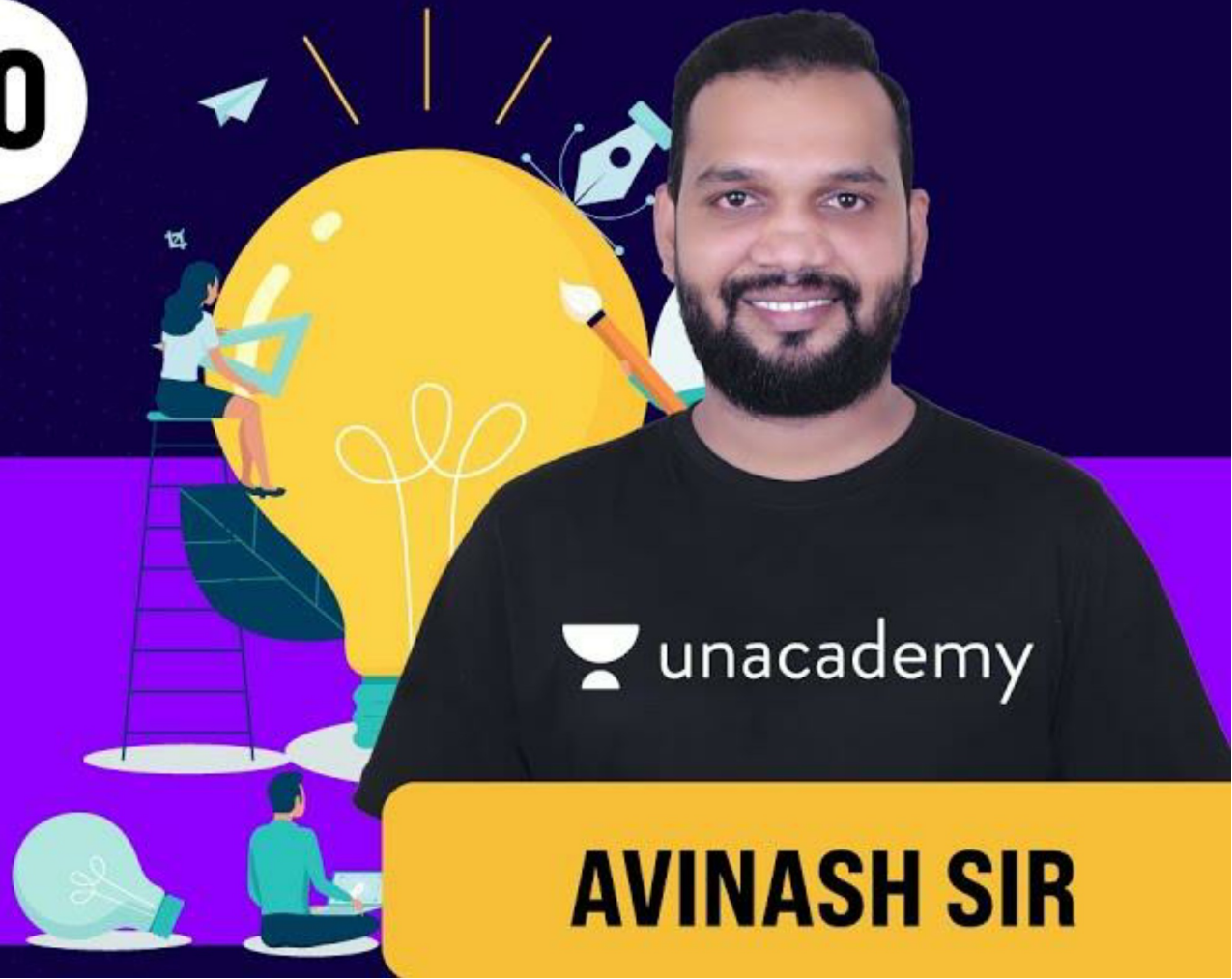
धमाकेदार ट्रिक के साथ 🔥🔥

GATE 2021

GENERAL APTITUDE

20

NUMBER SYSTEM -3



AVINASH SIR

AVINASH SINGH SIR

GATE | EE (CE)

