31 Jan 2025 Live Classes Schedule

Time	Class	Instructor
9:00AM	31 JANUARY 2025 DAILY DEFENCE UPDATES	DIVYANSHU SIR
10:00AM	31 JANUARY 2025 DAILY CURRENT AFFAIRS	RUBY MA'AM

AFCAT 1 2025 LIVE CLASSES

Time	Class	Instructor
12:30PM	REASONING - SYLLOGISM	RUBY MA'AM
3:00PM	STATIC GK - IMPORTANT INTERNATIONAL GROUPS	DIVYANSHU SIR
4:30PM	ENGLISH - ANTONYMS - CLASS 3	ANURADHA MA'AM
5:30PM	MATHS - NUMBER SYSTEM - CLASS 2	NAVJYOTI SIR

NDA 1 2025 LIVE CLASSES

Time	Class	Instructor
10:00AM	MATHS - VECTOR ALGEBRA	NAVJYOTI SIR
11:30AM	MODERN HISTORY - CLASS 3	RUBY MA'AM
1:00PM	PHYSICS - ROTATIONAL MOTION	NAVJYOTI SIR
4:30PM	ENGLISH - ANTONYMS - CLASS 3	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

Time	Class	Instructor
11:30AM	MODERN HISTORY - CLASS 3	RUBY MA'AM
1:00PM	PHYSICS - ROTATIONAL MOTION	NAVJYOTI SIR
4:30PM	ENGLISH - ANTONYMS - CLASS 3	ANURADHA MA'AM
5:30PM	MATHS - NUMBER SYSTEM - CLASS 2	NAVJYOTI SIR

Q) If the number $4\overline{13}\overline{283}P\overline{759}387$ is divisible by 13, then what is the value of P?

(a) 3   (b) 6   (c) 7   (d) 8

$(387 - 759 + 83P - 132 + 4)$ — Should be divisible by 13

$-37\,2 - 132 + 4 + 83P$

$-504 + 4 + 83P$

$-500 + \underline{83P}$

$= (33P)$ —

(a) 3 — ✗
(b) 6 — ✗
(c) 7 — ✗
(d) 8 — ✓

$83P$

$800 + 30 + P$

$- 500$
_____

$300 + 30 + P$
_____

$83P$
_____

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

(a) 3 (b) 6 (c) 7 (d) 8

Ans: (d)

A 4-digit number N has exactly 15 distinct divisors. What is the total number of distinct divisors of N^2 ?

(a) 16

(b) 30

(c) 45

(d) 225
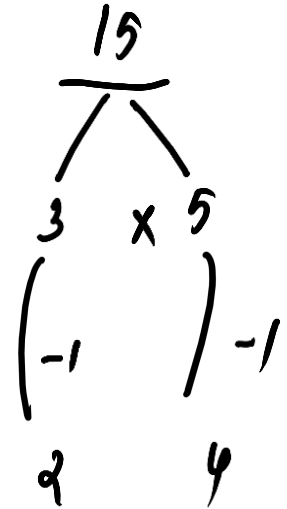
$$N = x^2 \times y^4$$

$(x \And y \text{ are prime factors})$

$$N^2 = x^4 \times y^8$$

distinct divisors $= (4+1)(8+1)$

$= 5 \times 9 = \boxed{45}$

15

3 × 5

$\left(\begin{array}{c} \\ -1 \\ \\ 2 \end{array}\right) -1$

4

Q) Three men start together to travel the same way around a

circular track of 11 kms. Their speeds are 4, $5\frac{1}{2}$, and 8 kms

per hour respectively. When will they meet at the starting
point?

(a)   22 hrs   (b)   12 hrs

(c)   11 hrs   (d)   44 hrs

Meeting at starting point = Lowest common multiple of their times,

$$LCM\left(\frac{11}{4}, \frac{11}{\left(\frac{11}{2}\right)}, \frac{11}{8}\right) = LCM\left(\frac{11}{4}, \frac{2}{1}, \frac{11}{8}\right)$$

$$LCM\left(\frac{11}{4}, \frac{2}{1}, \frac{11}{8}\right) = \frac{LCM(11, 2, 11)}{HCF(4, 1, 8)} = \frac{22}{1}$$

$$= \boxed{22 \text{ hours}}$$

Q) Three men start together to travel the same way around a circular track of 11 kms. Their speeds are 4, $5\dfrac{1}{2}$, and 8 kms per hour respectively. When will they meet at the starting point?

(a)   22 hrs

(b)   12 hrs

(c)   11 hrs

(d)   44 hrs

Ans: (a)

Q) One pendulum ticks 57 times in 58 seconds and another 608 times in 609 seconds. If they started simultaneously, find the time after which they will tick together.

