

« CDS/CAPF »

VIRAJ 2.0

2024

Number System PYP

Part 7

Mathematics

Lecture - 07

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TOPICS

to be covered

21 April

1

Number System PYP



2

2023 - CDS I, II

3

2022 → CDS I, II

4

→ Decimal & fraction

→ surds & indices

→ LCM & HCF

N.S + Ale

Math

YT

Ale + NS

Ge + NS

CDS - 2023

I
I, II - Solution

CDS - II - 2023

QUESTION

What is the largest number which divides both $2^{35} - 1$ and $2^{91} - 1$?

$2^{35} - 1$ and $2^{91} - 1$ दोनों को विभाजित करने वाली सबसे बड़ी संख्या क्या है?

[2023-I]

(35, 91) HCF

2 - 1

= 2 - 1

= 128 - 1

- 127

A 34

B 90

C 127

D 129

$x^n - 1, x^m - 1$

$= \frac{HCF(n,m)}{x - 1}$

QUESTION

What is the largest power of 10 that divides the product $29 \times 28 \times 27 \times \dots \times 2 \times 1$?
 10 की सबसे बड़ी घात क्या है जो उत्पाद को विभाजित करती है

[2023-I]

$$1 \times 2 \times 3 \times \dots \times 29$$

29!

A 4

B 5

C 6

D 7

$$\therefore \frac{29!}{5!} = 5$$

$$\frac{5}{5} \therefore \frac{1}{1}$$

QUESTION

What is the remainder when 65^{99} is divided by 11?
 65⁹⁹ को 11 से विभाजित करने पर शेषफल क्या होगा?

$$(-1)^{\text{odd}} = -1$$

$$(-1)^{\text{even}} = +1$$

[2023-I]

- A** 0
- B** 5
- C** 9
- D** 10

$$\frac{65^{99}}{11} \Rightarrow \frac{(-1)^{99}}{11}$$

+Ve Remainder

$$= \frac{-1}{11}$$

$$= 11 - 1 = \underline{\underline{10}} \text{ Remainder}$$

QUESTION

Consider the following numbers:

निम्नलिखित संख्याओं पर विचार कीजिये:

- 1. 437
- 2. 797
- 3. 1073

$$\begin{array}{r} 19) \overline{437} \\ \underline{-38} \\ \hline 57 \end{array}$$

How many of the above numbers are prime?
उपरोक्त संख्याओं में से कितनी संख्याएं अभाज्य हैं?

A Only one ✓

797

B Only two

1073

C All three

31, 29,

D None

19, 17

$$\leftarrow 22^2 = 484$$

23

$$\begin{array}{r} 28^2 = 784 \\ \hline \end{array}$$

$$\begin{array}{r} 13) \overline{79716} \\ \underline{-78} \\ \hline 16 \end{array}$$

$$31^2 = 961$$

$$\begin{array}{r} 32^2 = 1024 \\ \hline \end{array}$$

[2023-I]

$$\begin{array}{r} 29) \overline{1073} \\ \underline{-29} \\ \hline 78 \\ \underline{-29} \\ \hline 49 \\ \underline{-49} \\ \hline 0 \end{array} \quad 37$$

QUESTION

D&F ✓
S&I ✓



When every even power of every odd integer (greater than 1) is divided by 8, what is the remainder?

जब प्रत्येक विषम पूर्णक (1 से बड़ा) की प्रत्येक सम घात को 8 से विभाजित किया जाता है, तो शेषफल क्या होगा? [2023-I]

A 3

$$15^2 = 8 \overline{)225} \quad \begin{array}{r} 28 \\ -16 \\ \hline 12 \end{array}$$

B 2

$$65^2 = 8 \overline{)4225} \quad \begin{array}{r} 528 \\ -40 \\ \hline 22 \\ -16 \\ \hline 64 \\ -64 \\ \hline 0 \end{array}$$

C 1

$$\begin{array}{c} 3^{\text{even}} \\ \hline 1 \end{array} \Rightarrow 3^2 = \frac{9}{8} \Rightarrow R=1$$

Odd integer

D The remainder is not necessarily 1

Consider the following statements:

निम्नलिखित कथनों पर विचार कीजिये:

- 1/ If (n) is a natural number, then the number $\frac{n(n^2 + 2)}{3}$ is also a natural number.
- 2/ If (m) is an odd integer, then the number $\frac{m^4 + 4m^2 + 11}{16}$ is an integer.