Secured Score 99.86% in
CAT (Quantitative Section)

GATE/ESE:

7+ Years Teaching Experience
Mentored 25k+ Students for
GATE, ESE & PSUs

Subjects Taken:

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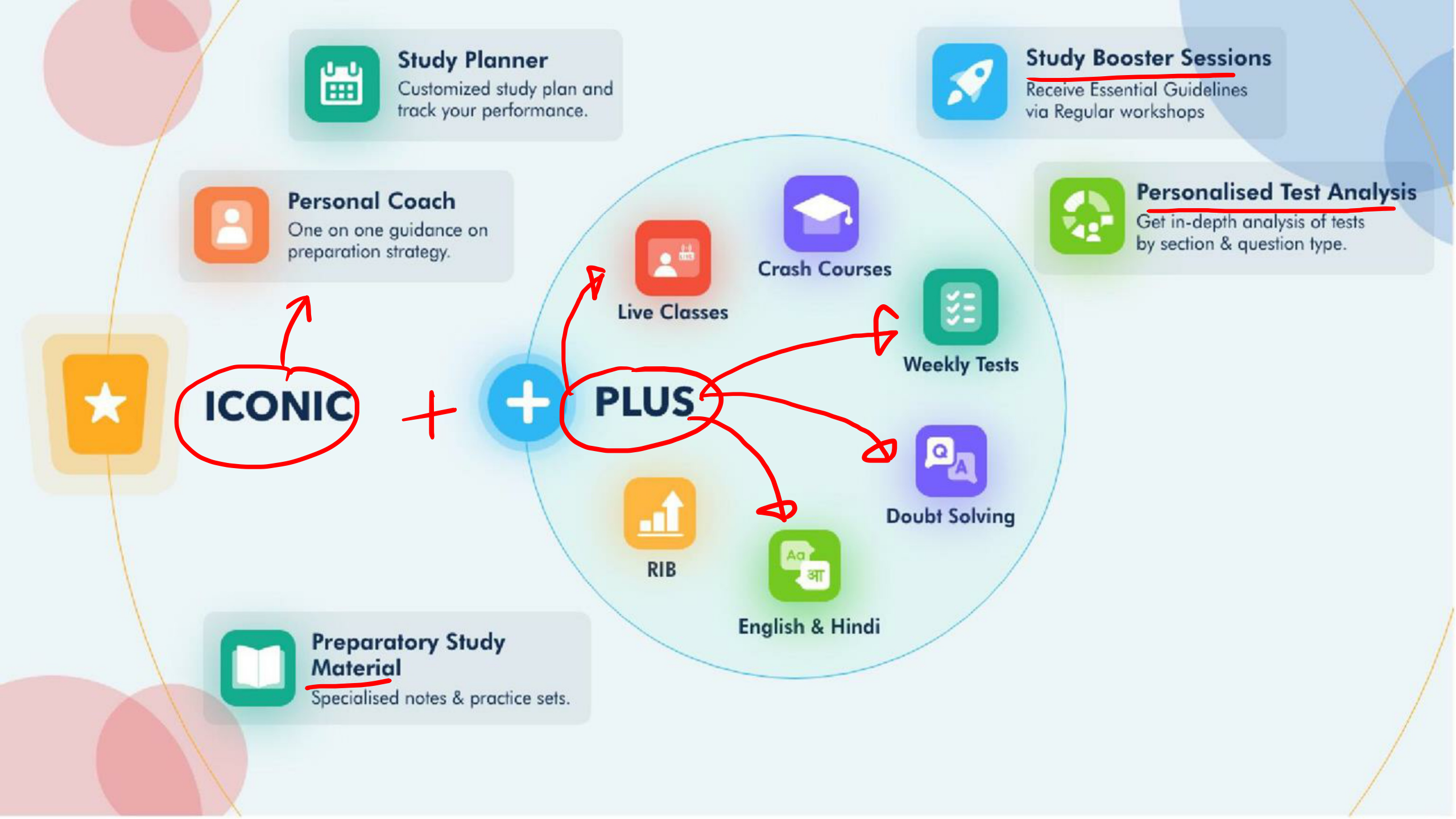
Engineering Mathematics
Digital Electronics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Analytical Aptitude