(a) $\dfrac{211}{19}$ s

(b) $\dfrac{1217}{19}$ s

(c) $\dfrac{1218}{19}$ s

(d) $\dfrac{1018}{19}$ s

Time required for a tick,

$57 \longrightarrow 58$ s

$1 \longrightarrow \dfrac{58}{57}$ s

$608 \longrightarrow 609$ s

$1 \longrightarrow \dfrac{609}{608}$ s

Time they tick together,

$$LCM \left(\frac{58}{57}, \frac{609}{608} \right) = \frac{LCM\ (58, 609)}{HCF\ (57, 608)}$$

$$\begin{array}{r} 42^{\ 4} \\ \times\ 29\ ' \\ \hline 121\ 8 \end{array}$$

$$= \frac{2 \times 3 \times 7 \times 29}{19}$$

$$= \frac{42 \times 29}{19} = \boxed{\frac{1218}{19}}$$

$$57 = 3 \times \textcircled{19}$$

$$608 = 32 \times \textcircled{19}$$

$$58 = \underline{2 \times 29}$$

$$609 = 3 \times 203$$
$$= 3 \times 7 \times 29$$

$$= \underline{3 \times 7 \times 29}$$

Q) One pendulum ticks 57 times in 58 seconds and another 608 times in 609 seconds. If they started simultaneously, find the time after which they will tick together.

(a) $\dfrac{211}{19}$ s

(b) $\dfrac{1217}{19}$ s

(c) $\dfrac{1218}{19}$ s

(d) $\dfrac{1018}{19}$ s

Ans: (c)

Q) The sum of first 47 terms of the series

$$\left(\frac{1}{4}+\frac{1}{5}-\frac{1}{6}-\frac{1}{4}-\frac{1}{5}+\frac{1}{6}\right)+\frac{1}{4}+\frac{1}{5}-\frac{1}{6}\ldots..\text{ is}$$

(a) 0

(b) $-\dfrac{1}{6}$

(c) $\dfrac{1}{6}$

(d) $\dfrac{9}{20}$

$$\left(\frac{1}{4}+\frac{1}{5}-\frac{1}{6}-\frac{1}{4}-\frac{1}{5}+\frac{1}{6}\right)+---$$

$$0$$

$$\left(\frac{1}{4}+\frac{1}{5}-\frac{1}{6}-\frac{1}{4}-\frac{1}{5}+\frac{1}{6}\right)$$

remaining

sum of 48 terms = 0

" " 47 " = $-\dfrac{1}{6}$

Q) The sum of first 47 terms of the series

$$\frac{1}{4}+\frac{1}{5}-\frac{1}{6}-\frac{1}{4}-\frac{1}{5}+\frac{1}{6}+\frac{1}{4}+\frac{1}{5}-\frac{1}{6} \ldots \text{ is}$$

(a) 0

(b) $-\frac{1}{6}$

(c) $\frac{1}{6}$

(d) $\frac{9}{20}$

Ans: (b)

Q) If 10^n divides $6^{23} \times 75^9 \times 105^2$, then what is the largest value of n?

(a) 20   (b) 22   (c) 23   (d) 28

$$\frac{(2 \times 3)^{23} \times (5^2 \times 3)^9 \times (5 \times 3 \times 7)^2}{2^{23} \times 5^{18} \times 5^2}$$ (only count powers of 2 and 5)

$$10 = 2 \times 5$$

$$2^{23} \times 5^{20}$$

$$= (2 \times 5)^{20} \times 2^3 \quad\longrightarrow\quad \underline{10^{20}}$$

$$\boxed{n = 20}$$

Q) If 10^n divides $6^{23} \times 75^9 \times 105^2$, then what is the largest value of n?

(a) 20 (b) 22 (c) 23 (d) 28

Ans: (a)

Q) What is the remainder when $(17^{23} + 23^{23} + 29^{23})$ is divided by 23 ?

(a)   0   (b)   1

(c)   2   (d)   3

$$\frac{17^{23}}{23} + \frac{23^{23}}{23} + \frac{29^{23}}{23}$$

$$\frac{a^n + b^n}{a + b} \longrightarrow \text{remainder} = 0$$

$$0 + \frac{17^{23} + 29^{23}}{23}$$

$$= 0 + \frac{17^{23} + 29^{23}}{17 + 29} = \frac{17^{23} + 29^{23}}{46} = \frac{17^{23} + 29^{23}}{2 \times 23}$$

Q) What is the remainder when $(17^{23} + 23^{23} + 29^{23})$ is divided
by 23 ?
(a)   0
(b)   1
(c)   2
(d)   3

Ans: (a)

Q) Consider the following statements:

(I) There is a finite number of rational numbers between any two rational numbers. ✗

(II) There is an infinite number of rational numbers between any two rational numbers. ✓

(III) There is a finite number of irrational numbers between any two rational numbers. ✗

Which of the above statements is/are correct?

