

**GATE 2021**

# **GENERAL APTITUDE**

धमाकेदार ट्रिक के साथ 🔥🔥

**TIME & WORK - 5,**  
**CONCEPT OF WAGES**

8



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**AVINASH SIR**



# AVINASH SINGH SIR

GATE | EE (CE)



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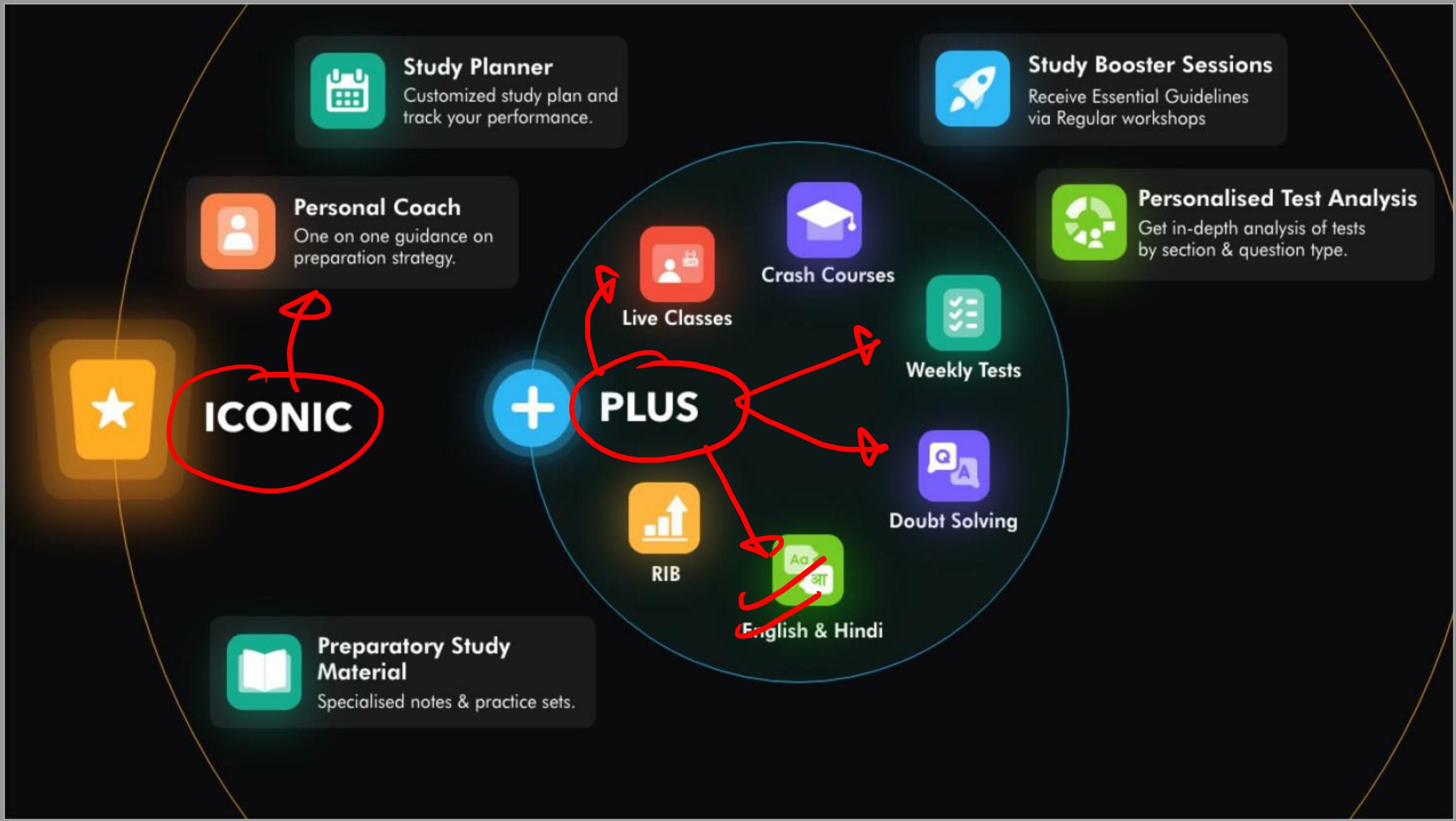


