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GATE 2021

# GENERAL APTITUDE

65

MIXTURES &  
ALLIGATIONS - 1



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## GATE | EE (CE)



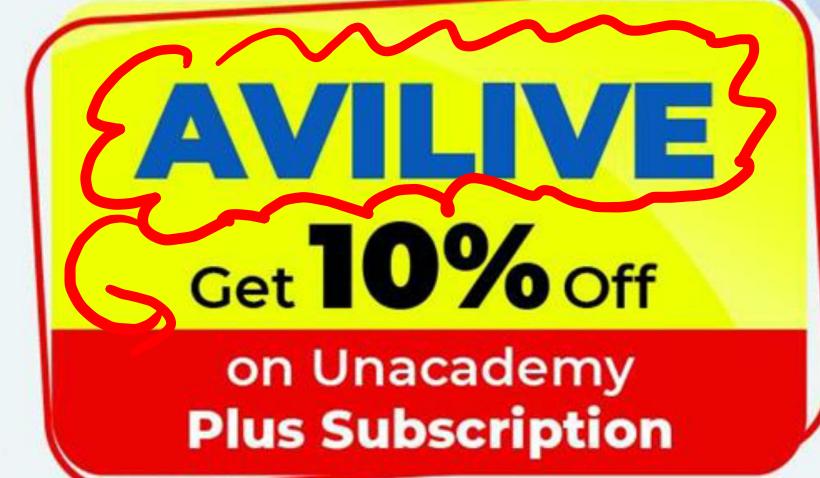
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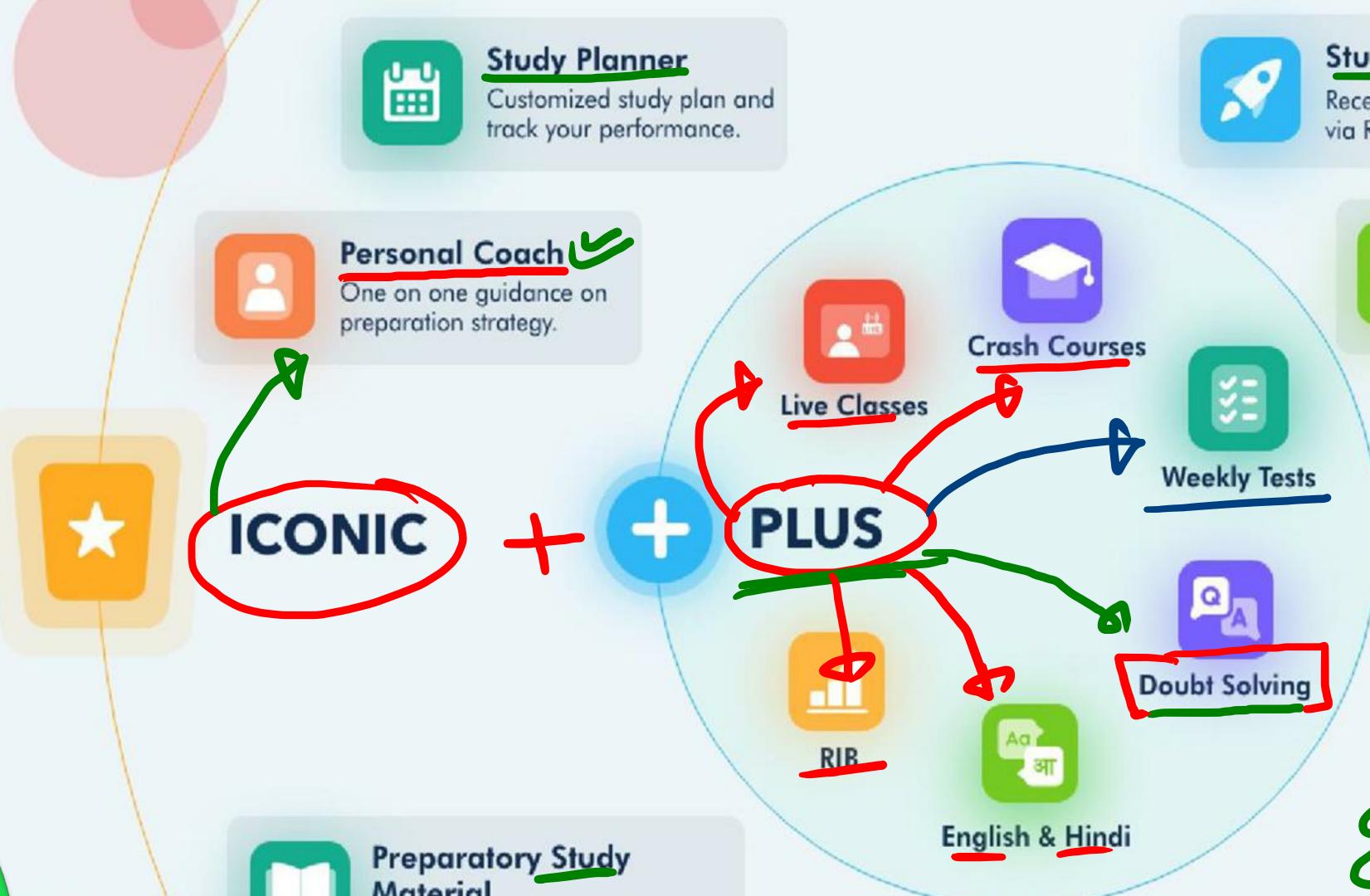