Which of the statements given above is/are correct?

उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

[2023-I]

A 1 only

$$m = -1$$

$$= \frac{(-1)^4 + 4(-1)^2 + 11}{16}$$

$$n=1 = \frac{1(1+2)}{3} = \frac{1 \times 3}{3} = 1 - \text{Natural N}$$

B 2 only

$$= \frac{1+4+11}{16} = \frac{16}{16} = 1$$

$$n=11 = \frac{11[11^2+2]}{16} = \frac{11 \times 123}{16} = 11 \times 41 - \text{N}$$

C Both 1 and 2

$$= \frac{3^4 + 4 \times 3^2 + 11}{16}$$

$$= \frac{81 + 36 + 11}{16} = \frac{128}{16} = 8$$

even Number \Rightarrow +ve integer

-ve integer

integer

D Neither 1 nor 2

QUESTION

↓ {1, 2, 3, 4, 5, ..., 100}

It is given that 5 does not divide $n - 1$, n and $n + 1$, where n is a positive integer. Which one of the following is correct?

यह दिया गया है कि 5, $n - 1$, n और $n + 1$ को विभाजित नहीं करता है, जहाँ n एक धनात्मक पूर्णांक है।
निम्नलिखित में से कौन सा सही है? [2023-I]

- A** 5 divides $(n^2 + 1)$

$$8^2 + 1 = 64 + 1 = \frac{65}{5} = 13$$

- B** 5 divides $(n^2 - 1)$

$$8, \quad n=9, \quad 10 \quad \checkmark$$

- C** 5 divides $(n^2 + n)$

$$n=7 \\ 6, \quad 7, \quad 8$$

- D** 5 divides $(n^2 - n)$

$$2^2 + 1 = 4 + 1 = 5 \quad \underline{\underline{=}}$$

QUESTION

J → LCM and HCF

What is the largest 5 – digit number, which leaves remainder $\boxed{7}$, when divided by $\boxed{18}$ as well as by $\boxed{11}$?

5 अंकों की सबसे बड़ी संख्या क्या है, जिसे 18 से और 11 से विभाजित करने पर शेषफल 7 प्राप्त होता है?
[2023-I]

- A ~~99981~~
- B ~~99988~~
- C ~~99997~~
- D ~~99999~~

$$\text{Answer} = \frac{18}{\begin{array}{c} 11 \\ | \\ 9 \times 2 \\ | \\ 3 \times 3 \end{array}} / \frac{11}{\begin{array}{c} 3 \\ | \\ 1 \end{array}}$$

QUESTION

Consider the following statements in respect of all factors of 360:

360 के सभी कारकों के संबंध में निम्नलिखित कथनों पर विचार करें:

- ~~1. The number of factors is 24.~~
- ~~2. The sum of all factors is 1170.~~

Which of the above statements is/are correct?

उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

A 1 only

B 2 only

C Both 1 and 2

D Neither 1 nor 2

$$360 \Rightarrow 2^2 \times 3^2 \times 5 \times 2 \\ \Rightarrow 2^3 \times 3^2 \times 5^1$$

[2023-I]

$$\begin{aligned} \text{Total No. of factors} &= (3+1)(2+1)(1+1) \\ &= 4 \times 3 \times 2 \\ &= 24 \end{aligned}$$

$$\begin{aligned} \text{Sum of factors} \\ &= [2^0 + 2^1 + 2^2 + 2^3] [3^0 + 3^1 + 3^2] [5^0 + 5^1] \\ &= 15 \times 13 \times 6 \end{aligned}$$

$$= 13 \times 90$$

$$= \underline{\underline{1170}}$$

QUESTION

Consider a 6-digit number of the form XYXYXY.

The number is divisible by:

फॉर्म XYXYXY की 6-अंकों की संख्या पर विचार करें।
संख्या निम्न द्वारा विभाज्य है:

- A** 3 and 7 only
- B** 7 and 13 only
- C** 3, 13 and 37 only
- D** 3, 7, 13 and 37

$$\begin{array}{r} 24 \times 10101 \\ \swarrow \quad \nwarrow \\ 91 \times 111 \end{array}$$

[2023-I]

$$\begin{array}{c} \wedge \quad \wedge \\ 13 \times 7 \times 3 \times 37 \end{array}$$

$$abab = ab \times 101$$

$$abcabc = abc \times 1001 \rightarrow 7, 11, 13$$

$$\underline{\underline{ababab}} = ab \times 10101 \rightarrow 3, 7, 13, 37, 111, 91$$

$$\underline{\underline{\underline{aaaaaa}}} = 3, 7, 11, 13, 37, 91, 111, 1001$$

QUESTION $(m, n) \in \{1, 2, 3, 4, \dots\}$ 

Let m and n be natural numbers. What is the minimum value of $(m + n)$ such that $33m + 22n$ is divisible by 121?