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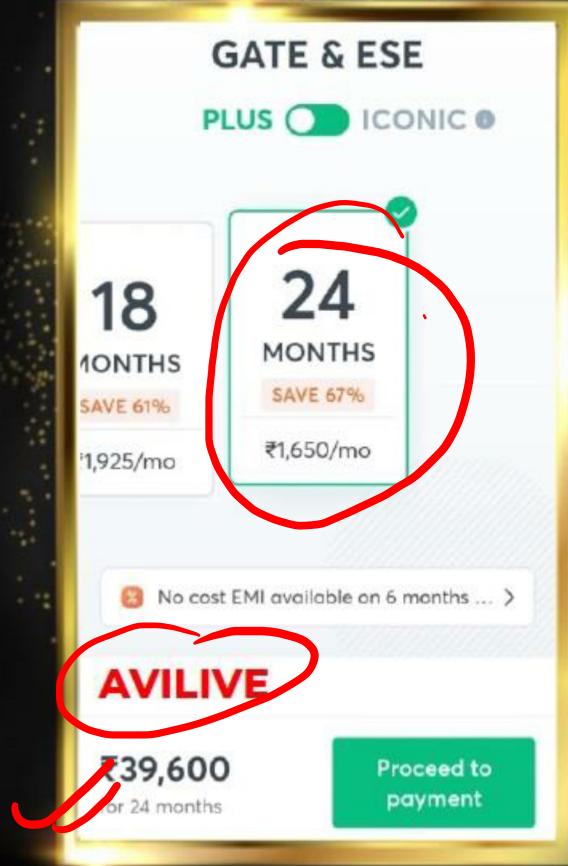
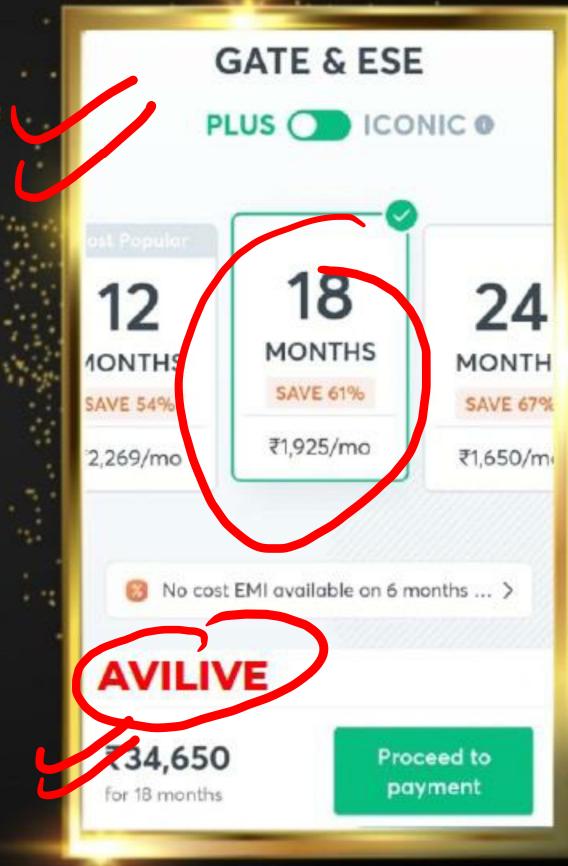
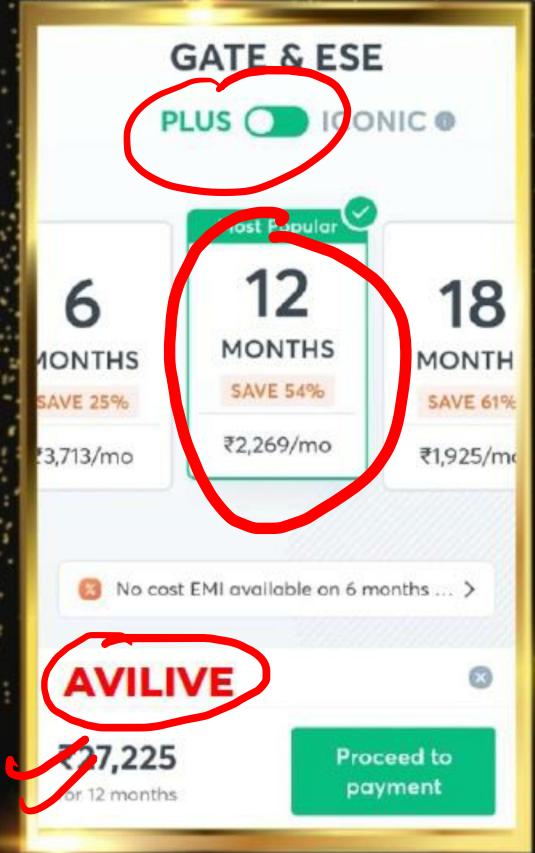