- Venn Diagram
- Syllogism
- Series
- Coding & Decoding
- Odd Man out
- Distance & Direction
- Blood Relation
- Seating Arrangements
- Clock & Calendar
- Puzzle

Quantitative Aptitude

- Number System
- Sequence & Series
- Ratio & Proportion
- Time, Speed & Distance
- Percentage
- Profit, Loss & Discount
- Average
- Allegation & Mixture
- Time & Work
- Pipes & Cisterns
- Powers, exponents and logarithms
- Algebra
- Permutation & Combination
- Probability
- Data Interpretation
- Mensuration and geometry

Spatial Aptitude

- Shape Matching – Two Dimensional
- Visual Comparison – Two Dimensional
- Group Rotation – Two Dimensional
- Combining Two Dimensional Shapes
- Cube Views in Three Dimensions
- Cubes in Two and Three Dimensions
- Other Solids in Two and Three Dimensions
- Block Counting in Three Dimensions
- Two-Dimensional Mirror Reflections
- Paper folding and Cutting

Home Work Question

All the pages numbers from a book are added, beginning at page 1. However, one page number was mistakenly added twice. The sum obtained was 220. Which page number was added twice?

A) 44 B) 45 C) 10 D) 12

twice

$1+2+3+4+5+6 \ldots - x - - - - - - + n = 220 - x$

$\frac{n(n+1)}{2}\Big|_{n=20} = \frac{20 \times 21}{2} = 210$

$(1-20) \rightarrow 210 = 220 - x \Rightarrow x = 10$

$(1-21) = 210 + 21 = 231$

Number System

Lecture-3

What will study in Number System?

- Classification of number
- Sum of series
- Concept of LCM & HCF
- Unit digit
- Factorization
- Reminder theorem
- Divisibility Rule
- Factorial
- Bases & Base conversion

Today's Class Agenda

- Concept of LCM & HCF
- Questions based on LCM & HCF

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

1) Three numbers are in the ratio 1 : 2 : 3 and their H.C.F is 12. The numbers are

[JE Level Exam]

A) 4, 8, 12 B) 5, 10, 15 C) 10, 20, 30 D) 12, 24, 36

$a : b : c = 1 : 2 : 3$

$(x \quad 2x \quad 3x)$

$12 \quad 24 \quad 36$

$HCF(a, b, c) = 12$

$HCF(a, b, c) = HCF(x, 2x, 3x)$

$= x = 12$

ImB

	HCF	LCM	LCM × HCF
$6 = 2 \times 3 \Leftarrow (2, 3)$	1	6	$1 \times 6 = 6$
$8 = 2 \times 4 \Leftarrow (2, 4)$	2	4	$2 \times 4 = 8$
$27 = 3 \times 9 \Leftarrow (3, 9)$	3	9	$3 \times 9 = 27$

$$a \times b = \text{LCM of } (a, b) \times \text{HCF of } (a, b)$$

↳ only valid for two number

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

2) The ratio of two numbers is 6:7 and their LCM is 210. Find their HCF. [UPPCL-2016]