मान लीजिए m और n प्राकृतिक संख्याएँ हैं। $(m + n)$ का न्यूनतम मान क्या है ताकि $33m + 22n$ 121 से विभाज्य हो? [2023-I]

$$m \cancel{+} n = 5$$

~~$$= 33 \times \cancel{2} + \cancel{22} \times \cancel{3}$$

$$= 66 + 66 =$$~~

$$33m + 22n =$$

Number + Algebra

A 3

B 4

C 5

D 10

$$= 33 \times \underline{3} + 22 \times \underline{1} = 121$$

Number + Geometry
(R.A.T) / (E.T)

$$m+n = \underline{4}$$

QUESTION

Let a, b, c and d be four positive integers such that

$a + b + c + d = 200$. If $S = (-1)^a + (-1)^b + (-1)^c + (-1)^d$, then what is the number of possible values of S ?

माना a, b, c और d चार धनात्मक पूर्णांक इस प्रकार हैं कि
 $a + b + c + d = \underline{200}$ यदि $S = (-1)^a + (-1)^b + (-1)^c + (-1)^d$ है, तो S के संभावित मानों की संख्या क्या है? [2023-I]

A One

$$\cancel{\checkmark} \cancel{\checkmark} \cancel{\checkmark} \cancel{\checkmark} \stackrel{\text{even}}{=} 200$$

B Two

$$\underline{\varepsilon + \varepsilon} + \underline{\varepsilon + \varepsilon} = E$$

C Three

$$\underline{0+0} + \underline{0+0} = \varepsilon$$

D Four

$$\varepsilon + \underline{0+0} + \varepsilon = \varepsilon$$

$$a, b, c, d = \{1, 2, 3, 4, \dots\}$$

$$(-1)^{\text{even}} = +\text{ve}$$

$$(-1)^{\text{odd}} = -\text{ve}$$

$$S = \frac{(-1)^{\text{even}} + (-1)^{\text{even}} + (-1)^{\text{even}} + (-1)^{\text{even}}}{4} = 4$$

$$1 + 1 + 1 + 1 = 4$$

$$S = 4$$

$$S = -1 - 1 - 1 - 1$$

$$S = -4$$

$$Q = [4, -4, 0]$$

$$S = \cancel{1} + \cancel{1} - \cancel{1} + \cancel{1} \quad S = 0$$

QUESTION

The number $97^{30} - 14^{30}$ is divisible by:

\checkmark $=$

$$\begin{array}{r} 97 \\ 14 \\ \hline 111 \\ 3 \times 37 \end{array}$$

$$\begin{array}{r} 97 \\ 14 \\ \hline 83 \end{array}$$

A 37 but not 83

B 83 but not 37

C Both 37 and 83

D Neither 37 nor 83

[2023-I]

$$a^n - b^n$$

$n = \text{even}$

$$= \underline{(a+b)} \quad \underline{(a-b)}$$

$$a^n - b^n$$

$n = \text{odd}$

$$= (a-b)$$

Consider the following statements:

निम्नलिखित कथनों पर विचार कीजिये:

1. $n^3 - n$ is divisible by 6.
2. $n^5 - n$ is divisible by 5.
3. $n^5 - 5n^3 + 4n$ is divisible by 120.

Which of the statements given above are correct?

उपर्युक्त कथनों में से कौन-से सही हैं?

$$\begin{array}{r} 2413 \\ 135 \\ \hline 108 \end{array}$$

A

1 and 2 only

$$\begin{aligned} n=2 &= 2^5 - 2 \\ &= 32 - 2 = 30 \end{aligned}$$

B

2 and 3 only

$$n=-2 = -32 + 2 = -30$$

$$\begin{aligned} n^5 - 5n^3 + 4n &= 3 \\ &= 27 - 5 \times 3 \\ &= 135 \end{aligned}$$

