

GATE 2021

GENERAL APTITUDE



**TIME & WORK -1,
BASIC CONCEPT OF TIME & WORK**

AVINASH SIR



AVINASH SINGH SIR

GATE | EE (CE)



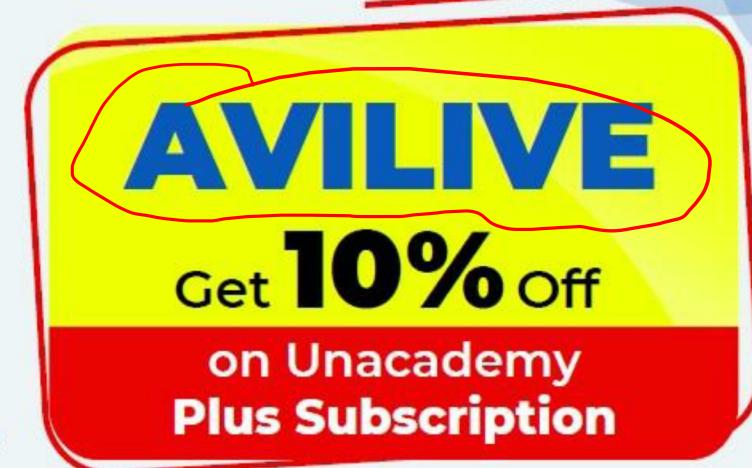
Secured Score 99.86% in
CAT (Quantitative Section)



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Subjects Taken:
General Aptitude
Engineering Mathematics
Digital Electronics





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Customized study plan and track your performance.



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One on one guidance on preparation strategy.



