ {2a + (n - 1)d} Sum = $\frac{25}{2}$ {2 × 2 + (25 - 1) × 2} = $\frac{25}{2}$ × 52 = 650 = 25 × 26 = 5 × 5 × 13 × 2 650 is clearly divisible by 5 and 13.

Sol.228.(d) Let the larger number be x and smaller number be y. According to question, x - y = 1564eq.(1) $6y + 19 = x \Rightarrow x - 6y = 19$ eq.(2) On solving eq.(1) and eq.(2), we get $5y = 1545 \Rightarrow y = 309$

Sol.229.(b) Nearest number which is greater to 87501 and is completely divisible by 765 is :- 765 × 115 = 87975 **Short Trick:-**

In this type of question make factor of $765 = 5 \times 3 \times 3 \times 17$

And now , check the option which is divisible by 3 , 5 and 17 .

Clearly , 87975 is clearly divisible by 3 , 5 and 17 .

Sol.230.(d) Given 6 - digit no. is 674pq0 is divisible by 33. **For divisible by 3 :-** 6 + 7 + 4 + p + q + 0

must be divisible by 3. -6 + 7 + 4 + p + q + 0

For divisible by 11 :- (6 + 4 + q) - (7 + p)must be divisible by 11. Now, from the option , we can see that

the option (**d**) satisfies the condition. Number is 674520.

Sol.231.(d) L.C.M. (7, 9, 11) = 693 Now, largest five digit number is 99999

When we divide 99999 by 693 , the remainder will be 207. No. completely divisible by 693 is 99999 - 207 = 99792 Now, the largest number which when divided by 7 , 9 and 11 leaves remainder 3 in each case :- 99792 + 3 = 99795

Sol.232.(c) Factor of $49 = 7 \times 7$ Factor of $147 = 3 \times 7 \times 7$ Factor of $322 = 2 \times 7 \times 23$ Clearly , 7 is the largest which divides 49 , 147 and 322 , leaving 0 as remainder in all cases.

Sol.233.(b) K = $42 \times 25 \times 54 \times 135$ K = $3 \times 14 \times 5 \times 5 \times 3^3 \times 2 \times 3^3 \times 5$ = $3^7 \times 14 \times 5 \times 5 \times 2 \times 5$ Hence, maximum value of a = 7

Sol.234.(c) 9435 + 7593 - 2607 = 14421 Now, from the option it is only divisible by 3.

Sol.235.(c) Let the original no be x

ATQ, $\left\{\frac{(x+7)\times 5}{3}\right\} - 4 = 16$ = $\frac{(x+7)\times 5}{3} = 20 = \frac{x+7}{3} = 4$ = $x + 7 = 12 \Rightarrow x = 12 - 7 = 5$

Sol.236.(c) $75 = 25 \times 3$ For 678p37q to be divisible by 25, the last two digits i.e.7q should be divisible by 25.

For this , the value q = 5

Now, For 678p375 to be divisible by 3, the sum of its digits i.e.6 + 7 + 8 + p + 3 + 7 + 5 = 36 + p, should be divisible by 3. For p not to be a composite no, the value of p must be 3 i.e. 39, divisible by 3.

Sol.237.(b) Let the six - digit no be abcabc. It can be written as : 100000a + 10000b + 1000c + 100a + 10b+ c = 100100a + 10010b + 1001c= $1001 \times (100a + 10b + c)$ Clearly, we can see that 6-digit no is always divisible by 1001.

Sol.238.(b)

The given fraction are ; $\frac{4}{5}$, $\frac{2}{3}$, $\frac{1}{11}$, $\frac{2}{9}$ $\frac{4}{5} = 0.80$, $\frac{2}{3} = 0.66$, $\frac{1}{11} = 0.09$, $\frac{2}{9} = 0.22$

Arranging it in ascending order , we get; $\frac{1}{11} < \frac{2}{9} < \frac{2}{3} < \frac{4}{5}$

Sol.239.(b) Let the bigger and smaller no be x and y respectively

 $\mathbf{x} \times \frac{17}{20} = \mathbf{y} \times \frac{23}{20} \Rightarrow \frac{x}{y} = \frac{23}{17}$

and, x + y = 680 (23 + 17) unit = 680 40 unit = 680 \Rightarrow 1 unit = $\frac{680}{40}$ = 17 So, the smaller no. = 17 unit = 17 × 17 = 289