C

1 and 3 only

$$2^5 - 5 \times 2^3 + 4 \times 2$$

$$32 - 40 + 8$$

$$48 - 40 = 0 = 108 + 12 = 120 = 120$$

D

1, 2 and 3

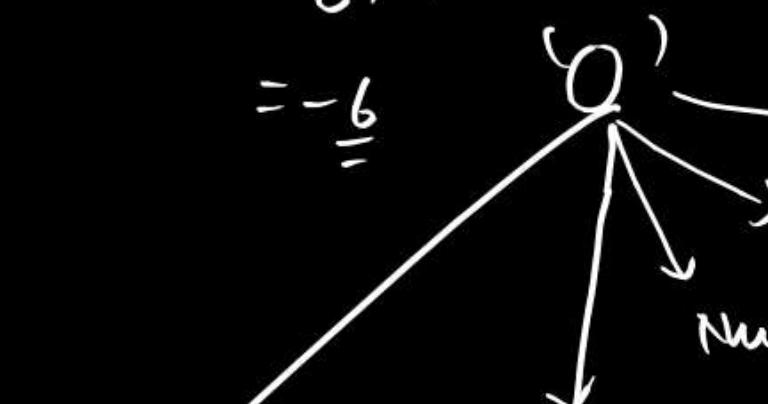
$n \geq \text{integer}$

$n=1$

$$n=2 \quad 2^3 - 2 = 8 - 2 = 6$$

$$n=-2 \quad (-2)^3 - (-2)$$

$$\begin{aligned} &-8 + 2 \\ &= -6 \end{aligned}$$



[2023-I]

0 is multiple of every Number

Natural Intgr

[Neither -ve, Nor positive]

Even integers

(Whole Numbers)

$$3^3 - 3 = 27 - 3 = 24 // b$$

QUESTION

What is the last digit of the sum $S = 9^{27} + 27^9$?

[2023-I]

$$\begin{array}{r} \cancel{9} \\ + 7^1 \\ \hline \end{array}$$

$$\begin{array}{r} 9^{\text{odd}} = \underline{9} \\ = \end{array}$$

$$= 9 + 9 = \underline{16}$$

- A** 3
- B** 6
- C** 7
- D** 9

Consider the following statements in respect of the polynomial $1 - x - x^n + x^{n+1}$, where n is a natural number:

- ~~1.~~ It is divisible by $1 - 2x + x^2$. $\Rightarrow (x-1)(x-1)$
2. It is divisible by $1 - x^n$.

Which of the statements given above is/are correct?

$$(1-x)$$

$$n=1$$

$$\begin{array}{l} x-1=0 \\ n=1 \end{array}$$

$$\begin{aligned} 1-x-x+x^2 &\Rightarrow (x^2+1-2x) \\ &= (x-1)^2 \end{aligned}$$

[2023-I]

NSTAG

$$-(x-1)$$

$$n = \{1, 2, 3, 4, \dots, \infty\}$$

A 1 only

B 2 only

C Both 1 and 2

D Neither 1 nor 2

$$1-x-x^2+x^3$$

$$1-1-1+1=0$$

Each item contains a Question followed by two Statements. Answer each item using the following instructions:

A number $277XY$ (where X, Y are digits) is divisible by 25 .

Question: What is the value of X ?

Statement I: The given number is divisible by 9 .

Statement II: $X > 5$.

इसके बाद दो वक्तव्य दिए गए हैं। निम्नलिखित निर्देशों का उपयोग करके प्रत्येक आइटम का उत्तर दें:

एक संख्या $277XY$ (जहाँ X, Y अंक हैं) 25 से विभाजित है।

प्रश्न: X का मान क्या है?

~~कथन I:~~ दी गई संख्या 9 से विभाज्य है।

~~कथन II:~~ $X > 5$.

$$\cancel{2+7+1} \cancel{3+7+5}$$

$$\underline{\underline{277XY}}$$

$$\Rightarrow \boxed{75}$$

$$\Rightarrow \boxed{00}$$

$$\Rightarrow \boxed{25}$$

$$\Rightarrow \boxed{50}$$

$$\Rightarrow \boxed{X Y}$$

$$\underline{\underline{27750}}$$

$$\begin{array}{c} 75 \\ \times 25 \\ \hline 375 \\ +150 \\ \hline 1875 \end{array}$$

$$\begin{array}{c} X \\ \swarrow \quad \searrow \\ > \\ \swarrow \quad \searrow \\ Y \end{array}$$

\boxed{XY}
$\boxed{00}$
$\boxed{25}$
$\boxed{50}$
$\boxed{75}$

$$\begin{array}{r} 3750 \\ \times 25 \\ \hline 18750 \end{array}$$

[2023-I]

- A** Choose this option if the Question can be answered by one of the Statements alone but not by the other.
- B** Choose this option if the Question can be answered by either Statement alone.
- C** Choose this option if the Question can be answered by using both the Statements together, but cannot be answered by using either Statement alone.
- D** Choose this option if the Question cannot be answered even by using both Statements together.