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Rank Booster Batch for GATE 2021 (ECE) - Batch D

Started on Nov 30

Siddharth Sabharwal and 1 more

**BATCH**



ENGLISH HINDI

Target ESE Prelims 2021 (Electrical) - Batch C

Started on Nov 20

Vishal Soni and 1 more

**BATCH**



ENGLISH HINDI

Rank Booster Batch for GATE 2021 (Electrical) - Batch B

Started on Nov 16

B V Reddy and 2 more

Hindi

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Ankit Goyal Sir

**Network Analysis**

25<sup>th</sup> JAN | 8:30AM - 10:30AM

Vishal Soni Sir

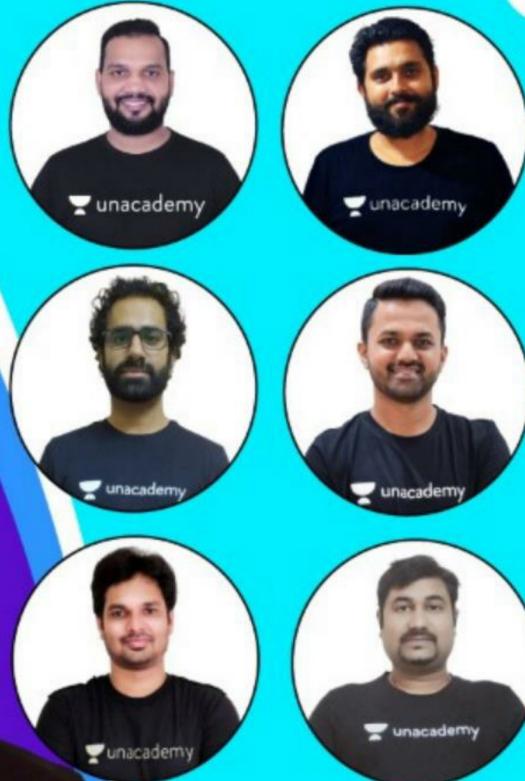
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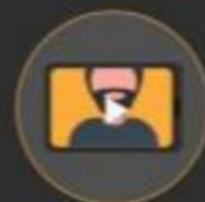
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# लो आ गया

# Spatial Aptitude



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Spatial  
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Verbal  
Aptitude

Analytical  
Aptitude

- Paper folding and Cutting
- Shape Matching - Two Dimensional
- Visual Comparison - Two Dimensional
- Group Rotation - Two Dimensional
- Combining Two Dimensional Shapes
- Cube Views in Three Dimensions
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Aptitude

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Aptitude

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Spatial  
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- Venn Diagram
- Syllogism
- Series
- Analogy
- Puzzle

25

- Coding & Decoding
- Distance & Direction
- Blood Relation
- Seating Arrangements
- Clock & Calendar

~~AAI~~

## Tejas Batch (Starting from 25th Jan)

Faculty	Subject	Date (from)	Date (to)	Time
Ankit Goyal	Physics	25th Jan	18th Feb	12:00 PM
Pallav Gaur	Physics	25th Jan	13th Feb	2:30 PM
Avinash Singh	Quantitative + Reasoning + Maths	25th Jan	24th April	7:30 PM
Vishal Soni	Maths & Physics	1st Feb	24th April	5:00 PM
Saket Verma	Physics	15th Feb	3rd March	2:30 PM

## Analytical Aptitude

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

## Quantitative Aptitude

- Time & Work
- Pipes & Cisterns
- Ratio & Proportion
- Number System
- Sequence & Series
- Average
- Time, Speed & Distance
- Percentage
- Profit, Loss & Discount
- Allegation & Mixture
- 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
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- Two-Dimensional Mirror Reflections
- Paper folding and Cutting

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# Today's Class Agenda



Basic concept of Mixture and Alligation

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## Mixture

When two or more elements are mixed in a certain ration, it is called mixture

s method

## Alligation

The rule which enables us to find the ratio in which two or more elements are mixed together is called allegation.