Sol.240.(c) Let the four digit pin be abcd. a , b = 2a, c = 4a, d = 8a Putting a = 1. We get the four digit pin as 1248 which is divisible by 2, 3 and 13

Sol.241.(d) LCM of 15 and 18 = 90 So, the least possible no. = 90K + 3 = 90 × 1 + 3 = 93 (putting k = 1)

Sol.242.(b) LCM of 12, 16, 24 = 48 So, the required no is in the form of 48k + 5. Putting K = 12, we get ; $48 \times 12 + 5 = 581$ Putting K = 13, we get ; $48 \times 13 + 5 = 629$ Putting K = 14, we get ; $48 \times 14 + 5 = 677$ Now, adding all the no's , we get : 581 + 629 + 677 = 1887

Sol.243.(b) 36 = 4 × 9

For 72x8431y4 to be divisible by 4, its last 2 digit y4 must be divisible by 4. For the smallest value of y, we have y = 2 Now, For 72x8431**2**4 to be divisible by 9, the sum of its digits i.e. 7 + 2 + x + 8 + 4 + 3 + 1 + 2 + 4 = 31 + x must be divisible by 9, For this, the value of x must be 5 i.e. 31 + 5 = 36, which is divisible by 9. So, $\frac{x}{y} - \frac{y}{x} = \frac{5}{2} - \frac{2}{5} = \frac{21}{10} = 2\frac{1}{10}$

Sol.244.(c) 3 4 R 0 5 0 3 0 M 6 Divisibility of 11 = difference of the sum

of alternate digits must be 0/11/22...Divisibility of 16 = must be divisible by 4, 8. (3 + R + 5 + 3 + M) - (4 + 0 + 0 + 0 + 6)= 0/11R + M = 10(1) So, M cannot be 1, the last 3 digits should be divisible by 8 and the last two digits should be divisible by 4.

So, M = 5 and R = 5

Sol.245.(d) For 476xy0 to be divisible by 11, the difference of the sum of its alternate digits i.e. 7 + x - (10 + y) = x - y - 3 should be divisible by 11 For this we have, x - y - 3 = 0/11/22...x - y = 3 ------ (1) For 476xy0 to be divisible by 3, the sum of its digits i.e.4 + 7 + 6 + x + y + 0 = 17 + x + y, should be divisible by 3. For this, x + y = 1/4/7/10.... But we get fractional values .of x and y so, x + y = 13 ------(2) Solving equation (1) and (2), we have : x = 8 and y = 5

Sol.246.(b) Numbers between 1 and

Sol.247.(c) Factors of 216 = $(2)^3 \times (3)^3$ Sum of odd factors = $(3)^0 + (3)^1 + (3)^2 + (3)^3 = 1 + 3 + 9 + 27 = 40$

Sol.248.(a) A smallest 6 digit number which is divisible by 198 is 100188. Sum of digits = 1 + 0 + 0 + 1 + 8 + 8 = 18After rearranging the digits of six digit number, sum of digits be constant So, by the option, option 'a' satisfied { A no is divisible by 3 if sum of its digits is a multiple of 3}

Sol.249.(b) 763254 - 205 = 763049 So, the new number formed is divisible by 7.

Sol.250.(b)

Let the two numbers be x and y. x - y = 3951.....(1) $x = 12y + 13 \Rightarrow x - 12y = 13....(2)$ By solving eq. (1) and (2), we get x = 4309 and y = 358 Sum of the digits of the larger number = 4309, 4 + 3 + 9 = 16

Sol.251.(a) It is given that,

 $6 < \sqrt[3]{N} < 7 \implies 6 < N^{\frac{1}{3}} < 7$ $6^{3} < (N^{\frac{1}{3}})^{3} < 7^{3} \implies 216 < N < 343$ So, the total possible values of N = (343 - 216) - 1 = 126

Sol.252.(d)

I. Let the two digit no be 10x + yATQ, (10x + y) - (10y + x) = 36 $9x - 9y = 36 \Rightarrow x - y = 4$ II. The value of no can be 84 as 84 - 48 = 36

III. the number formed in the given case may or may not be composite no. i.e. 84 which is a composite no and 73 which is a prime no.

Clearly, we can see that option (d) is the correct one.

Sol.253.(d) As we know, that sum of two odd numbers gives an even no and two even no. also gives an even no.

Putting x = 2 which is the only even prime no, we have

y + z = 70 - 2 = 68

The possible value of y and z is (7, 61) and (31, 37)

So, the value of z = 61 or 37

Checking the options, we get z = 37. Hence, the correct option is (d).