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## Analytical Aptitude

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

5.00 PM

## Quantitative Aptitude

- Number System
- Sequence & Series
- Ratio & Proportion
- Time, Speed & Distance
- Percentage
- Profit, Loss & Discount
- Average
- Allegation & Mixture
- Time & Work
- 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

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# TIME & WORK

EC | EE | ME | CE | IN | CS | CH

2015  
2020

2021

2010 (IIT Guwahati)

Number of  
question - 1

2011 (IIT Madras)

Number of  
question - 1

2012 (IIT Delhi )

Number of  
question - 0

2013 (IIT Bombay)

Number of  
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2014 (IIT Kharagpur)

Number of  
question - 1

2015 (IIT Kanpur )

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question - 0

2016 (IISc Bangalore)

Number of  
question - 3

2017 (IIT Roorkee)

Number of  
question - 3

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2018 (IIT Guwahati)

Number of  
question - 2

2019 (IIT Madras)

Number of  
question - 5

2020 (IIT Delhi)

Number of  
question - 1

2021 (IIT Bombay)

?

Boost Your Preparation with Avinash Singh Sir

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## Group of Two (Man/Women/Children/Machine/Robot)

$$\begin{aligned} & \text{Work = Constant} \\ & \eta \propto \frac{1}{T} \\ & \eta = \frac{1}{T} \\ & \frac{1}{5} \times 2 \rightarrow 2m + 2sw \rightarrow 20 \text{ Day} \\ & 1m + sw \rightarrow 100 \text{ Day} \\ & 10m + 5sw \rightarrow 10 \text{ Days} \\ & 2sm + 4sw \rightarrow 9 \times \cancel{\text{X}} \end{aligned}$$

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$$C_5 M + 25 W \rightarrow 20 \text{ days}$$

1 : 5  
5 : 25

$$C_1 M + 5 W \rightarrow$$

1 : 5

$$C_{10} M + 50 W \rightarrow$$

1 : 5

$$2 S M + 40 W \rightarrow$$

5 : 8

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✓ 1) 15 men and 20 Women can do a piece of work in 10 days. Then 24 men and 32 Women can do the same work in how many days?

A)  $\frac{25}{4}$

B)  $\frac{50}{3}$

C)  $\frac{25}{8}$

D) Can't determine

$$\begin{array}{l} \text{15m + 20w} \rightarrow 10 \\ \text{24m + 32w} \rightarrow ? \\ \hline \text{6m + 8w} \end{array}$$

$$\begin{array}{l} 15m + 20w \rightarrow 10 \\ \times 5 \quad 3m + 4w \rightarrow 50 \\ \times 8 \quad 24m + 32w \rightarrow 40 \end{array}$$

$$\frac{25}{4}$$

$$\frac{50}{8}$$

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✓ 2) 12 Boys and 20 Girls can do a piece of work in 14 days. Then 18 Boys and 32 Girls can do the same work in how many days?