A) 4 B) 2 C) 5 D) 3

$\frac{a}{b} = \frac{6}{7}$, $LCM(a,b) = 210$

$a = 6x$

$b = 7x$

$HCF(a,b) = HCF(6x, 7x) = x$

$a \times b = LCM(a,b) \times HCF(a,b)$

$6x \times 7x = 210 \times x$

$x = 5$

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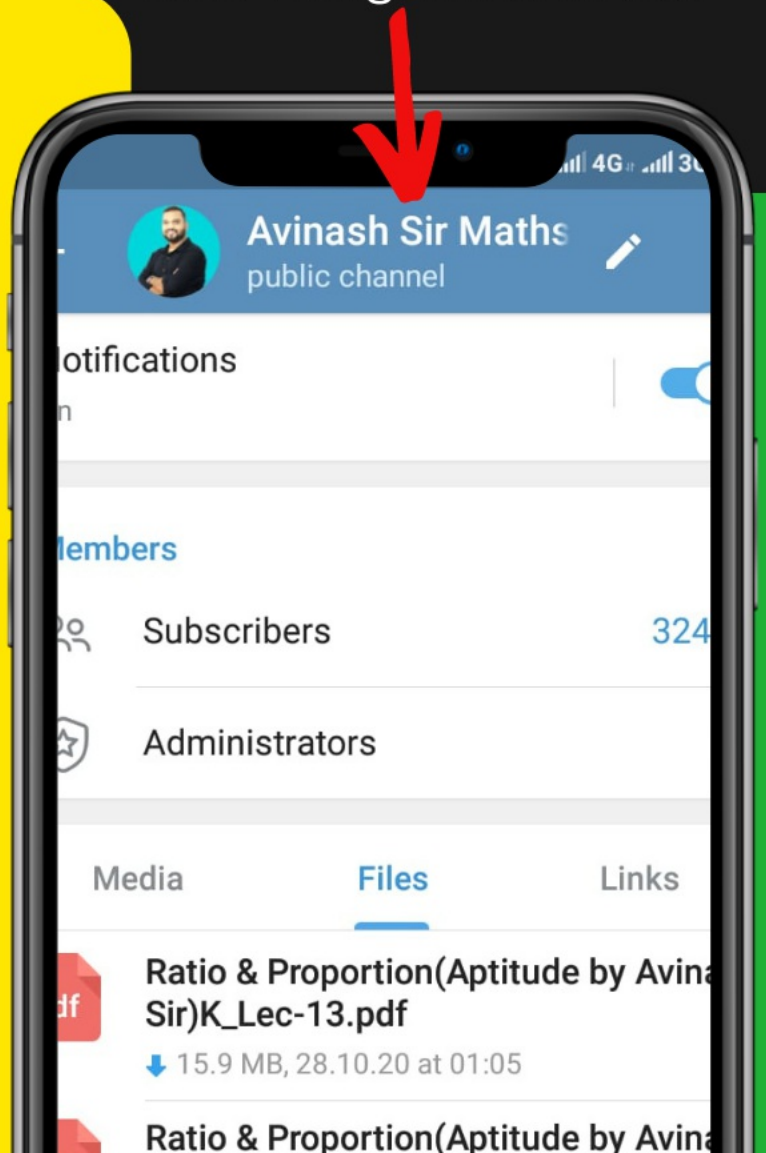

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

3) 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) 55/601 B) 601/55 C) 11/120 D) 120/11

a, b

$a+b=55$ — (1), $HCF(a,b)=5$, $LCM=120$

$a \times b = HCF \times LCM$

$a \times b = 5 \times 120$

$a \times b = 5 \times 120$ — (2)

$\frac{a+b}{a \times b} = \frac{55}{5 \times 120} \Rightarrow$

$\frac{1}{a} + \frac{1}{b} = ?$

$\frac{1}{b} + \frac{1}{a} = \frac{11}{120}$

$a \times b = LCM \times HCF$

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

4) If HCF of two natural number is 10. Sum of these two natural numbers is 90. How many pairs of number are possible?

A) 3 B) 4 C) 2 D) NOTA

(2,4) ✓
(4,2) ✓

HCF(a, b) = 10 , a + b = 90

a = 10x
b = 10y

x & y must be Co-prime or HCF(x, y) = 1

10x + 10y = 90

x + y = 9

✓ 1 8 ⇒ (10, 80)
✓ 2 7 ⇒ (20, 70)
✗ 3 6
✓ 4 5 ⇒ (40, 50)

5 ✗ 1

3

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

5) If HCF of two natural number is 12. Product of these two natural numbers is 1728. How many pairs of number are possible?