QUESTION

If $\frac{2a}{3} = \frac{4b}{5} = \frac{3c}{4}$, then what is the value of $\frac{18}{a}\sqrt{a^2 + c^2 - b^2}$?

[2023-II]

$$\frac{2a}{3} = \frac{4b}{5} = \frac{3c}{4} = k$$

$$\frac{2a}{3} = k$$

A

$$3\sqrt{5}$$

$$a:b:c = \frac{3}{2}k : \cancel{k}^6 : \frac{5}{4}k^3 : \frac{4}{3}k^4$$

$$a = \frac{3}{2}k$$

$$= \frac{18}{18} \sqrt{18^2 + 16^2 - 15^2} = 18:15:16$$

B

$$\sqrt{355}$$

$$= 1 \sqrt{324 + 31}$$

C

$$\sqrt{375}$$

$$= \sqrt{355}$$

D

$$3\sqrt{15}$$

QUESTION

$41^{43} + 43^{43}$ is divisible by

[2022-I]

$$a^n + b^n$$

$$n = \text{odd}$$

always divisible by $(a+b)$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

A 80

$$\begin{array}{r} 41 \\ 43 \\ \hline 84 \end{array}$$

B 84

C 86

D 88

QUESTION

$4^{61} + 4^{62} + 4^{63} + 4^{64}$ is divisible by

[2022-I]

$$4^{61} [1 + 4 + 4^2 + 4^3]$$

$$= 4^{61} [1 + 4 + 16 + 64]$$

$$= 4^{61} \times 85$$

\wedge

5×17

A 7

B 9

C 11

D 17

QUESTION

If $43^x \times 47^y = (2021)^2$, $x \neq 0, y \neq 0$, then what is the value of the following?

[2022-I]

$$\frac{4xy + x + y}{2xy - x - y}$$

$$43^x \times 47^y = (43 \times 47)^2$$

$$16+4 = \frac{20}{4} \textcircled{5}$$

- 8-4-
A 5

- B 15

- C 25

- D 45

$$x=2$$

$$y=2$$

$$(ab)^m = a^m b^m$$

Same and ten Rule

$$63 \times 67 = 4221$$

$$43 \times 47 = \underline{\underline{2021}}$$

QUESTION

Let a, b, c, d be positive integers. If $\frac{1}{a+\frac{1}{b+\frac{1}{c+\frac{1}{d}}}} = \frac{17}{60}$ then what is the product of a, b, c, d ?

$$\frac{1}{a+\frac{1}{b+\frac{1}{c+\frac{1}{d}}}}$$

$$\begin{aligned} 3 &= a + \frac{1}{b} \\ b &= b + \frac{1}{c+1} \end{aligned}$$

$$3 + \frac{9}{17}$$

[2022-I]

$$\begin{aligned} c &= 1 \\ d &= 8 \end{aligned}$$

$$(1) + \frac{1}{8}$$

$$\textcircled{1} + \frac{6}{9}$$

$$\frac{17}{9}$$

$$1 + \frac{1}{8}$$

102

A

24

B

51

C

68

D

$$= a \times b \times c \times d$$

$$= 3 \times 1 \times 1 \times 8 = 24$$

QUESTION

Forth Nikar

What is the least value of n if $194480 + n = m^4$, where m and n are natural numbers? यदि $194480 + n = m^4$ है, जहाँ m और n प्राकृतिक संख्याएँ हैं, तो n का न्यूनतम मान क्या है? [2022-I]

$$n=1$$

$$n=1$$

$$\underline{\underline{81}}$$

$$\cancel{P_{82}}$$

A

1

B

2

$$\cancel{83}$$

C

3

$$\cancel{\underline{\underline{84}}}$$

D

4

$$\cancel{82}$$

$$44^2 = 1936$$

$$45^2 = 2025$$

$$\cancel{194481}$$

$$\cancel{441}$$

$$\cancel{4444}$$

$$\cancel{449}$$

$$448 \cancel{0}$$

$$(441)^2 = m^4$$

$$441 = m^2 \quad m = 21$$

QUESTION

What is the smallest natural number from the following which must be subtracted from 9410 to make the remaining number a perfect square?