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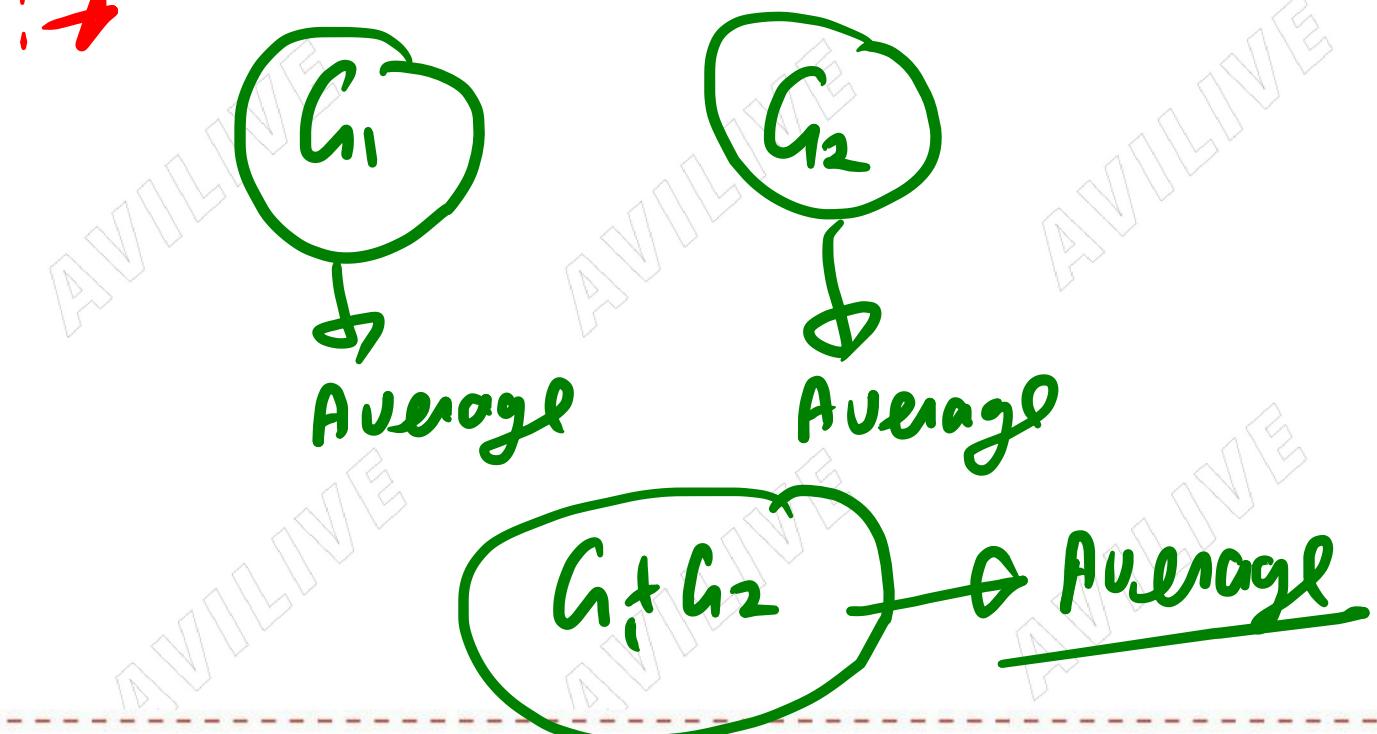
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# Alligation

The rule which enables us to find the ratio in which two or more elements are mixed together is called allegation.

Weighted Average:



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- 1) 30 boys with an average weight of 60 kg and 20 girls with an average weight of 40 kg.

Find the average weight of the whole class.

A) 40 kg

B) 52 kg

C) 46 kg

D) 56 kg

$$G_1 + 30 \text{ boys} \rightarrow \underline{60 \text{ kg}}$$

$$G_2 + 20 \text{ girls} \rightarrow \underline{40 \text{ kg}}$$

$$\underline{G_1 + G_2 + 30B + 20G \rightarrow}$$

$$\frac{30 \times 60 + 20 \times 40}{30 + 20}$$

$$\frac{180 + 80}{5} = \underline{\underline{260}}$$

$$\frac{260}{5} = \underline{\underline{52}}$$

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2) The average weight of boys is 60 kg, average weight of girls is 40 kg and average weight of whole class is 52. Find the ratio between the number of boys and girls?