A) 1 B) 2 C) 3 D) 4

$HCF(a,b) = 12$

$a = 12x$
$b = 12y$ } $HCF\ of\ (x,y) = 1$

$a \times b = 1728$

$12x \times 12y = 1728$ (144)

$x \times y = 12$

1 12 $\Rightarrow (12, 44)$

~~2 6~~

3 4 $\Rightarrow (36, 48)$

} 2 pairs

~~4 3~~

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

6) Find the largest 4 digit number divisible by 45, 50 and 30? [Exam]

A) 9000 B) 9900 C) 9990 D) NOTA

9988

450, 900, 1350, 1800, 2250, ... , □

9999 / 450 | R = 99

9999 - 99 = 9900

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

Question) Find the smallest number divisible by 45, 50 and 30?

$\frac{N}{45}|_R = \frac{N}{50}|_R = \frac{N}{30}|_R = 0$

LCM of (45, 50, 30) = 450

450, 900, 1350, 1800, ...

450

1. Smallest 3-digit
2. Largest 3-digit
   900
3. Smallest 4-digit
   1350
4. Largest 4-digit

Aptitude for GATE/ESE/PSUs/AE/JE/College Placement, Topic- LCM & HCF

7) Find the least 3 digit number which will give a remainder of 6 when divide by 8, 9 and 10?