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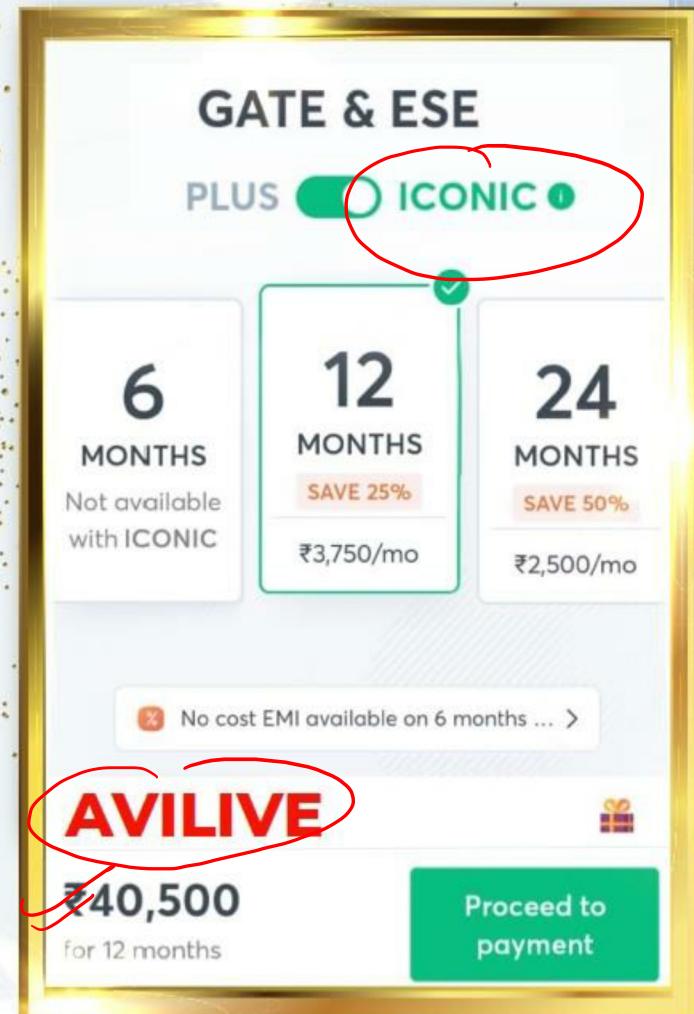
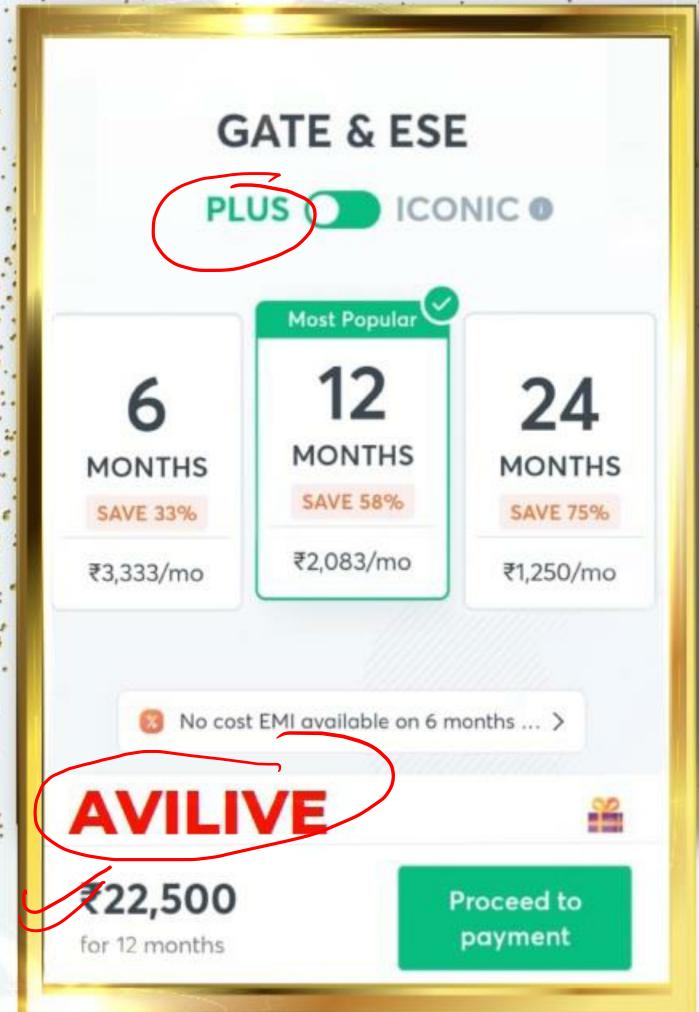
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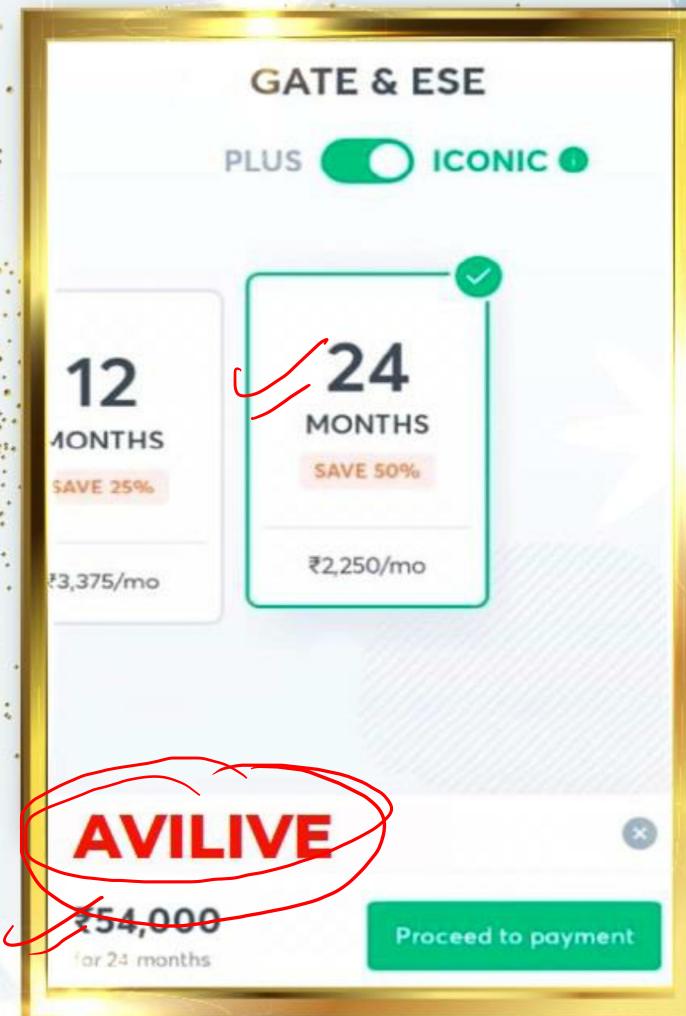
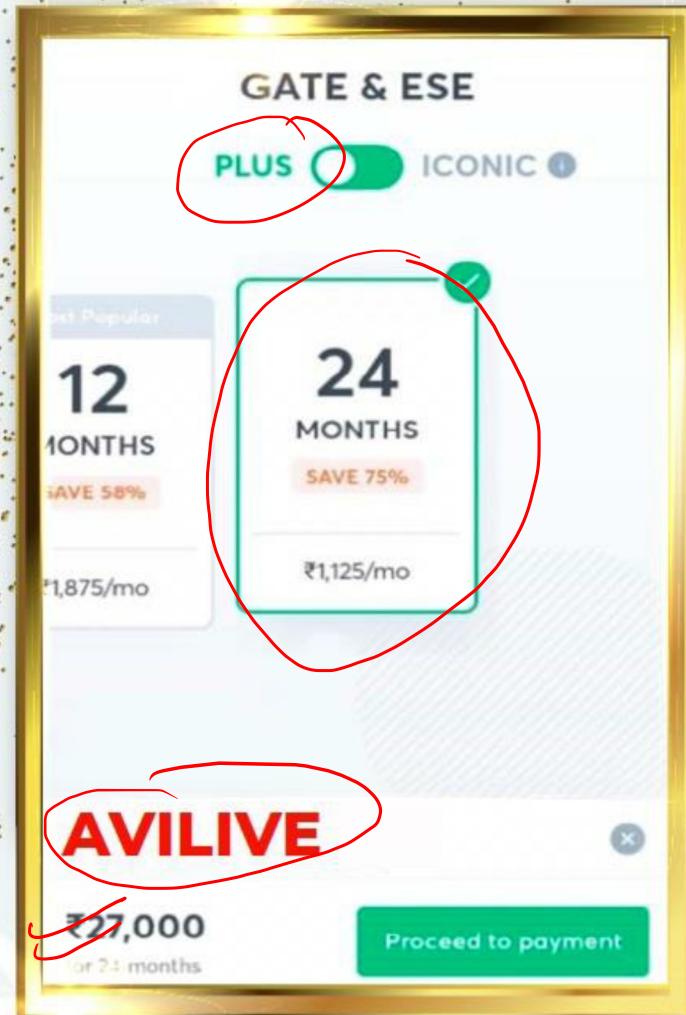
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Complete Package To CRACK GATE/ESE