A) 3:1

B) 1:3

C) 3:2

D) 2:3

$$\begin{aligned} g_1 + B &\rightarrow 60 \text{ kg} \\ g_2 + G &\rightarrow 40 \text{ kg} \\ g_3 + B+G &\rightarrow 52 \text{ kg} \end{aligned}$$

$$\frac{B \times 60 + G \times 40}{B+G} = 52$$

$$60B + 40G = 52B + 52G$$

$$(60 - 52)B = (52 - 40)G$$

$$\frac{B}{G} = \frac{52 - 40}{60 - 52}$$

$$\boxed{\frac{B}{G} = \frac{12}{8} = \frac{3}{2}}$$

Alligation

$$\begin{array}{ccc} B & & G \\ 60 & & 40 \\ 12 & & 8 \\ \hline \frac{B}{G} = \frac{12}{8} = \frac{3}{2} \end{array}$$

3) In what ratio should a shopkeeper mix two types of rice, one costing 20 ₹/kg and

another costing 10 ₹/kg to get a rice variety costing 14 ₹/kg

A) 2:3

B) 3:2

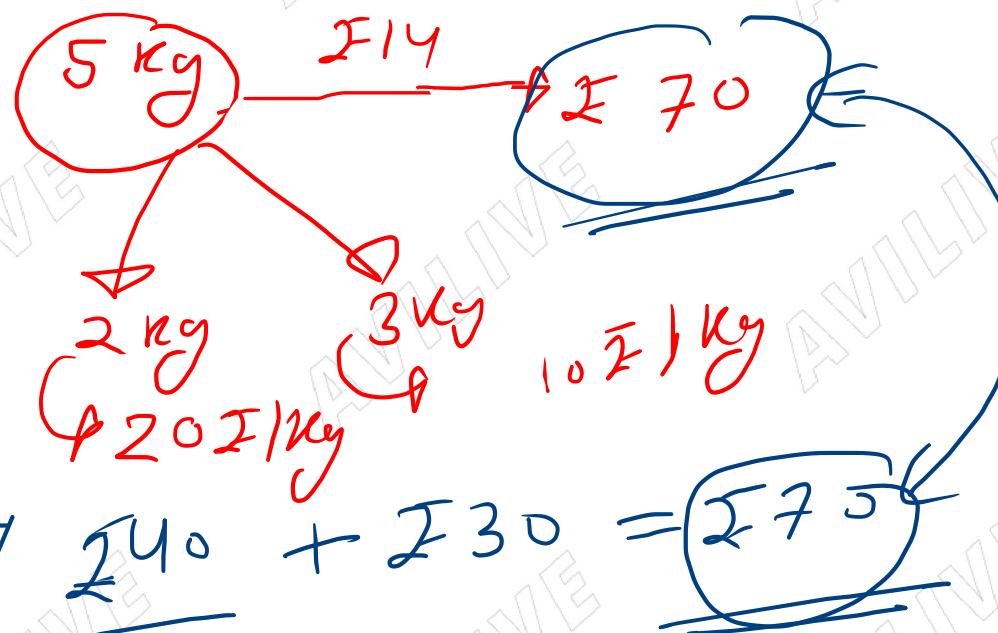
C) 1:3

D) 1:2

20 ₹/kg      10 ₹/kg

4                  6

$$\frac{R_{20}}{R_{10}} = \frac{4}{6} = \frac{2}{3}$$



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## Pattern

Total 10 Questions

- 1) Five Question  
Each question 1 mark
  
- 2) Five Question  
Each question 2 mark

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- Venn Diagram
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- Series
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- Puzzle



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4) A grocer wishes to sell a mixture of two variety of pulses worth Rs.16 per kg. In what ratio must he mix the pulses to reach this selling price, when cost of one variety of pulses is Rs.14 per kg and the other is Rs.24 per kg?