- A)  $\frac{25}{4}$       B)  $\frac{50}{3}$       C)  $\frac{25}{8}$

D) Can't determine

$12B + 20G \rightarrow 14$   
3 : 5

$18B + 32G \cancel{\rightarrow ?}$   
G g : 16

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3) 2 men and 7 boys can do a piece of work in 14 days. 3 men and 8 boys can do the same piece of work in 11 days. Then 8 men and 6 boys can do the same work in how many days?

A) 7

B) 21

C) 12

D) 15

$$2M + 7B \rightarrow 14$$

$$3M + 8B \rightarrow 11$$

$$8M + 6B \rightarrow ?$$

$$4M + 3B \rightarrow ?$$

$$8 \times 2 + 6 \times 1 = 16 + 6 = 12$$

$$T = \frac{T.W.}{22} = \frac{11 \times 14}{22} = 7$$

$$\frac{T.W.}{M_1 D_1} = \frac{(2M + 7B) \times 14}{(3M + 8B) \times 11}$$

$$28M + 98B = 33M + 88B$$

$$5M = 10B \Rightarrow M = 2B$$

$$\frac{M}{B} = \frac{2}{1} \quad \eta \rightarrow 2:1$$

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~~✓~~ 2 men and 7 boys can do a piece of work in 14 days. 3 men and 8 boys can do the same piece of work in 11 days.

a) Then 12 men and 32 boys can do the same work in how many days?  $\rightarrow \frac{11}{4}$

b) Then 10 men and 35 boys can do the same work in how many days?

$$T_1 \rightarrow 2M + 7B \rightarrow 14$$
$$T_2 \rightarrow 3M + 8B \rightarrow 11$$
$$\text{Ratio: } 3M + 8B : 12M + 32B = 1 : 8$$

$$x_1 \left( \begin{array}{l} 3M + 8B \rightarrow 11 \\ 12M + 32B \rightarrow ? \end{array} \right) \times \frac{1}{4}$$
$$\text{Result: } \frac{11}{4}$$

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4) 2 men and 7 boys can do a piece of work in 14 days. 3 men and 8 boys can do the same piece of work in 11 days.

a) Then 12 men and 32 boys can do the same work in how many days?

b) Then 10 men and 35 boys can do the same work in how many days?

$$\tau_1 \rightarrow 2M + 7B \rightarrow 14$$

$$\tau_2 \rightarrow 3M + 8B \rightarrow 11$$

$$\begin{array}{r} 10M + 35B \\ - (2M + 7B) \\ \hline 8M + 28B \end{array}$$

$$\begin{array}{l} 2M + 7B \rightarrow 14 \\ \times 5 \\ 10M + 35B \rightarrow 70 \\ \hline 14 \\ \hline 5 \end{array}$$

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✓ 5) 1200 men and 500 women can build a bridge in 2 weeks. 900 men and 250 women will take 3 weeks to build the same bridge. How many men will be needed to build the bridge in one week?

- A) 3000      B) 3300

$$T_1 \rightarrow 1200M + 500W \rightarrow 2 \text{ week}$$

$$T_2 \rightarrow 900M + 250W \rightarrow 3 \text{ week}$$

$$T_3 \rightarrow M \rightarrow 1 \text{ week}$$

[GATE 2017, EC]

$$T.W = (M \times D) \rightarrow 3600 = (1200M + 500W) \times 2$$

$$240M + 100W = 3600$$

$$240M + 100W = 2700M + 750W$$

$$30M = 25W \Rightarrow 6M = 5W$$

$$6M = 5W \quad \text{--- (1)}$$

$$1200M + 500W \rightarrow 2 \text{ week}$$

$$\rightarrow 1200M + 600M \rightarrow 2 \text{ week}$$

$$1800M \rightarrow 2 \text{ week}$$

$$3600M \rightarrow 1 \text{ week}$$

$$\eta_w > \eta_m$$

$$\frac{M}{W} = \frac{5}{6}$$

$$\eta_m : \eta_w = 5 : 6$$

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Q) 12 Men or 18 Women can do a work in 14 days. In how many days the same work will finish by 8 Men and 16 Women.