The image displays a grid of 15 educational modules for GATE/ESE preparation, arranged in three rows and five columns. Each module is represented by a colored box containing the subject name, a Unacademy logo, and a photo of the instructor.

- FLUID MECHANICS** (Top Left): Instructor - MRIGANK SIR
- STRENGTH OF MATERIALS** (Top Middle): Instructor - Abhishek Sir
- DESIGN OF STEEL STRUCTURE** (Top Right): Instructor - BABULAL SIR
- GEOTECHNICAL ENGINEERING** (Second Row, Left): Instructor - ABHISHEK SIR
- REINFORCED CEMENT CONCRETE (RCC)** (Second Row, Middle): Instructor - Aishwary Sir
- RCC** (Second Row, Right): Instructor - KSHITIJ SIR
- OPEN FLOW CHANNEL** (Second Row, Far Right): Instructor - Mrigank Saurav Sir
- IRRIGATION ENGINEERING** (Third Row, Left): Instructor - CHETAN SIR
- STRUCTURAL ANALYSIS** (Third Row, Middle): Instructor - AISHWARY SIR
- SURVEYING** (Third Row, Right): Instructor - KSHITIJ SACHAN SIR
- GEOTECHNICAL ENGINEERING** (Bottom Left): Instructor - AISHWARY SIR
- ENVIRONMENTAL ENGG** (Bottom Middle Left): Instructor - Mrigank Saurav Sir
- ENGINEERING HYDROLOGY** (Bottom Middle Right): Instructor - CHETAN SIR
- HIGHWAY ENGINEERING** (Bottom Right): Instructor - KSHITIJ SACHAN SIR