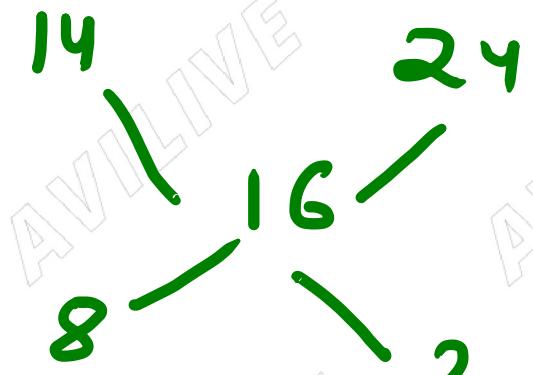
A) 2:5

B) 4:1

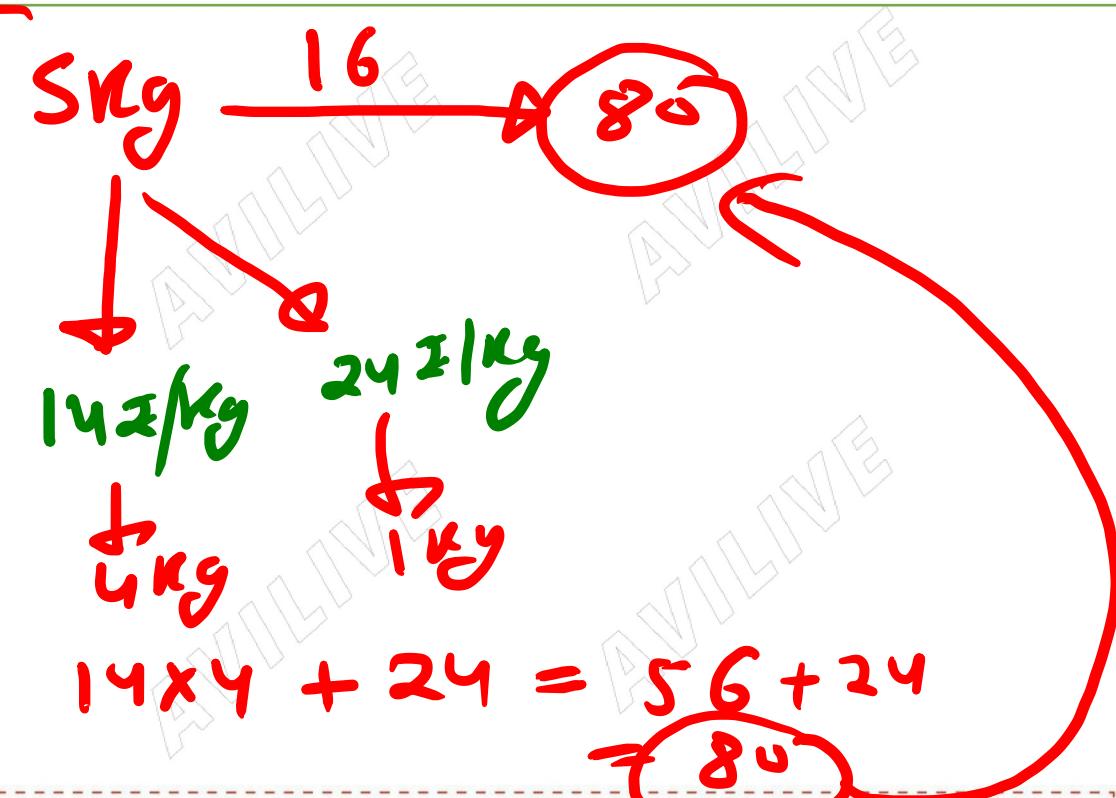
C) 2:1

D) 4:3

#



$$\frac{P_{14}}{P_{24}} = \frac{8}{2} = \frac{4}{1}$$



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5) Cost of two types of pulses is Rs.15 and Rs. 20 per kg, respectively. If both the pulses are mixed together in the ratio 2:3, then what should be the price of mixed variety of pulses per kg?

- A) Rs. 22 per kg      B) Rs. 18 per kg      C) Rs. 30 per kg      D) Rs. 10 per kg

$$\frac{R_{15}}{R_{20}} = \frac{2}{3} \rightarrow 2 \text{ Unit}$$

$\frac{2}{3} \rightarrow 3 \text{ Unit}$

$$\frac{15 \times 2 + 20 \times 3}{2+3} = 18 \text{ ₹/kg}$$

→ weighted Average  
↳ Alligation



- 6) How many kg of rice costing ₹ 8 per kg must be mixed with 36 kg of rice costing ₹ 5.40 per kg so that 20% gain may be obtained by selling the mixture at ₹ 7.20 per kg?
- A) 10 kg      B) 12 kg      C) 10.8 kg      D) 8 kg

Diagram illustrating the mixture problem:

Cost of 1 kg of first rice = ₹ 8/kg  
 Cost of 1 kg of second rice = ₹ 5.4/kg  
 Total weight = 36 kg  
 Gain = 20%  
 Selling price = ₹ 7.2/kg

Let  $x$  be the weight of the first rice to be mixed.

Given:  $\frac{R_8}{R_{5.4}} = \frac{0.6}{2} = \frac{6}{20} = \frac{3}{10}$

Solving for  $x$ :

$$\frac{R_8}{R_{5.4}} = \frac{0.6}{2} = \frac{6}{20} = \frac{3}{10}$$

$$R_8 = \frac{3}{10} \times R_{5.4}$$

$$= \frac{3}{10} \times 36 = 10.8 \text{ kg}$$

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## Pattern

Total 10 Questions

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Each question 1 mark

2) Five Question  
Each question 2 mark

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## Spatial Aptitude

## Verbal Aptitude

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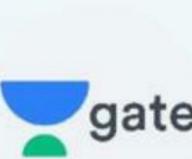
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## Educator highlights

