

CDS 2 2024

LIVE

MATHS

REVISION

CLASS 9



NAVJYOTI SIR



16 August 2024 Live Classes Schedule

8:00AM	16 AUGUST 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	16 AUGUST 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:00AM	COMPLETE PSYCH TEST	ANURADHA MA'AM
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NDA 2 2024 LIVE CLASSES

11:00AM	GK - GEOGRAPHY REVISION - CLASS 3	RUBY MA'AM
1:00PM	MATHS REVISION - CLASS 3	NAVJYOTI SIR
2:00PM	CHEMISTRY REVISION - CLASS 2	SHIVANGI MA'AM
5:30PM	ENGLISH - REVISION - CLASS 5	ANURADHA MA'AM

CDS 2 2024 LIVE CLASSES

11:00AM	GK - GEOGRAPHY REVISION - CLASS 3	RUBY MA'AM
2:00PM	CHEMISTRY REVISION - CLASS 2	SHIVANGI MA'AM
3:00PM	MATHS REVISION - CLASS 9	NAVJYOTI SIR
5:30PM	ENGLISH - REVISION - CLASS 5	ANURADHA MA'AM



REVISION TOPICS :

- **Number System**

- Q) Every prime number of the form $3k + 1$ can be represented in the form $6m + 1$ (where, k and m are integers), when
- (a) k is odd
 - (b) k is even
 - (c) k can be both odd and even
 - (d) No such form is possible

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

$$6^{23} \times 75^9 \times 105^2 = (2 \times 3)^{23} \times (5^2 \times 3)^9 \times (3 \times 5 \times 7)^2$$

$= (2^{23} \times 5^{18} \times 5^2)$ for 10^n , only collect powers of 2 and 5.

$$= \underline{2^{23} \times 5^{20}} \quad \text{---} \quad 2^3 \times \boxed{10^{20}}$$

$$\underline{n = 20}$$

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

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

Rem. $\rightarrow \frac{17^{23}}{23} + \frac{29^{23}}{23} \Rightarrow \frac{(23+6)^{23}}{23} \Rightarrow \frac{6^{23}}{23}$

Rem. = 0

$$\frac{17^{23} + 6^{23}}{23} \quad \left| \quad \frac{a^n + b^n}{a+b} \right.$$

$a^n + b^n$ is divisible by $(a+b)$ if n is odd.

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

- (a) 0
- (c) 2

- (b) 1
- (d) 3

Ans: (a)

Q) The LCM of $(x^3 - x^2 - 2x)$ and $(x^3 + x^2)$ is

- (a) $x^3 - x^2 - 2x$ (b) $x^2 + x$ α
 \checkmark (c) $x^4 - x^3 - 2x^2$ (d) $x - 2$ α

$$x^3 - x^2 - 2x = x(x^2 - x - 2)$$

$$= x(x-2)(x+1)$$

$$x^3 + x^2 = x^2(x+1)$$

$$\text{LCM} = x^2(x+1)(x-2)$$

$$(x^4)$$

- Q) The LCM of $(x^3 - x^2 - 2x)$ and $(x^3 + x^2)$ is
- (a) $x^3 - x^2 - 2x$ (b) $x^2 + x$
(c) $x^4 - x^3 - 2x^2$ (d) $x - 2$

Ans: (c)

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

Between 2 rational numbers, there is an infinite no. of rational as well as irrational numbers.

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 $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{n(n+1)} = \frac{99}{100}$ then what is the value of n ?

(a) 98

(b) 99

(c) 100

(d) 101

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

remaining

$$= 1 - \frac{1}{n+1} = \frac{99}{100}$$

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

Q) If $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{n(n+1)} = \frac{99}{100}$ 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

9999

LCM of 16, 36, 45, 48

$$16 - 2^4$$

$$36 - 2^2 \times 3^2$$

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

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

$$\text{LCM} = 2^4 \times 3^2 \times 5 = 16 \times 9 \times 5 = 144 \times 5 = \underline{720}$$

$$\begin{array}{r} 720 \overline{) 9999} \\ \underline{720} \\ 2799 \\ \underline{2160} \\ 639 \end{array}$$

$$\begin{array}{r} 9999 \\ \underline{639} \\ 9360 \end{array}$$

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

$$\frac{17^{29} + 19^{29}}{18} \equiv \left(\frac{17^{29}}{18} \right) + \left(\frac{19^{29}}{18} \right) \pmod{18}$$

Rem $\rightarrow (-1) + 1 = 0$

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

$$5^{2n} - 2^{3n}$$

$25^n - 8^n$ } always divisible by $(25 - 8) = 17$

$a^n - b^n$ is always divisible by $(a - b)$.