(a) Only I

(b) Only II ✓

(c) Only III

(d) Both I and II

Q) Consider the following statements:
 (I) There is a finite number of rational numbers between any two rational numbers.
 (II) There is an infinite number of rational numbers between any two rational numbers.
 (III) There is a finite number of irrational numbers between any two rational numbers.
 Which of the above statements is/are correct?
 (a) Only I
 (b) Only II
 (c) Only III
 (d) Both I and II

Ans: (b)

Q) If $\dfrac{1}{1 \times 2} + \dfrac{1}{2 \times 3} + \dfrac{1}{3 \times 4} + \ldots + \dfrac{1}{n(n+1)} = \dfrac{99}{100}$ then what is the value of n?

(a) 98 (b) 99 (c) 100 (d) 101

$$\left(\frac{1}{1} - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) + \cdots \left(\frac{1}{n} - \frac{1}{n+1}\right) = \frac{99}{100}$$

$$\left(1 - \frac{1}{n+1}\right) = \frac{99}{100}$$

$$\frac{n}{n+1} = \frac{99}{100} \quad \Rightarrow \quad 100n = 99n + 99$$

$$\boxed{n = 99}$$

Q) If $\dfrac{1}{1\times 2}+\dfrac{1}{2\times 3}+\dfrac{1}{3\times 4}+...+\dfrac{1}{n(n+1)}=\dfrac{99}{100}$ then what is the value of n?

(a) 98   (b) 99   (c) 100   (d) 101

Ans: (b)

Q) The highest four-digit number which is divisible by each of
the numbers 16, 36, 45, 48 is

(a) 9180　　　(b) 9360　　　(c) 9630　　　(d) 9840

$$LCM\ (16,\ 36,\ 45,\ 48) = \underline{720}$$

Highest four digit number = 9999

$$16 = 2^4$$

$$36 = 2^2 \times 3^2$$

$$45 = 3^2 \times 5$$

$$48 = 2^4 \times 3$$

$$LCM = 2^4 \times 3^2 \times 5$$

$$= 16 \times 9 \times 5$$

$$= 144 \times 5 = \underline{720}$$

$$
\begin{array}{r}
13 \\
720\overline{)9999} \\
-720 \\
\hline
2799 \\
-2160 \\
\hline
639 \\
\end{array}
$$

$$
\begin{array}{r}
9999 \\
-639 \\
\hline
9360 \\
\end{array}
$$

subtract the remainder

This is exactly divisible

by 720.

Q) The highest four-digit number which is divisible by each of the numbers 16, 36, 45, 48 is

(a) 9180 (b) 9360 (c) 9630 (d) 9840

Ans: (b)

Q) What is the remainder when $(17^{29} + 19^{29})$ is divided by 18?

(a) 6   (b) 2   (c) 1   (d) 0

$$\frac{17^{29} + 19^{29}}{17 + 19} = \frac{17^{29} + 19^{29}}{36} \Rightarrow 17^{29} + 19^{29} \text{ is divisible by } 36,$$

$$Rem\left(\frac{a^n + b^n}{a + b}\right) = 0 \quad \text{if} \quad n = odd$$

$\Downarrow$

if divisible by 36, if will also be divisible by factors of 36 $\Rightarrow$ divisible by 18

Q) What is the remainder when $(17^{29} + 19^{29})$ is divided by 18?

(a) 6   (b) 2   (c) 1   (d) 0

Ans: (d)

Q) The expression $5^{2n} - 2^{3n}$ has a factor

(*a*) 3   (*b*) 7

(*c*) 17   (*d*) None of the above

$$n = 1 \quad \Rightarrow \quad 5^{2 \times 1} - 2^{3 \times 1} = 5^2 - 2^3 = 25 - 8 = \boxed{17}$$

$$n = 2 \quad \Rightarrow \quad 5^4 - 2^{3 \times 2} = 625 - 64 = 561 = \underline{33 \times 17}$$

Q) The expression $5^{2n} - 2^{3n}$ has a factor

(a) 3

(b) 7

(c) 17

(d) None of the above

Ans: (c)

Q) Which one of the following is the largest divisor of $3^x + 3^{x+1} + 3^{x+2}$, if x is any natural number?