- ★ Worked at GATE ACADEMY
- ★ Cracked GATE Exam Multiple time
- 📍 Lives in Durg, Chhattisgarh, India
- ⌚ Unacademy Educator since 29th September, 2020
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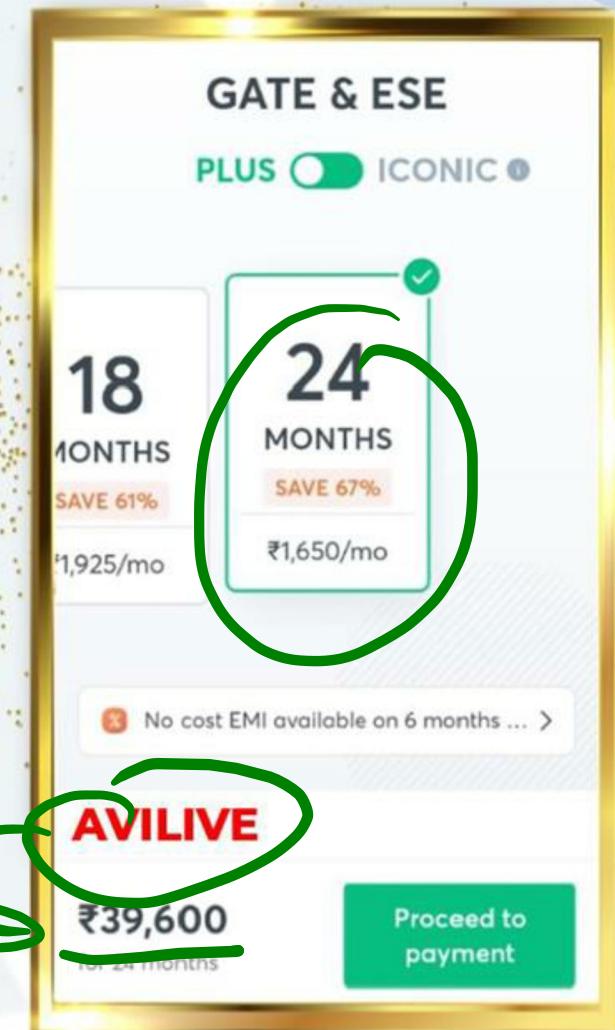
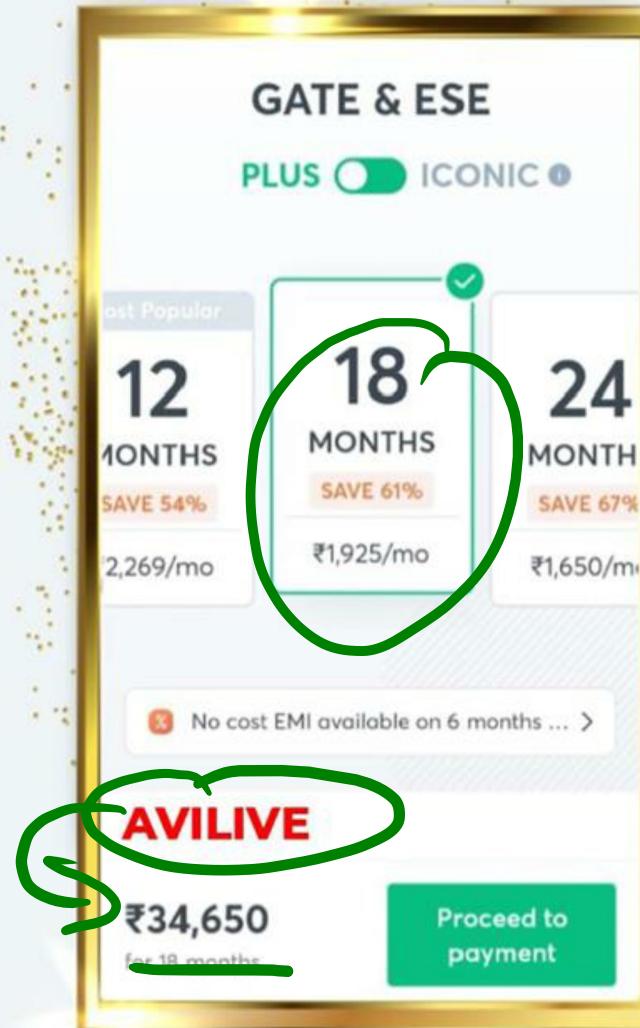
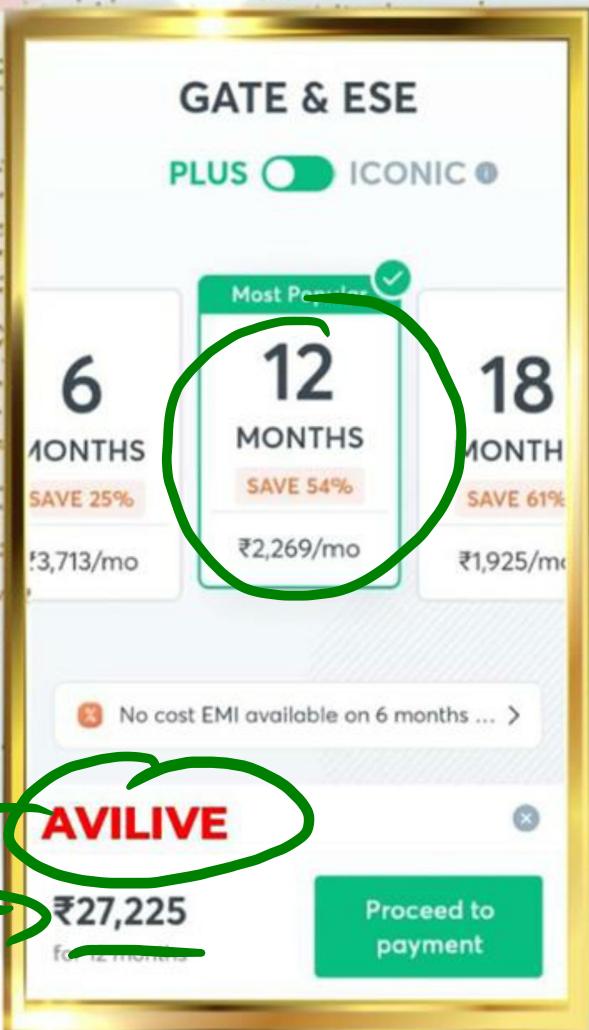
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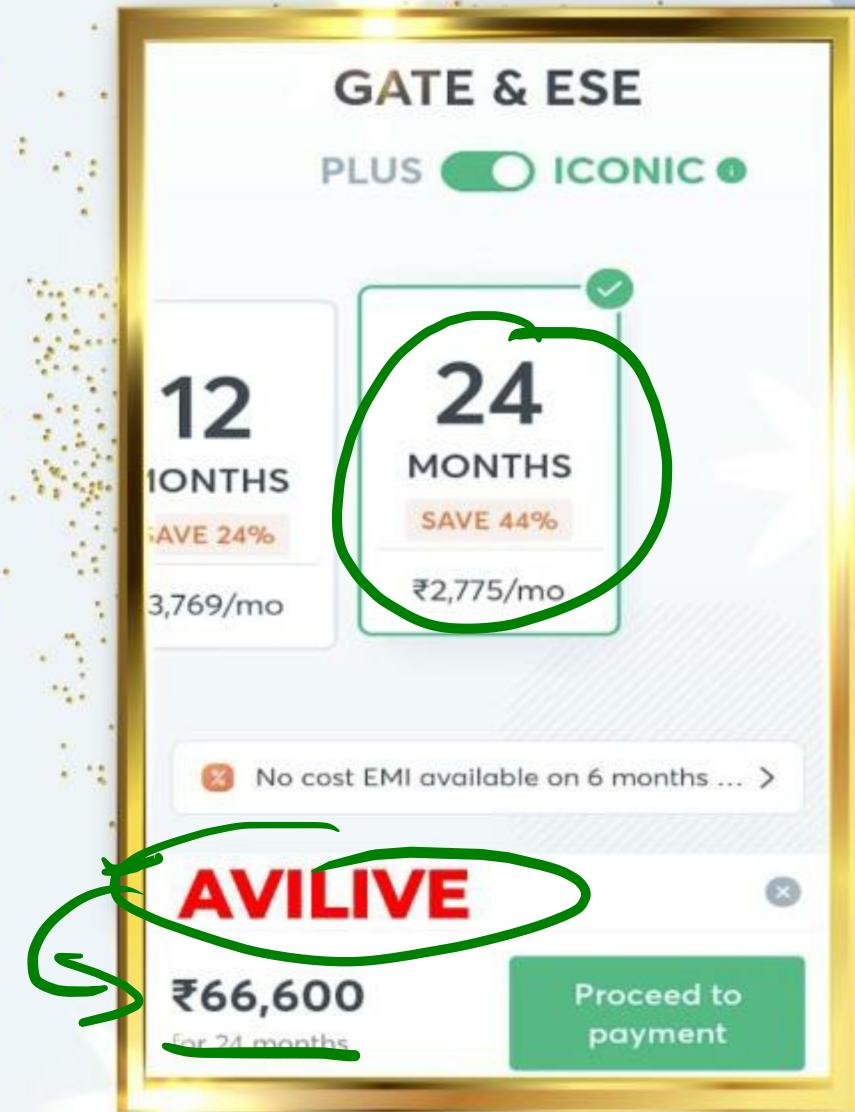