A) 360 B) 366 C) 720 D) NOTA

$\frac{N}{8}|_R = \frac{N}{9}|_R = \frac{N}{10}|_R = 0$

LCM of (8, 9, 10) = 360

$\frac{360}{+6}$

366

Home Work Question

The ratio of two numbers is 3 : 4 and their H.C.F is 4. Their L.C.M is

A) 12 B) 16 C) 24 D) 48

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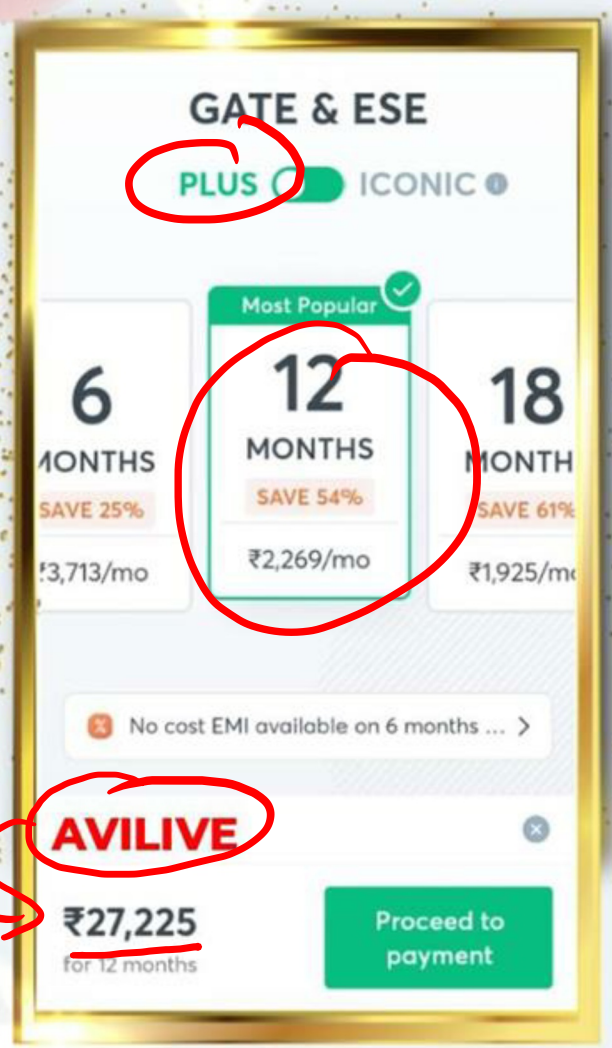