~~Analytical Aptitude~~

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

~~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

Quant Hack

1. Number to Variable
2. Number to Number
3. Variable to Number
4. Variable to Variable
5. Reverse Approach
6. Sampling Based

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$$S_n \quad n=1 \quad S_1 = T_1 \\ = 8$$

Home Work Question

The sum of the first n term in the sequence 8, 88, 888, 8888, is _____

[GATE 2020, IN, ME]

~~$$S_n \quad (A) \frac{81}{80} (10^n - 1) + \frac{9}{8} n$$~~

~~$$n=1 \\ 8 \quad \frac{81}{80} \times 9 + \frac{9}{8}$$~~

~~$$(B) \frac{81}{80} (10^n - 1) - \frac{9}{8} n$$~~

~~$$\frac{81}{80} \times 9 - \frac{9}{8}$$~~

~~$$(C) \frac{80}{81} (10^n - 1) + \frac{8}{9} n$$~~

~~$$\frac{80}{81} \times 9 + \frac{8}{9}$$~~

~~$$(D) \frac{80}{81} (10^n - 1) - \frac{8}{9} n$$~~

$$\begin{aligned} & \frac{80}{81} \times 9 - \frac{8}{9} \\ & \frac{80}{9} - \frac{8}{9} = \frac{72}{9} \\ & = 8 \end{aligned}$$

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JAR

JAR

The difference between the sum of the first $2n$ natural numbers and the sum of the first n

odd numbers is

(A) $2^n - n$

$n \neq$ Variable

$n = 1$

(B) $n^2 - n$

~~Sum of first n odd nos~~

[GATE 2020, CH, BT]

(C) $2^n + n$

3

(D) $n^n + n$

2

1

(Sum of first $2n$ natural nos) - (Sum of the first n odd nos)

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

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~~Time and Work~~

~~→ 8 to 1 type~~

- ① LCM type
- ② % type
- ③ Ratio & Proportion

~~GATE~~ → S-6
ESE → 1
~~PSUS~~ →
~~AE/JE~~ →

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Time and Work

Ques

A \rightarrow 10 Day

B \rightarrow 20 Day

A + B \rightarrow

$$\text{Work} = \frac{1}{T}$$

A \rightarrow 10 Day

B \rightarrow 20 Day

$$A+B \rightarrow \left(\frac{1}{10} + \frac{1}{20}\right)^{\text{th}} / \text{Day}$$

