Analytical Aptitude Daily Quiz Questions For GATE 2024

GATE And Tech
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1 Age Relations

1. **(Quiz Question 1: GATE2013 CE)** Abhishek is elder to Savar. Savar is younger to Anshul. Which of the given conclusions is logically valid and is inferred from the above statements?

   A. Abhishek is elder to Anshul

   B. Anshul is elder to Abhishek

   C. Abhishek and Anshul are of the same age

   D. No conclusion follows

   Solution: No conclusion follows as we can not derive any relationship between Abhishek and Anshul with the given data.

   Correct Answer: D

   https://gateoverflow.in/40280/gate2013-ce-ga-10

   Video Solution

2. **(Home Work Question 1: CAT 2020 Set-3)** Dick is thrice as old as Tom and Harry is twice as old as Dick. If Dick's age is 1 year less than the average age of all three, then Harry's age, in years, is _____. (Numerical Answer Type)

   Solution: Let the present ages of Dick, Tom and Harry be D, T, and H years respectively.

   According to the question,

   - $D = 3T \longrightarrow (1)$
   - $H = 2D \longrightarrow (2)$

   And, $D = \left(\frac{D+T+H}{3}\right) - 1$

   $\Rightarrow D = \left(\frac{D+\frac{D}{3}+2D}{3}\right) - 1$ [$\because$ From equation (1) and (2)]

   $\Rightarrow D = \left(\frac{3D+D+6D}{9}\right) - 1$

   $\Rightarrow 9D = 10D - 9$

   $\Rightarrow \boxed{D = 9 \text{ years}}$

   Now, Harry present age $H = 2 \times 9$

   $\Rightarrow H = 18$ years.

   Correct Answer : 18

   https://aptitude.gateoverflow.in/8126/Cat-2020-set-3-question-52

3. **(Quiz Question 2: CAT 2017 Set-1)** Arun's present age in years is 40% of Barun's. In another few years, Arun's age will be half of Barun's. By what percentage will Barun's age increase during this period?

   A. 15

   B. None of these

   C. 25

   D. 30

   Solution: Let the present age of Barun's be x years,

   Therefore, Arun's Present age = 40% of $x = \frac{40}{100} \times x = \frac{2x}{5}$ years.

   Let, after t years Arun's age will be half of Barun's age.

   Now, $\frac{2x}{5} + t = \frac{1}{2}(x + t)$

   $\Rightarrow \frac{2x+5t}{5} = \frac{x+t}{2}$

   $\Rightarrow 4x + 10t = 5x + 5t$

   $\Rightarrow x = 5t$

   $\therefore$ The Barun's age increased by $= \left[\frac{(x+t)-x}{x}\right] \times 100\% = \frac{t}{x} \times 100\% = \frac{t}{5t} \times 100\% = 20\%.$

   Short Method: Let the present age of Barun's be 100 years,

   Therefore, Arun's Present age = 40 years.

   Let, after t years Arun's age will be half of Barun's age.

   Now, $40 + t = \frac{1}{2}(100 + t)$

   $\Rightarrow 80 + 2t = 100 + t$

   $\Rightarrow t = 20$

   $\therefore$ The Barun's age increased by $= \frac{20}{100} \times 100\% = 20\%.$

   Correct Answer : B

   https://aptitude.gateoverflow.in/5787/Cat-2017-set-1-question-67

   Video Solution

4. **(Home Work Question 2: NIELIT 2016 MAR Scientist D)** Rani will be twice Raja's age in 3 years when Raja will be 40. How many years old is Rani now?

   A. 20

   B. 80

   C. 77

   D. 37

   Solution: Let's say the Present age of Rani = x years

   The present age of Raja = y years

   Rani will be twice Raja's age in 3 yeas when Raja will be 40. That means AFTER 3 years,

   $x + 3 = 2(y + 3)$

   given: $y + 3 = 40$.

   So, $x + 3 = 80$

   $x = 77$.

   Correct Answer: C

   https://aptitude.gateoverflow.in/6911/Nielit-2016-mar-scientist-d-72

5. **(Quiz Question 3: NIELIT 2016 DEC Scientist B)** The average of the husband and his wife age was 23 years at the time of their marriage. After five years they have a one-year-old child. The average age of the family now is :

   A. 29.3 years

   B. 28.5 years

   C. 23 years

   D. 19 years

   Solution: Let the age of the husband and wife at the time of marriage is x years and y years respectively.

   Now, $\frac{x+y}{2} = 23$

   $\implies x+y = 46 \quad \longrightarrow (1)$

   After five years they have a one-year-old child.