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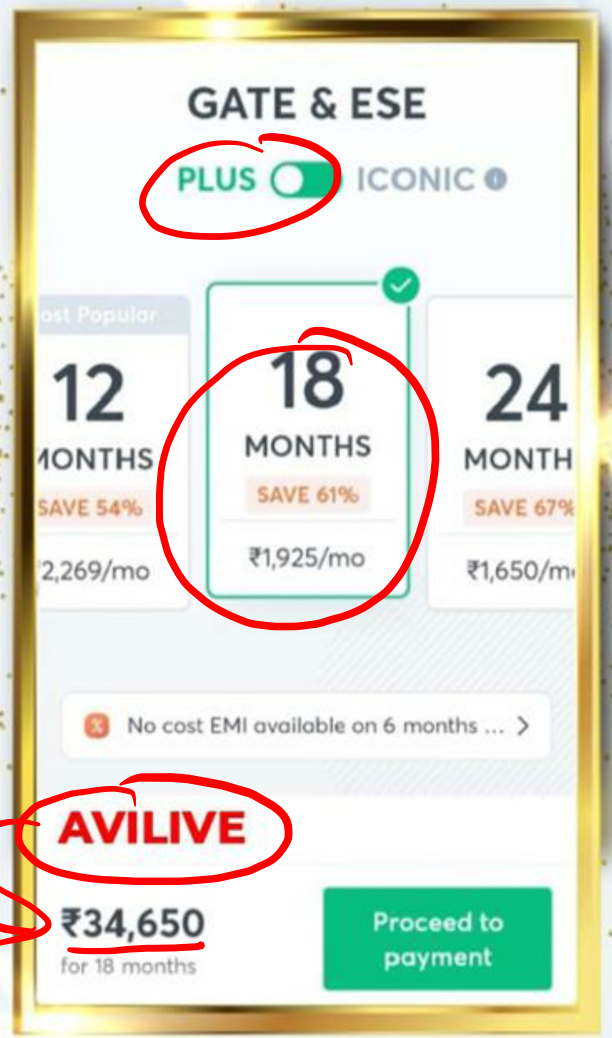
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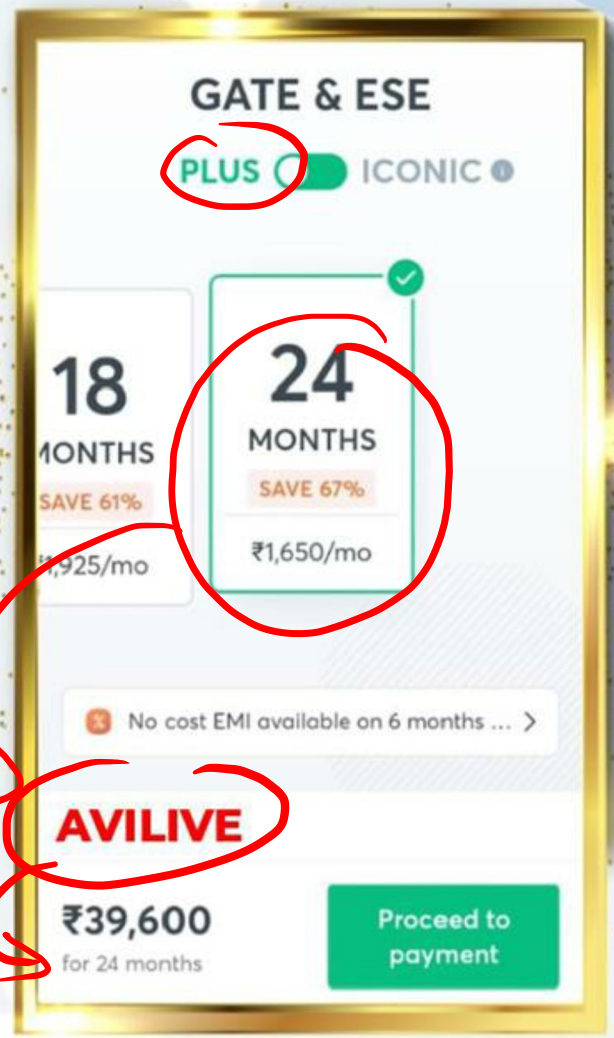
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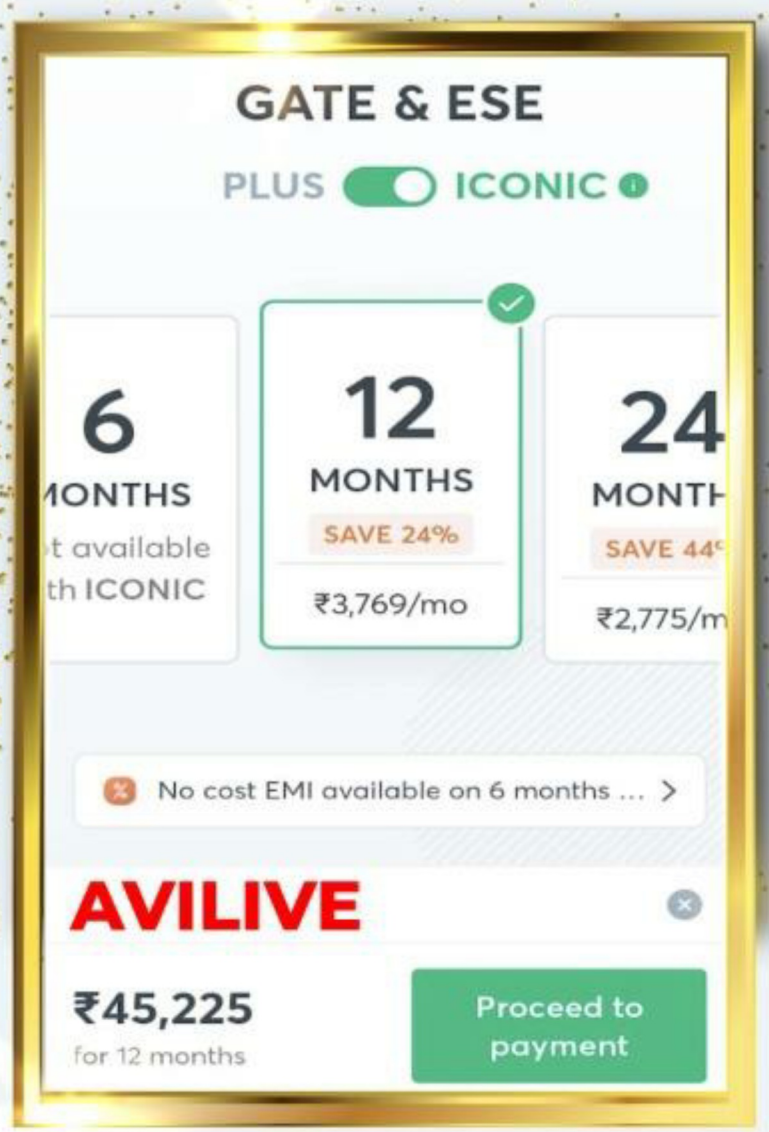
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ONTHS