निम्नलिखित में से वह सबसे छोटी प्राकृत संख्या क्या है जिसे 9410 से घटाया जाना चाहिए ताकि शेष संख्या एक पूर्णवर्ग बन जाए? [2022-I]

$$n=1$$

A 4

B 3

C 2

D 1

$$\begin{array}{r} 9410 \\ - 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9408 \\ \hline \end{array}$$

$$\begin{array}{r} 9410 \\ - 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9409 \\ \hline \end{array}$$

$$\begin{array}{r} - 3 \\ \hline 9407 \end{array}$$

QUESTION

$27^5 + 3^{13}$ is divisible by

[2022-I]

$$[3^3]^5 + 3^{13}$$

$$= 3^{15} + 3^{13}$$

$$= 3^{13}(3^2 + 1)$$

$$= 3^{13} \times \underline{10}$$

A

8

B

10

C

12

D

21

QUESTION

(2, 4, 6, 8, 10, ...)

Let $p = 2^{2n+2} + m$ and $q = 2^{4n} - m$ (where n is even natural number).What should be the least value of m such that p as well as q is divisible by 5?

[2022-I]

$m=2$

$m=1$

$$p = \cancel{2^{2 \times 2+2}} + m = 64 + m = 64 + 1 = 65$$

$$q = \cancel{2^{4 \times 2}} - m = 2^8 - m = 256 - m = 256 - 1 = 255 \checkmark$$

A

-1

B

1

C

4

D

6

$$\begin{array}{c} m=1 \\ \swarrow \searrow \\ Q \end{array}$$

$m=$

Consider the following statements:

1. The sum of the cubes of three consecutive natural numbers is divisible by 9.

तीन क्रमागत प्राकृत संख्याओं के घनों का योग 9 से विभाज्य है।

2. Every even power of every odd number (>1) when divided by 8 gives 1 as a remainder. Which of the above statements is/are correct?

प्रत्येक विषम संख्या (>1) की प्रत्येक सम घात को जब 8 से विभाजित किया जाता है तो शेषफल के रूप में 1 प्राप्त होता है।

उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

[2022-I]

A 1 only

मृश

B 2 only

C Both 1 and 2

D Neither 1 nor 2

QUESTION

What is the number of divisors of 1000 (excluding 1 and 1000)?
1000 के भाजकों की संख्या क्या है (1 और 1000 को छोड़कर)?

[2022-I]

A 12

B 13

C 14

D 16

41ω

Consider a question and two statements:

[2022-I]

Question:

Is $3x+2y$ positive?

Statement-I: $x^3 = -29.8$

Statement-II: $y^3 = 3x$

Which one of the following is correct in respect of the question and the statements?

एक प्रश्न और दो कथनों पर विचार करें: [2022-I]

प्रश्न:

क्या $3x+2y$ सकारात्मक है?

कथन-I: $x^3 = -29.8$

कथन-II: $y^3 = 3x$

प्रश्न और कथनों के संबंध में निम्नलिखित में से कौन सा सही है?

11/10

A

Statement-I alone is sufficient to answer the question

B

Statement-II alone is sufficient to answer the question

C

Both Statement-I and Statement-II are together sufficient to answer the question

D

Both Statement-I and Statement-II are not

If three times the greater of two numbers is divided by the smaller number, the quotient will be 6 and the remainder will be 6. If five times the smaller number is divided by the greater number, the quotient will be 2 and the remainder will be 3.

What is the difference between the numbers?

यदि दो बड़ी संख्याओं के तीन गुना को छोटी संख्या से विभाजित किया जाता है, तो भागफल 6 होगा और शेषफल 6 होगा। यदि छोटी संख्या के पांच गुना को बड़ी संख्या से विभाजित किया जाता है, तो भागफल 2 होगा और शेषफल 3 होगा। संख्याओं के बीच का अंतर क्या है? [2022-II]

A 8

B 9

C 10

D 12



QUESTION

There are two natural numbers x and y , where $x > y$. When x is divided by 6, it leaves the remainder 2 and; is y divided by 6, it leaves the remainder 3. What is the remainder when $(x - y)$ is divided by 6?