η
Efficiency

$$\left(\frac{1}{10}\right)^{\text{th}} / \text{Day}$$

$$\left(\frac{1}{20}\right)^{\text{th}} / \text{Day}$$

$$\left(\frac{1}{10} + \frac{1}{20}\right)^{\text{th}} / \text{Day}$$

$$=\left(\frac{3}{20}\right)^{\text{th}} / \text{Day}$$

$$\text{Time} = \frac{1}{\frac{3}{20}} = \frac{20}{3} \text{ Day}$$

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Lcm method

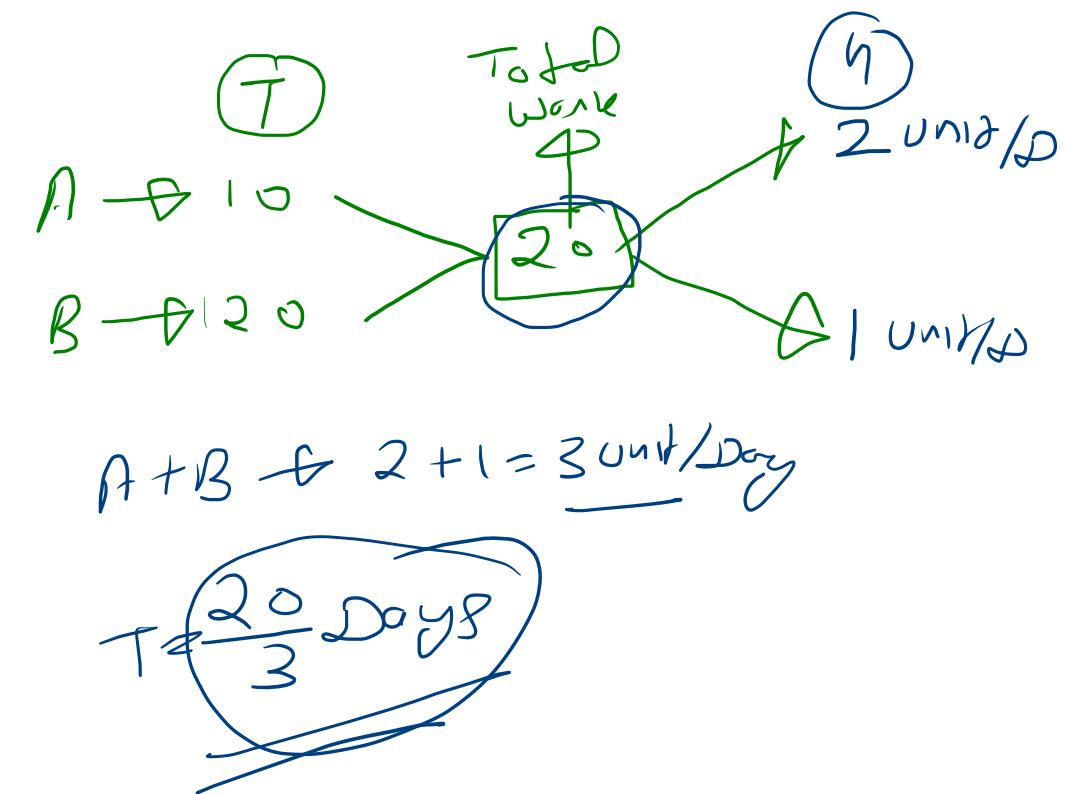
$$\text{Work} = \text{LCM of } (10, 20) = 20 \text{ Unit}$$

A \rightarrow 10 Day 20 Unit / Day

B \rightarrow 20 Day 1 Unit / Day

A+B \rightarrow 2+1 = 3 Unit / Day

Time = $\frac{20}{3}$ Day



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Percentage Method

(T)

$$Work = 100\%$$

(R)

A \rightarrow 10 Day $10\%/\text{Day}$ ✓

B \rightarrow 20 Day $5\%/\text{Day}$ ✓

$$A+B \rightarrow (10\% + 5\%) = 15\%/\text{Day}$$

$$\text{Time} = \frac{100\%}{15\%} = \frac{2}{3} \text{ Day}$$

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~~Time~~

$$Time(T) \times Efficiency(\eta) = Work(W)$$



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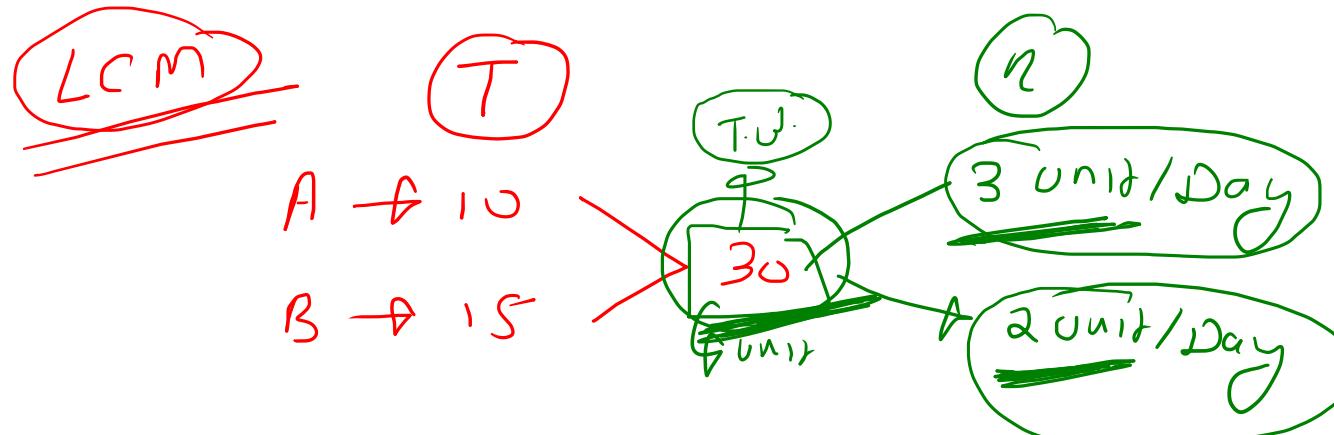
~~1) A can do a work in 10 days, while B alone can do it in 15 days. in how many days work will complete if they work together?~~