   $\therefore$ The required ratio $= \frac{(x+5)+(y+5)+1}{3} = \frac{x+y+11}{3} = \frac{57}{3} = 19$ years.

   Correct Answer: D

   https://aptitude.gateoverflow.in/6380/Nielit-2016-dec-scientist-b-section-a-52

   Video Solution

6. **(Home Work Question 3: NIELIT 2016 DEC Scientist B)** The ratio of ages of the father and his son at present is 12 : 5, the difference of their age is 28 years. What will be the ratio of their ages after eight years?

   A. 2 : 2

   B. 3 : 1

   C. 2 : 1

   D. 3 : 2

   Solution: The present age of father and son at present is $12x$ years and $5x$ years respectively.

   Now, $12x–5x = 28$

   $\implies 7x = 28$

   $\implies x = 4$

   $\therefore$ Father present age $= 12x = 48$ years and son present age $= 5x = 20$ years.

   Now, the required ratio $= \frac{48+8}{20+8} = \frac{56}{28} = \frac{2}{1}$

   Hence, the ratio of their ages after eight years = 2 : 1.

   Correct Answer: C

   https://aptitude.gateoverflow.in/6384/Nielit-2016-dec-scientist-b-section-a-48

7. **(Quiz Question 4: NIELIT 2016 DEC Scientist B)** The ratio between Sumit's and Prakash's age at present is 2 : 3. Sumit is 6 years younger than Prakash. The ratio of Sumit's age to Prakash's age after six years will be :

   A. 1 : 2

   B. 2 : 3

   C. 3 : 4

   D. 3 : 8

   Solution: Let the Sumit's and Prakash's age at present is $2x$ years and $3x$ years respectively.

   Sumit is 6 years younger than Prakash, so $2x = 3x – 6$

$\implies x = 6$

$\therefore$ The present age of Sumit = $2x = 12$ years and the present age of Prakash = $3x = 18$ years.

Now, the ratio of Sumit's age to Prakash's age after six years will be = $\frac{12+6}{18+6} = \frac{18}{24} = \frac{3}{4}$

Hence, The ratio of Sumit's age to Prakash's age after six years will be 3 : 4.

Correct Answer: C

https://aptitude.gateoverflow.in/6386/Nielit-2016-dec-scientist-b-section-a-46

Video Solution

8. **(Home Work Question 4: CAT 2007)** Ten years ago, the ages of the members of a joint family of eight people added up to 231 years. Three years later, one member died at the age of 60 years and a child was born during the same year. After another three years, one more member died, again at 60, and a child was born during the same year. The current age of this eight-member joint family is nearest to:

   A. 23 years

   B. 22 years

   C. 21 years

   D. 25 years

   E. 24 years

   Solution: From current ,10 yr ago ... family of 8 member have total age =231

   then ,3 yr later , 1 people died(age=60) and 1 child born ,now age of family = 231+3*8 – 60 = 195

   then ,another 3 yr later , 1 member died(age =60), and 1 child born , so age of family = 195+3*8–60= 159,

   now ,question ask aboubt current age of menmber (average age) of family =

   current = (159 (which is 4yr ago(10-3-3) + 4*8) / 8= 23.8 = 24 yr

   Correct Answer: E

   https://aptitude.gateoverflow.in/601/Cat-2007-question-24

9. **(Quiz Question 5: GATE2018 CE-1)** Hema's age is 5 years more than twice Hari's age. Suresh's age is 13 years less than 10 times Hari's age. If Suresh is 3 times as old as Hema, how old is Hema?

   A. 14

   B. 17

   C. 18

   D. 19

   Solution: Let Hema's age be x, Hari's age be y and Suresh's age be z.

   According to the question:

   $x = 5 + 2y \implies x - 2y = 5 \quad \rightarrow (1)$

   $z = 10y - 13 \quad \rightarrow (2)$

   $z = 3x \quad \rightarrow (3)$

   From (2) and (3) we get

   $3x - 10y = -13 \quad \rightarrow (4)$

   Solving equations (1), (4) and (3) we get $x = 19$, $y = 7$ and $z = 57$.

   Hema's age, $x = 19$

   Correct Answer: D

   https://gateoverflow.in/313272/gate2018-ce-1-ga-3

   Video Solution

10. **(Home Work Question 5)** What is Kavya's present age, if after 15 years her age will be 3 times her age 3 years back?

    A. 12

    B. 24

    C. 6

    D. 9

    Solution: Let Kavya's present age be $'x'$ years.