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

$$3^x (1 + 3 + 3^2)$$
$$= 3^x (1 + 3 + 9)$$
$$= \underline{13 \times 3^x}$$

for $x = 1$

$$13 \times 3 = \underline{39}$$

$x = 2$

$$13 \times 3^2 = 13 \times 9 = \underline{117}$$

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: (d)

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)** If we divide a positive integer by another positive integer, what is the resulting number?
- (a) It is always a natural number
 - (b) It is always an integer
 - (c) It is a rational number
 - (d) It is an irrational number

- Q)** If we divide a positive integer by another positive integer, what is the resulting number?
- (a) It is always a natural number
 - (b) It is always an integer
 - (c) It is a rational number
 - (d) It is an irrational number

Ans: (c)

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)

Q) A cubic metre of copper weighing 9000 kg is rolled into a square bar 9 m long. An exact cube is cut off from the bar; How much does the cube weigh ?

- (a) 1000 kg (b) $\frac{1000}{3}$ kg
- (c) 300 kg (d) $\frac{500}{3}$ kg

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- (a) 1000 kg (b) $\frac{1000}{3}$ kg
- (c) 300 kg (d) $\frac{500}{3}$ kg

Ans: (b)

Q) A plane divides a right circular cone into two parts of equal volume. If the plane is parallel to the base, then the ratio, in which the height of the cone is divided, is

(a) $1 : \sqrt[3]{2}$

(b) $1 : \sqrt{2}$

(c) $1 : \sqrt[3]{2} - 1$

(d) $1 : \sqrt[3]{2} + 1$

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(a) $1 : \sqrt[3]{2}$

(b) $1 : \sqrt{2}$

(c) $1 : \sqrt[3]{2} - 1$

(d) $1 : \sqrt[3]{2} + 1$

Ans: (c)

Q) What is the remainder after dividing the number 37^{1000} by 9?

- (a) 1 (b) 3
(c) 7 (d) 9

Q) What is the remainder after dividing the number 37^{1000} by 9?

- (a) 1
- (b) 3
- (c) 7
- (d) 9

Ans: (a)

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

(a) 0

(b) 1

(c) 3

(d) 4

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

(a) 0

(b) 1

(c) 3

(d) 4

Ans: (a)

Q) What is the maximum value of m , if the number $N = 90 \times 42 \times 324 \times 55$ is divisible by 3^m ?

(a) 8

(b) 7

(c) 6

(d) 5

Q) What is the maximum value of m , if the number $N = 90 \times 42 \times 324 \times 55$ is divisible by 3^m ?

(a) 8

(b) 7

(c) 6

(d) 5

Ans: (b)

Q) The digit in the unit's place of the number represented by $(7^{95} - 3^{58})$ is:

(a) 0

(b) 4

(c) 6

(d) 7

Q) The digit in the unit's place of the number represented by $(7^{95} - 3^{58})$ is:

(a) 0

(b) 4

(c) 6

(d) 7

Ans: (b)

Q) The sum of $5^2 + 6^2 + 7^2 + \dots + 15^2$ is

(a) 1110

(b) 1120

(c) 1310

(d) 1210

Q) If $x959y$ is divisible by 44 and $y > 5$, then what are values of the digit x and y ?

(a) $x = 7, y = 6$

(b) $x = 4, y = 8$

(c) $x = 6, y = 7$

(d) None of these

Q) If $x959y$ is divisible by 44 and $y > 5$, then what are values of the digit x and y ?

(a) $x = 7, y = 6$

(b) $x = 4, y = 8$

(c) $x = 6, y = 7$

(d) None of these

Ans: (a)

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

(a) 3

(b) 6

(c) 7

(d) 8

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)

Q) The number of prime factors in the expression

$(6)^{10} \times (7)^{17} \times (11)^{27}$ is:

- (a) 54 (b) 64 (c) 71 (d) 81

Q) The number of prime factors in the expression

$(6)^{10} \times (7)^{17} \times (11)^{27}$ is:

- (a) 54 (b) 64 (c) 71 (d) 81

Ans: (b)

Q) The seven digit number $876p37q$ is divisible by 225. The values of p and q can be respectively

(a) 9, 0

(b) 0, 0

(c) 0, 5

(d) 9, 5

Q) The seven digit number $876p37q$ is divisible by 225. The values of p and q can be respectively

(a) 9, 0

(b) 0, 0

(c) 0, 5

(d) 9, 5

Ans: (d)

Q) The sum of three fractions is $2\frac{11}{24}$. When the largest fraction is divided by the smallest, the fraction thus obtained is $\frac{7}{6}$ which is $\frac{1}{3}$ more than the middle one. The fractions are:

(a) $\frac{3}{5}, \frac{4}{7}, \frac{2}{3}$

(b) $\frac{7}{8}, \frac{5}{6}, \frac{3}{4}$

(c) $\frac{7}{9}, \frac{2}{3}, \frac{3}{5}$

(d) None of these

Q) The sum of three fractions is $2\frac{11}{24}$. When the largest fraction is divided by the smallest, the fraction thus obtained is $\frac{7}{6}$ which is $\frac{1}{3}$ more than the middle one. The fractions are:

(a) $\frac{3}{5}, \frac{4}{7}, \frac{2}{3}$

(b) $\frac{7}{8}, \frac{5}{6}, \frac{3}{4}$

(c) $\frac{7}{9}, \frac{2}{3}, \frac{3}{5}$

(d) None of these

Ans: (b)

Q) If the sum of two numbers is 55 and the H.C.F. and L.C.M. of these numbers are 5 and 120 respectively, then the sum of the reciprocals of the numbers is equal to:

- (a) $\frac{55}{601}$ (b) $\frac{601}{55}$ (c) $\frac{11}{120}$ (d) $\frac{120}{11}$

Q) If the sum of two numbers is 55 and the H.C.F. and L.C.M. of these numbers are 5 and 120 respectively, then the sum of the reciprocals of the numbers is equal to:

- (a) $\frac{55}{601}$ (b) $\frac{601}{55}$ (c) $\frac{11}{120}$ (d) $\frac{120}{11}$

Ans: (c)

Q) If the points P and Q represent real numbers $0.7\bar{3}$ and $0.5\bar{6}$ on the number line, then what is the distance between P and Q ?

- (a) $\frac{1}{6}$ (b) $\frac{1}{5}$ (c) $\frac{16}{45}$ (d) $\frac{11}{90}$

Q) If the points P and Q represent real numbers $0.7\bar{3}$ and $0.5\bar{6}$ on the number line, then what is the distance between P and Q ?

- (a) $\frac{1}{6}$ (b) $\frac{1}{5}$ (c) $\frac{16}{45}$ (d) $\frac{11}{90}$

Ans: (a)

Q) Minimum difference between x and y such that $1x71y61$ is exactly divisible by 11 is

- (a) 2 (b) 3 (c) 1 (d) 0

Q) Minimum difference between x and y such that $1x71y61$ is exactly divisible by 11 is

- (a) 2 (b) 3 (c) 1 (d) 0

Ans: (a)

Q) The value of

$$\frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} + \frac{1}{\sqrt{5} - 2} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{3 - \sqrt{8}} \text{ is}$$

- (a) 0 (b) 1 (c) 5 (d) 7

Q) The value of

$$\frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} + \frac{1}{\sqrt{5} - 2} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{3 - \sqrt{8}} \text{ is}$$

(a) 0 (b) 1 (c) 5 (d) 7

Ans: (c)

Q) What is the unit digit in the expansion of 67^{32} ?

(a) 1

(b) 3

(c) 7

(d) 9

Q) What is the unit digit in the expansion of 67^{32} ?

- (a) 1 (b) 3 (c) 7 (d) 9

Ans: (a)

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 |

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 |

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) $\frac{211}{19}$ s

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

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

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

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) $\frac{211}{19}$ s

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

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

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

Ans: (c)

- Q)** The LCM of $x^3 - 1$, $x^4 + x^2 + 1$ and $x^4 - 5x^2 + 4$ is
- (a) $(x - 1)(x + 1)(x - 2)$
 - (b) $(x - 1)(x + 1)(x + 2)$
 - (c) $(x^2 - 1)(x^2 - 4)$
 - (d) $(x^2 - 1)(x^2 - 4)(x^2 + x + 1)(x^2 + 1 - x)$

- Q) The LCM of $x^3 - 1$, $x^4 + x^2 + 1$ and $x^4 - 5x^2 + 4$ is
- (a) $(x - 1)(x + 1)(x - 2)$
 - (b) $(x - 1)(x + 1)(x + 2)$
 - (c) $(x^2 - 1)(x^2 - 4)$
 - (d) $(x^2 - 1)(x^2 - 4)(x^2 + x + 1)(x^2 + 1 - x)$

Ans: (d)

Q) What is the HCF of $36(3x^4 + 5x^3 - 2x^2)$, $9(6x^3 + 4x^2 - 2x)$ and $54(27x^4 - x)$?

(a) $9x(x + 1)$

(b) $9x(3x - 1)$

(c) $18x(3x - 1)$

(d) $18x(x + 1)$

Q) What is the HCF of $36(3x^4 + 5x^3 - 2x^2)$, $9(6x^3 + 4x^2 - 2x)$ and $54(27x^4 - x)$?

(a) $9x(x + 1)$

(b) $9x(3x - 1)$

(c) $18x(3x - 1)$

(d) $18x(x + 1)$

Ans: (c)

Q) What is the HCF of the polynomials $x^3 + 8$, $x^2 + 5x + 6$
and $x^3 + 2x^2 + 4x + 8$?

(a) $x + 2$

(b) $x + 3$

(c) $(x + 2)^2$

(d) None of these

Q) What is the HCF of the polynomials $x^3 + 8$, $x^2 + 5x + 6$ and $x^3 + 2x^2 + 4x + 8$?

(a) $x + 2$

(b) $x + 3$

(c) $(x + 2)^2$

(d) None of these

Ans: (a)

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**REVISION
TOPICS :
(19/08/24)**

- **Number System**
- **Algebra**