A) 6

B) 5

C) 4

D) 3



$$A+B \rightarrow (3+2) \text{ unit/Day} = \underline{5 \text{ unit/Day}}$$

$$T = \frac{30}{5} = \cancel{6 \text{ Day}}$$

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2) A can do a work in 10 days, while B alone can do it in 12 days and C alone can do it in 15 days. In how many days they together will complete the total work.

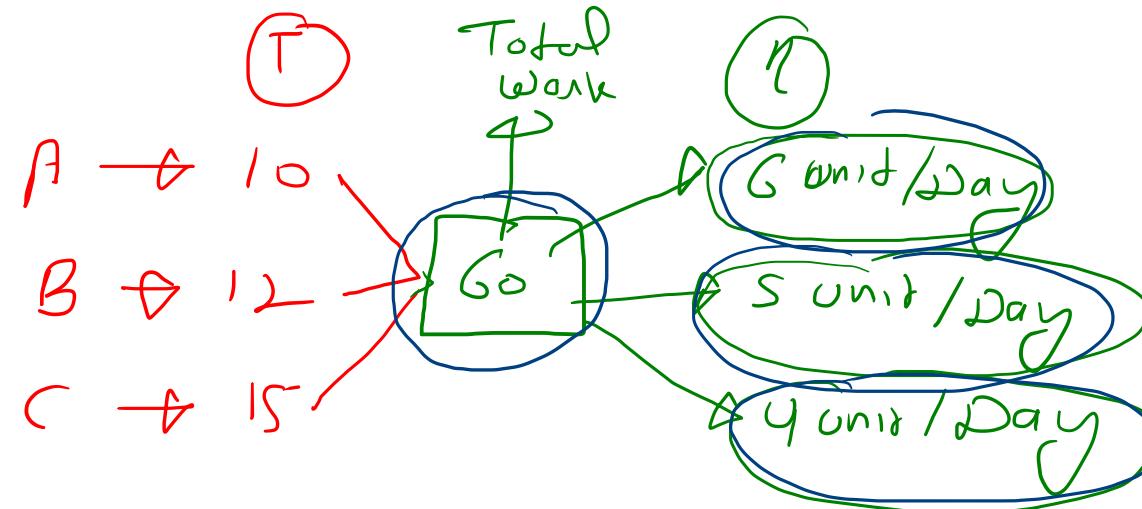
A) 4

B) 5

C) 7

D) 8

L C M



$$A+B+C \rightarrow 15 \text{ unit/day}$$

$$\text{Time} = \frac{60}{15} = \underline{\underline{4 \text{ day}}}$$

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~~(3) A can do a work in 15 days, while B alone can do the same work in 20 days, while A, B, C together can do the same work in 8 days.~~ In how many days ~~C alone will complete the total work?~~