    Now, $x + 15 = 3(x - 3)$

    $\implies x + 15 = 3x - 9$

    $\implies x - 3x = -9 - 15$

    $\implies = -2x = -24$

    $\implies x = 12.$

    Correct Answer: A

2 Family Relations

1. **(Quiz Question 6: GATE Civil 2022 Set 1)** Given the statements:

    - P is the sister of Q.
    - Q is the husband of R.
    - R is the mother of S.
    - T is the husband of P.

    Based on the above information, T is _____ of S.

    A. the grandfather

    B. an uncle

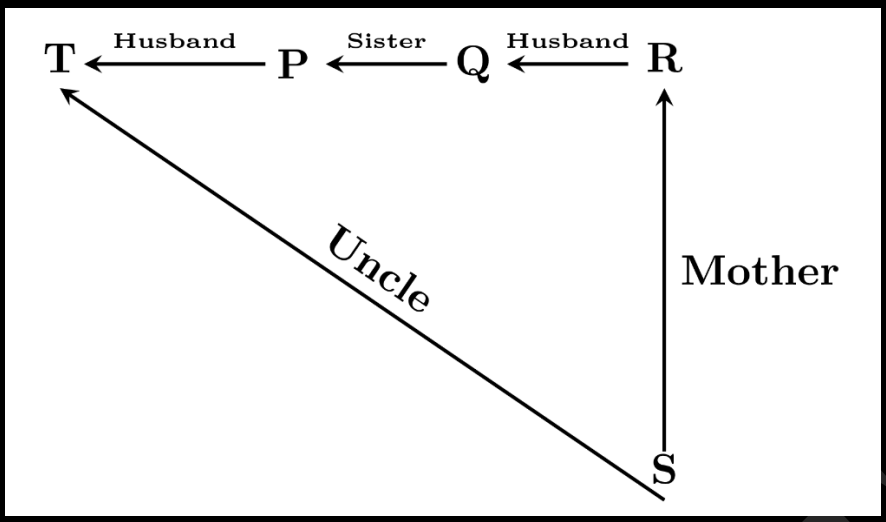
    C. the father

    D. a brother

    Solution: Given the statements:

    - P is the sister of Q.
    - Q is the husband of R.
    - R is the mother of S.
    - T is the husband of P.

    Based on the above statements, we can draw the diagram.



$\therefore$ T is an uncle of S.

Correct Answer : B

https://gateoverflow.in/411737/gate-civil-2022-set-1-ga-question-4

Video Solution

2. **(Home Work Question 6: NIELIT 2019 Feb Scientist C)** Read the following information to answer the question.

   $A + B$ means A is daughter of B; $A * B$ means A is son of B and $A - B$ means A is wife of B.

   If $P * Q - S$, which of the following is true?

   A. S is wife of Q

   B. S is father of P

   C. P is daughter of Q

   D. Q is father of P

   Solution: Given $P * Q - S$

   If we take $P * Q$ then P is son of Q

   Next, $Q - S$ mean Q is wife of S

   It means Q and S are parents of P

   Hence S is father of P

   Correct Answer: B

   https://aptitude.gateoverflow.in/6582/Nielit-2019-feb-scientist-c-section-a-14

3. **(Quiz Question 7)** Read the following information to answer the question.

   - A + B means A is the father of B.
   - A × B means A is the sister of B.
   - A $ B means A is the wife of B.
   - A%B means A is the mother of B.
   - A ÷ B means A is the son of B.

   Which of the following expressions is true if Y is son of X is definitely false?

   A. W%L × T × YX

   B. W + L × T × YX

C. $X + L \times T \times YW$

D. W $ X + L + Y + T

Solution:

Correct Answer: D

https://aptitude.gateoverflow.in/32/Reasoning-answer-it

Video Solution

4. **(Home Work Question 7: NIELIT 2022 Feb Scientist D)** Read the following information to answer the question

   A × B means A is the sister of B, A + B means A is the daughter of B, A-B means A is the son of B.

   On the basis of the information, you have to tell, how is P related to S in the relationship P-Q × R+S?

   A. Brother

   B. Son

   C. Grandson

   D. Daughter's son

   Solution: $P - Q \times R + S$:

   - $P - Q$: P is the son of Q.
   - $Q \times R$: Q is the sister of R. Q and R are female here.
   - $R + S$: R is the daughter of S. S has 2 daughters Q, R, and P is his/her daughter's son.

   Correct Answer: D

   https://aptitude.gateoverflow.in/9099/Nielit-2022-feb-scientist-d-section-a-13

5. **(Quiz Question 8)** In a family of seven people Lawyer is married to a Teacher and has three sons, one Engineer, one Doctor and one Actor. The Actor's wife is a Dancer and is an Aunt of Emily. Emily, the daughter of Engineer learns martial arts with her brother Rahul. How is the Doctor related to Rahul?