A) 8

$$\begin{array}{l} 12m \rightarrow 14d \\ 18w \rightarrow 14d \\ \hline T \rightarrow [8m + 16w] \end{array}$$

$24 + 32 = 56$

B) 9

$$T \cdot W = 12m \times 14 = 18w \times 14$$

$2m = 3w \Rightarrow \frac{m}{w} = \frac{3}{2}$

$$T \cdot W = 12 \times 3 \times 14 \Rightarrow n \rightarrow \frac{m}{3} \frac{w}{2}$$

$$T = \frac{18 \times 12 \times 14}{56} = 9$$

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✓ 7) 1 Men or 2 women or 3 Children can finish a piece of work in 44 days. In how many days the same work will finish by 1 Men, 2 Women & 3 Children.

A)  $44/3$  days

B)  $44/6$

C) 44

D) NOTA

$$T \cdot W = \cancel{1M \times 44} = \cancel{2W \times 44} = \cancel{3C \times 44}$$

$$\underline{1M = 2W = 3C \Rightarrow M : W : C = \frac{6}{1} : \frac{6}{2} : \frac{6}{3}}$$

$$\therefore \text{LCM of } (1, 2, 3) = 6$$

$$M : W : C = 6 : 3 : 2$$

$$T \rightarrow \boxed{1M + 2W + 3C} \rightarrow \\ \downarrow \quad \downarrow \quad \downarrow \\ 6 + 6 + 6 = \boxed{18}$$

$$T \cdot W = \boxed{2 \times 3 \times 44}$$

$$T = \frac{2 \times 3 \times 44}{18+3} = \boxed{\frac{44}{3}}$$

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~~S) Two man alone or three women alone can complete a piece of work in 4 days. In how many days can one woman and one man together complete the same piece of work?~~

[CGPSC-2014]

A) 6 days

B)  $\frac{24}{5}$  days

C)  $\frac{12}{1.75}$  days

D) NOTA

$$2M = 3W$$
$$1M + \frac{3}{2}W$$

$$T.W = 2M \times 4 = 3W \times 4$$
$$2M = 3W$$

$$T.W = 2 \times 3 \times 4$$
$$1M + 1W$$
$$3 + 2 = 5$$

$$\frac{24}{5}$$

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## ~~Concept of $M \times D \times H$~~

$$\eta = \frac{W}{M \times D \times H}$$

Where,

W = Work

M = No of Men/Women/Machine

D = No of days to Complete work

H = No of hours/Day

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✓) If 100 cats can kill 100 rats in 100 days. In how many days 10 cats can kill 10 rats.

- A) 10
- B) 100
- C) 1000
- D) Can't determine

M.W.  
100





# Avinash Singh

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16 Watch mins (last 30 days)