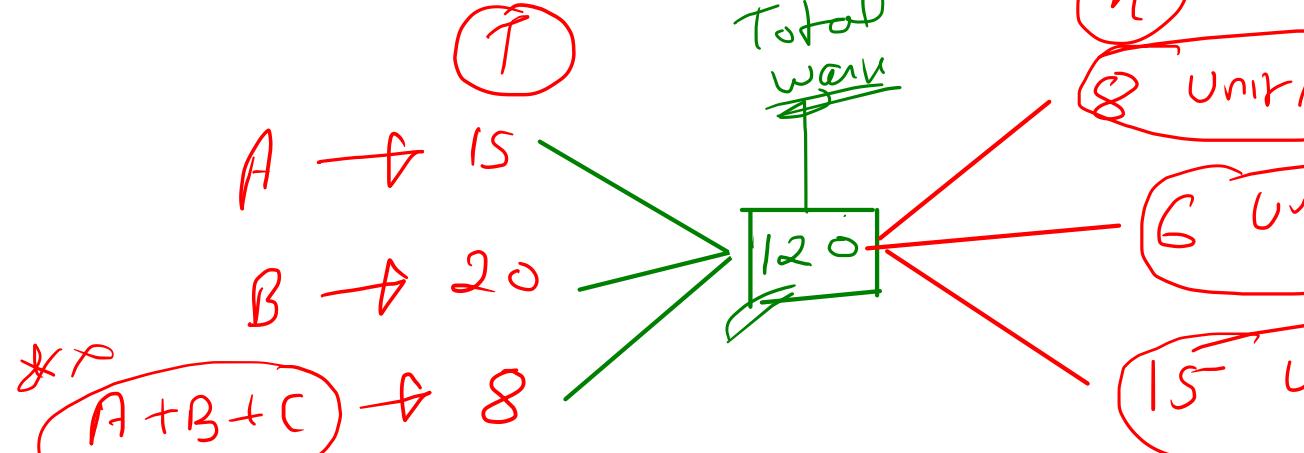
A) 80 days

B) 100 days

~~(C) 120 days~~

D) NOTA

LCM



$$(A+B+C)\eta \rightarrow 15 \text{ unit/Day}$$

\downarrow \downarrow \downarrow
8 6 1 unit/Day

$$\eta_C = ? \text{ unit/Day}$$

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Home Work Question

It would take one machine 4 hours to complete a production order and another machine 2 hours to complete the same order. If both machine work simultaneously at their respective constant rates, the time taken to complete the same order is _____ hours.

[GATE-2019, EC]

- A) $\frac{2}{3}$
- B) $\frac{3}{4}$
- C) $\frac{4}{3}$
- D) $\frac{7}{3}$

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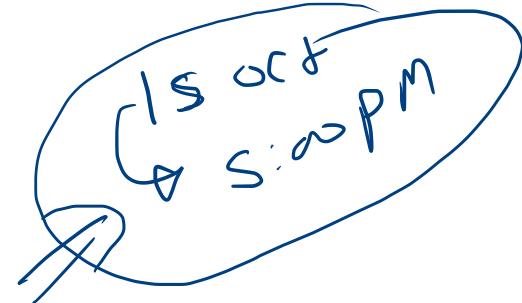
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Avinash Singh