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th ICONIC
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24
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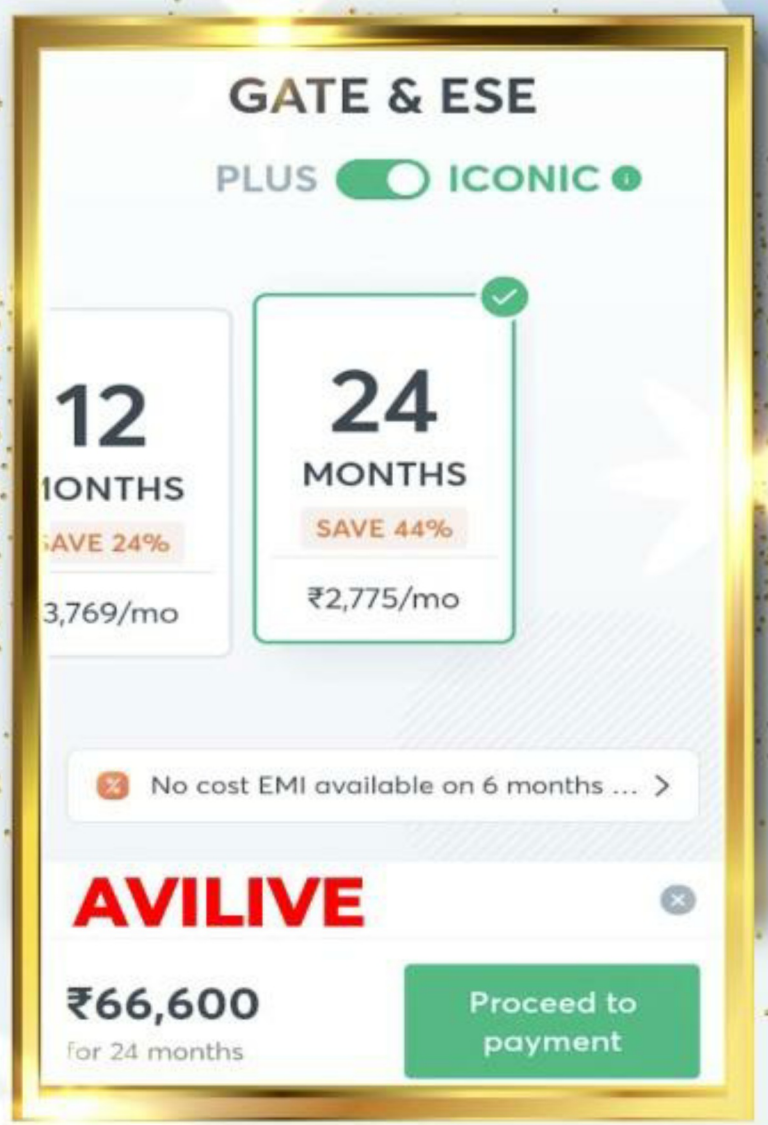
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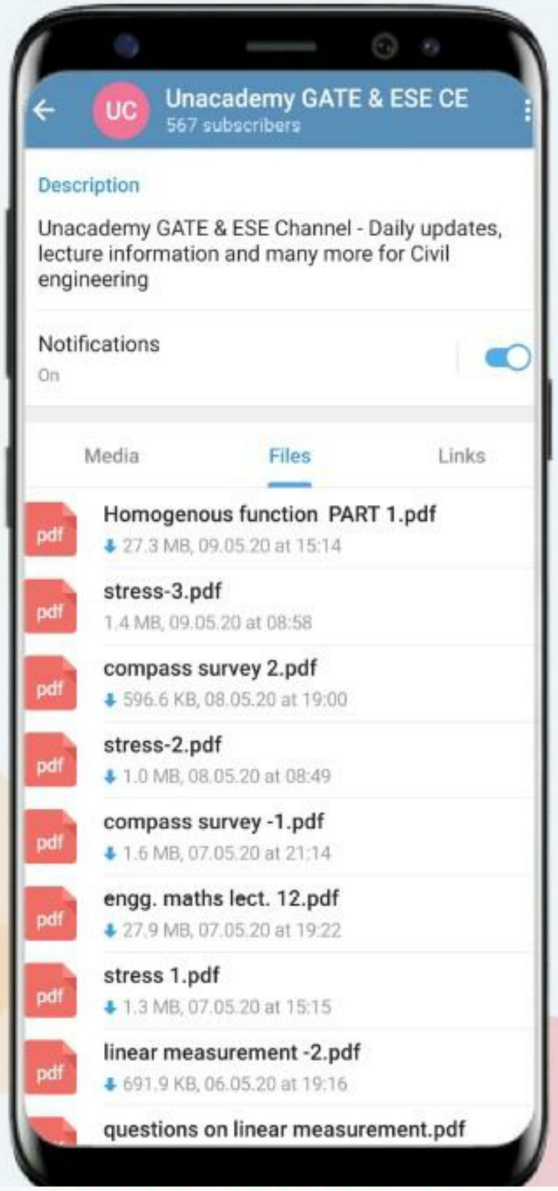

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