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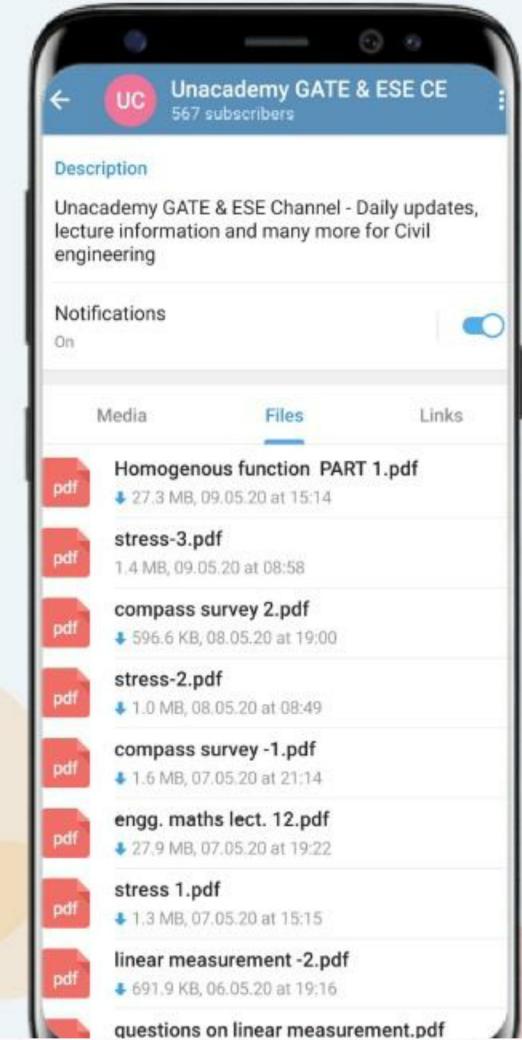
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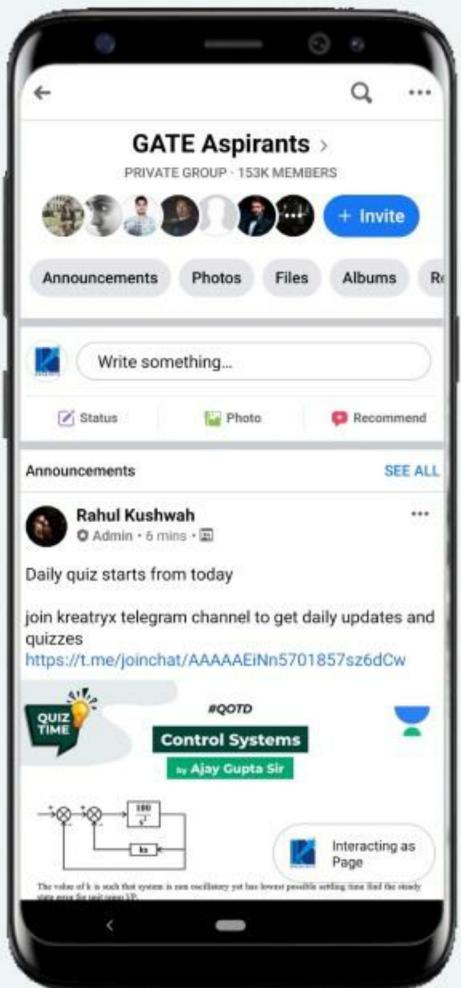
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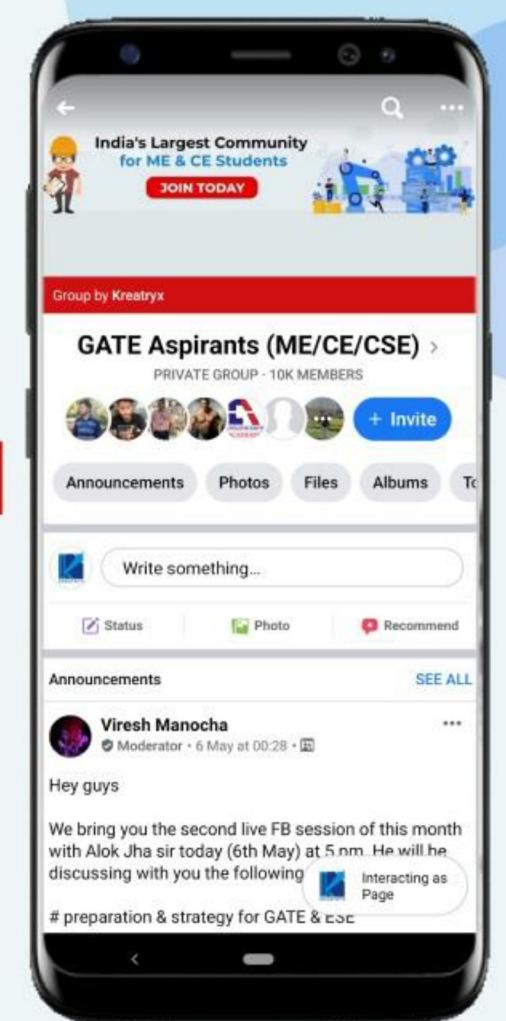
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