Teaching isn't my job, it's my passion



16 Watch mins

16 Watch mins (last 30 days)

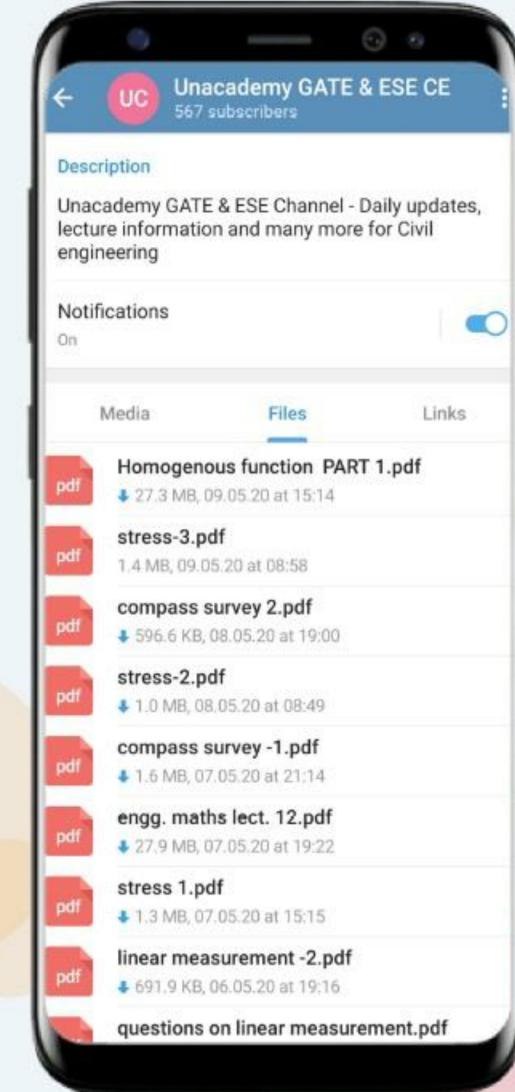
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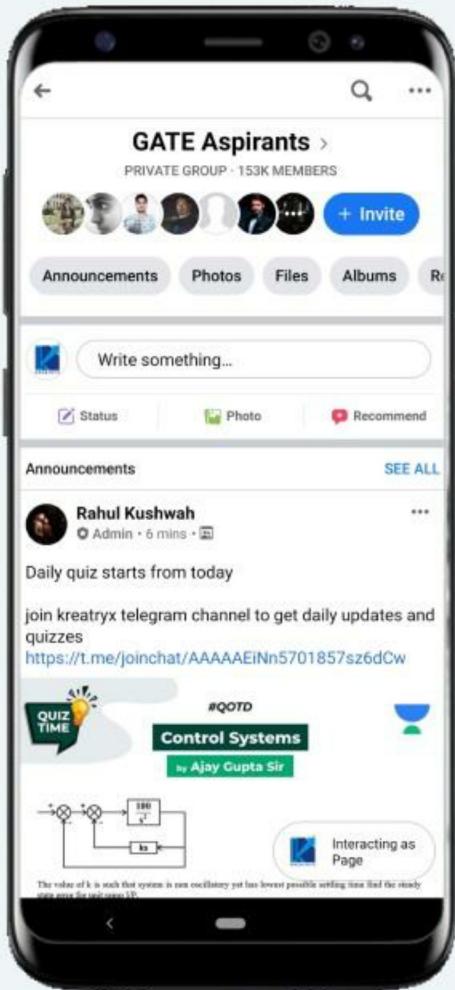
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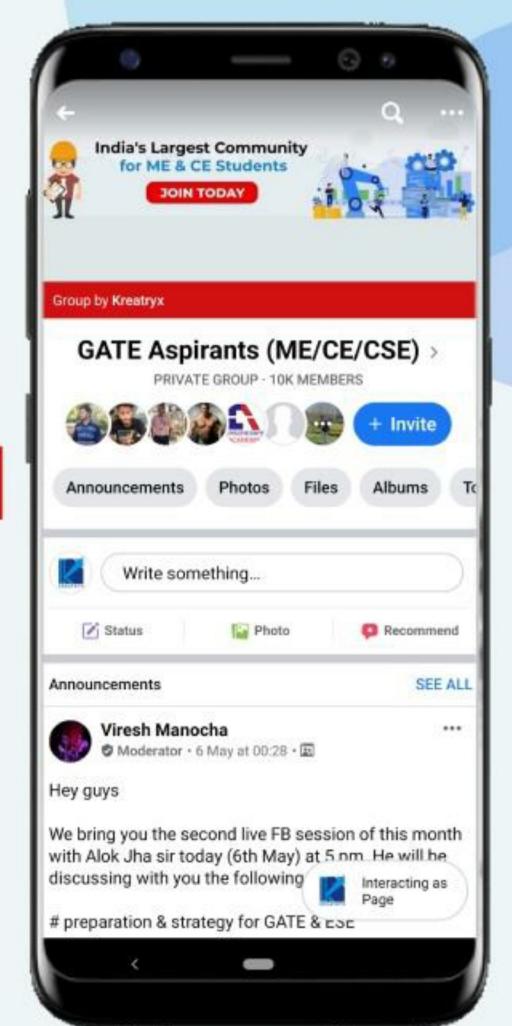


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Thank You



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