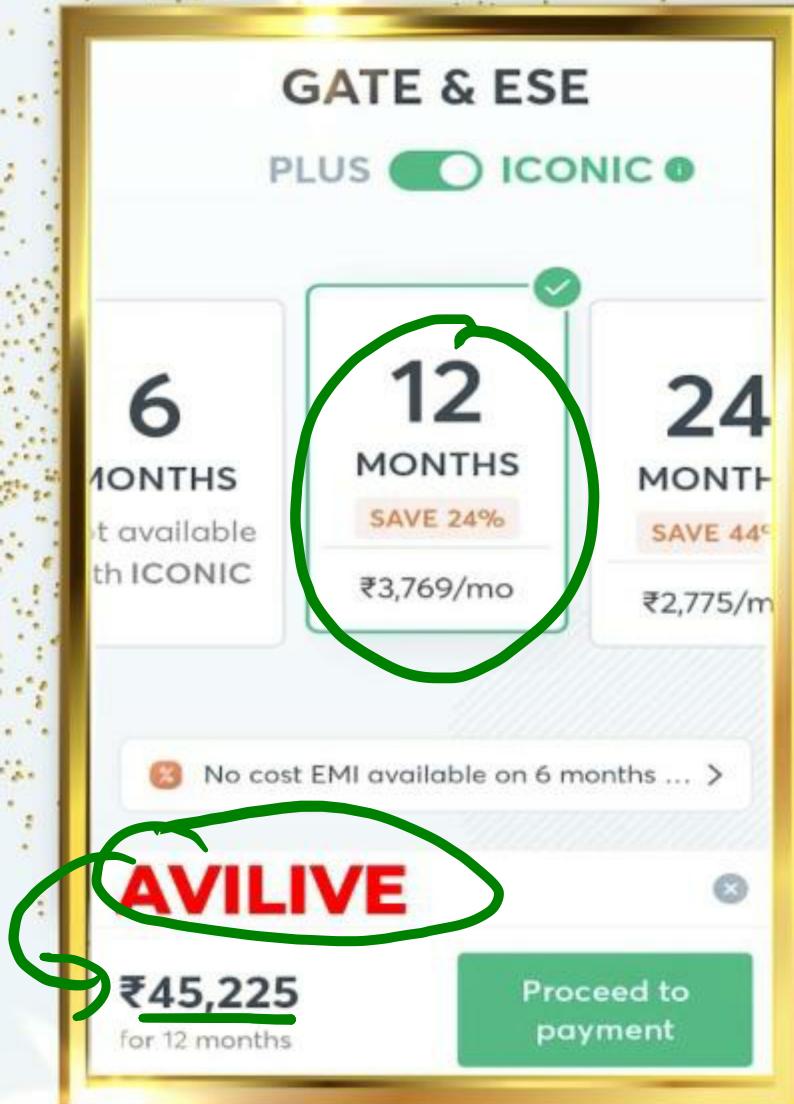
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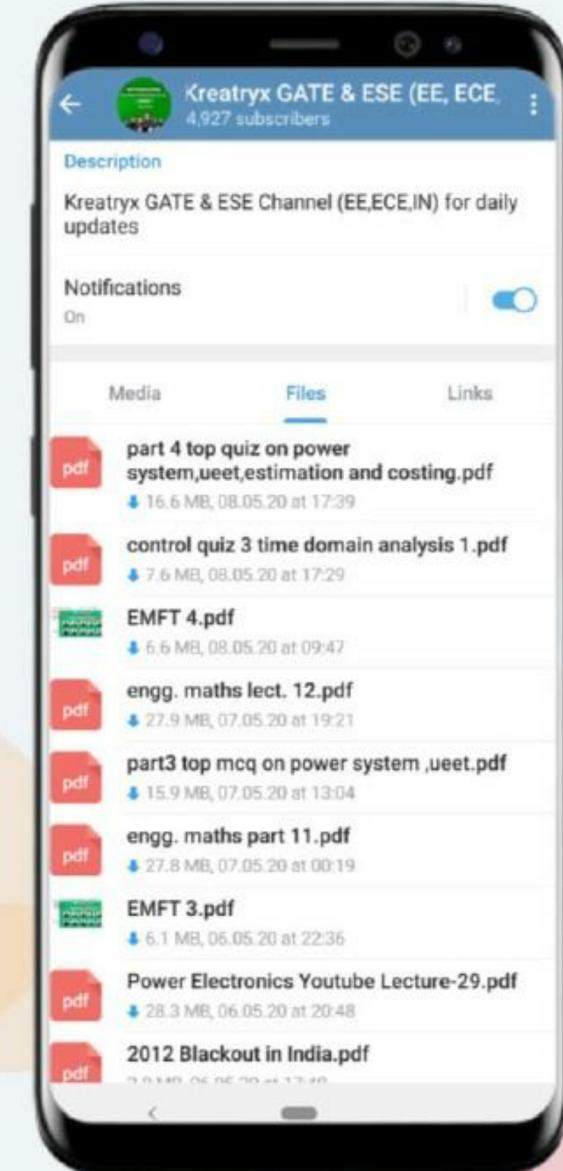


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