दो प्राकृतिक संख्याएँ x और y हैं, जहाँ $x > y$ है। जब x को 6 से विभाजित किया जाता है, तो यह शेषफल 2 और; y को 6 से विभाजित किया जाता है, यह शेषफल 3 छोड़ देता है। $(x - y)$ को 6 से विभाजित करने पर शेषफल क्या होगा? [2022-II]

- A** 1
- B** 3
- C** 5
- D** Remainder cannot be determined



QUESTION

The value of a 2-digit number is 5 times the sum of the digits. What is the product of the digits?

2-अंकीय संख्या का मान अंकों के योग का 5 गुना है। अंकों का गुणनफल क्या है?

[2022-II]

A 15

B 18

C 20

D 27

(45)

Consider the number $N = 12^6 \times 3^8 \times 5^3$. Which of the following statements is/are correct?

1. The number of odd factors of N is 60.
2. The number of even factors of N is 720.

Select the correct answer using the code given below:

संख्या $N = 12^6 \times 3^8 \times 5^3$ पर विचार करें। निम्नलिखित में से कौन-सा/से कथन सही है/हैं?

1. N के विषम गुणनखंडों की संख्या 60 है।
2. N के सम गुणनखंडों की संख्या 720 है।

नीचे दिए गए कूट का उपयोग करके सही उत्तर का चयन कीजिए:

[2022-II]



A

Only 1

B

Only 2

C

Both 1 and 2

D

Neither 1 nor 2

Consider the question and two statements given below: [2022-II]

A 2-digit number is added to the number formed by reversing the digits of the 2-digit number.

Question: What is the 2-digit number?

Statement-1: The sum is divisible by 9.

Statement -2: The sum is divisible by 2.

Which one of the following is correct in respect of the question and the statements?

नीचे दिए गए प्रश्न और दो कथनों पर विचार करें:

2-अंकीय संख्या के अंकों को उलटकर बनाई गई संख्या में 2-अंकीय संख्या जोड़ी जाती है।

प्रश्न: 2 अंकों की संख्या क्या है?

कथन-1: योग 9 से विभाज्य है।

कथन -2: योग 2 से विभाजित है।

प्रश्न और कथनों के संबंध में निम्नलिखित में से कौन सा सही है?

HW

- A** Statement-1 alone is sufficient to answer the question
- B** Statement-2 alone is sufficient to answer the question
- C** Both Statement-1 and Statement-2 are sufficient to answer the question
- D** Both Statement-1 and Statement-2 are not sufficient to answer the question

QUESTION

Consider the question and two statements given below :

[2022-II]

Question: Is $(x^n + y^n)$ divisible by $(x + y)$?

Statement-1: n is a natural number.

Statement-2: n is an even natural number.

Which one of the following is correct in respect of the question and the statements?

H4

- A** Statement-1 alone is sufficient to answer the question
- B** Statement-2 alone is sufficient to answer the question
- C** Both Statement-1 and Statement-2 are sufficient to answer the question
- D** Both Statement-1 and Statement-2 are not sufficient to answer the question

QUESTION

If the number $413283P759387$ is divisible by 13 , then what is the value of P?

यदि संख्या $413283P759387$ 13 से विभाज्य है, तो P का मान क्या है?

[2021-I]

A 3

B 6

C 7

D 8



QUESTION

What is the remainder when $2^{1000000}$ is divided by 7?

$2^{1000000}$ को 7 से विभाजित करने पर शेषफल क्या होगा?

[2021-I]

A 1



B 2

C 4

D 6

QUESTION

Consider the pairs of prime numbers (m, n) between 50 and 100 such that $m - n = 6$. How many such pairs are there?

50 और 100 के बीच अभाज्य संख्याओं (m, n) के युग्मों पर विचार करें जैसे $m - n = 6$ । ऐसे कितने जोड़े हैं?
[2021-I]

A 2

B 3

C 4

D 5



QUESTION

How many terms are there in the following product?

निम्नलिखित गुणनफल में कितने पद हैं?

$$(a_1 + a_2 + a_3)(b_1 + b_2 + b_3 + b_4)(c_1 + c_2 + c_3 + c_4 + c_5)$$

[2021-I]

A 15

B 30

C 45

D 60

H ω

QUESTION

What is the remainder when $27^{27} - 15^{27}$ is divided by 6?

$27^{27} - 15^{27}$ को 6 से विभाजित करने पर शेषफल क्या होगा?

[2021-I]

A 0

B 1

C 3

D 4





JAI HINDO