(a) 3   (b) 13   (c) 39   (d) 117 ✓

$$3^x + 3^{x+1} + 3^{x+2}$$

$$3^x \left(1 + 3^1 + 3^2 \right)$$

$$3^x \left(1 + 3 + 9 \right)$$

$$3^x (13)$$

$x = 1 \implies \underline{39}$

$x = 2 \implies \underline{117}$

Q) Which one of the following is the largest divisor of $3^x + 3^{x+1} + 3^{x+2}$, if x is any natural number?

(a) 3   (b) 13   (c) 39   (d) 117

Ans: (c)

Q) Consider the following statements:

If p is a prime such that p + 2 is also a prime, then

I.   p (p + 2) + 1 is a perfect square.

II. 12 is a divisor of p + (p + 2), if p > 3.

Which of the above statements is/are correct ?

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Q) Consider the following statements:
If p is a prime such that p + 2 is also a prime, then
I.   p (p + 2) + 1 is a perfect square.
II.   12 is a divisor of p + (p + 2), if p > 3.
Which of the above statements is/are correct ?
(a)   Only I   (b)   Only II
(c)   Both I and II   (d)   Neither I nor II

Ans: (c)

Q) Which one of the following is correct?

The sum of two irrational numbers

(a) is always a natural or irrational

(b) may be rational or irrational

(c) is always a rational number

(d) is always an irrational number

Q) Which one of the following is correct?

The sum of two irrational numbers

(a) is always a natural or irrational

(b) may be rational or irrational

(c) is always a rational number

(d) is always an irrational number

Ans: (b)

Q) Consider the following statements in respect of three 3-digit numbers XYZ, YZX and ZXY :

1. The sum of the numbers is not divisible by $(X + Y + Z)$.

2. The sum of the numbers is divisible by 111.

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Q) Consider the following statements in respect of three 3-digit numbers XYZ, YZX and ZXY :

1. The sum of the numbers is not divisible by $(X + Y + Z)$.

2. The sum of the numbers is divisible by 111.

Which of the above statements is/are correct?

(a) 1 only   (b) 2 only

(c) Both 1 and 2   (d) Neither 1 nor 2

Ans: (b)

Q) The least number that should be added to 2055 so that the sum is exactly divisible by 27 :

(a) 24   (b) 27   (c) 31   (d) 28

Q) The least number that should be added to 2055 so that the sum is exactly divisible by 27 :

(a) 24   (b) 27   (c) 31   (d) 28

Ans: (a)

Q) Let x be the least number, which when divided by 5, 6, 7 and 8 leaves a remainder 3 in each case but when divided by 9 leaves no remainder. The sum of digits of x is

(a) 22   (b) 21   (c) 18   (d) 24

Q) Let x be the least number, which when divided by 5, 6, 7 and 8 leaves a remainder 3 in each case but when divided by 9 leaves no remainder. The sum of digits of x is

(a) 22   (b) 21   (c) 18   (d) 24

Ans: (c)

Q) I have a certain number of beads which lie between 600 and 900. If 2 beads are taken away the remainder can be equally divided among 3, 4, 5, 6, 7 or 12 boys. The number of beads I have

(a)   729   (b)   842   (c)   576   (d)   961

Q) I have a certain number of beads which lie between 600 and 900. If 2 beads are taken away the remainder can be equally divided among 3, 4, 5, 6, 7 or 12 boys. The number of beads I have

(a) 729   (b) 842   (c) 576   (d) 961

Ans: (b)

Q) A hall is 13 metres 53 cm long and 8 metres 61 cm broad is to be paved with minimum number of square tiles. The number of tiles required is:

(a) 123   (b) 77   (c) 99   (d) 57

Q) A hall is 13 metres 53 cm long and 8 metres 61 cm broad is to be paved with minimum number of square tiles. The number of tiles required is:

(a)   123   (b) 77   (c) 99   (d)   57

Ans: (b)

Q) Three wheels can complete respectively 60,36,24 revolutions per minute. There is a red spot on each wheel that touches the ground at time zero. After how much time, all these spots will simultaneously touch the ground again?

(a) 5/2 seconds   (b) 5/3 seconds

(c) 5 seconds   (d) 7.5 seconds

Q) Three wheels can complete respectively 60,36,24 revolutions per minute. There is a red spot on each wheel that touches the ground at time zero. After how much time, all these spots will simultaneously touch the ground again?

(a) 5/2 seconds   (b) 5/3 seconds

(c) 5 seconds   (d) 7.5 seconds

Ans: (c)