   A. Uncle

   B. Son

   C. Nephew

   D. Brother

   Solution: Rahul is the son of the Engineer who is the brother of Doctor. So, the Doctor is Uncle of Rahul.

   Correct Answer: A

   Video Solution

6. **(Home Work Question 8: NIELIT 2022 Feb Scientist D)** If P+Q means P is the mother of Q . P # Q means P is the father of Q. P – Q means P is the sister of Q, then which of the following relationship shows that M is the daughter of R?

   A. R # M + N

   B. R + N # M

   C. R - M # N

   D. None of these

   Solution: $R\#M + N$: $R\#M$ means R is the father of M (R is male).$M + N$ means M is the mother of Q. M is the daughter of R and Q is grand child of R.

   Correct Answer: A

   https://aptitude.gateoverflow.in/9100/Nielit-2022-feb-scientist-d-section-a-12

7. **(Quiz Question 9: GATE Civil 2021 Set 1)** Statement: Either P marries Q or X marries Y

   Among the options below, the logical NEGATION of the above statement is :

   A. P does not marry Q and X marries Y

   B. Neither P marries Q nor X marries Y

   C. X does not marry Y and P marries Q

   D. P marries Q and X marries Y

   Solution: The given statement is: Either P marries Q or X marries Y.

   The logical NEGATION of the above statement is : Neither P marries Q nor X marries Y.

   We can also write the above statement as P does not marry Q and X does not marries Y.

   Correct Answer: B

   `https://gateoverflow.in/359879/gate-civil-2021-set-1-ga-question-6`

   Video Solution

8. **(Home Work Question 9)** Rupesh introduces Poonam as the daughter of the only son of my father's wife. How is Poonam related to Rupesh?

   A. Cousin

   B. Niece

   C. Daughter

   D. Aunt

   Solution: Break the given sentence at as.

   Resolving from the last, In the view of Rupesh,

   My father's wife - mother

   Only son of mother - himself i.e. Rupesh

   Daughter of Rupesh - daughter.

   So, answer is daughter.

   Correct Answer: C

9. **(Quiz Question 10: GATE2019 ME-1)** M and N had four children P, Q, R and S. Of them, only P and R were married. They had children X and Y respectively. If Y is a legitimate child of W, which of the following statements is necessarily FALSE?

   A. M is the grandmother of Y

   B. R is the father of Y

   C. W is the wife of R

   D. W is the wife of P

   Solution: M and N had four children P, Q, R and S.

   It means M and N are couple.

   Only P and R were married.

   They had children X and Y respectively.

   It means child of P is X and child of R is Y.

   If Y is a legitimate child of W we can conclude that W and R are couple.

   A. M is the grandmother of Y– Possible, can also be grand father.

   B. R is the father of Y– Possible, can also be mother.

   C. W is the wife of R– Possible, can also be husband.

D. W is the wife of P–False, W is either wife of R or husband of R.

Correct Answer: D

https://gateoverflow.in/313601/gate2019-me-1-ga-10

Video Soluion

10. **(Home Work Question 10: NIELIT 2019 Feb Scientist C)** A said to B that B's mother was mother-in-law of A's mother. How is A's mother related to B's mother?

A. Daughter-in-law

B. Mother-in-law

C. Sister

D. Aunt

Solution: Inverse relation for mother-in-law – either son-in-law or daughter-in-law. Option A is the only possible answer.

Correct Answer: A

https://aptitude.gateoverflow.in/6574/Nielit-2019-feb-scientist-c-section-a-22

3 Inequality

1. **(Quiz Question 11: GATE CH 2022)** Consider the following inequalities.

   - $3p - q < 4$
   - $3q - p < 12$

   Which one of the following expressions below satisfies the above two inequalities?

   A. $p + q < 8$

   B. $p + q = 8$

   C. $8 \leq p + q < 16$

   D. $p + q \geq 16$

   Solution: Given that,

   - $3p - q < 4 \quad \longrightarrow (1)$
   - $3q - p < 12 \quad \longrightarrow (2)$

   Adding the equation (1) & (2).

   $3p - q + 3q - p < 4 + 12$

   $\Rightarrow 2p + 2q < 16$

   $\Rightarrow 2(p + q) < 16$

   $\Rightarrow \boxed{p + q < 8}$

   Correct Answer : A

   https://gateoverflow.in/411708/gate-ch-2022-ga-question-8

   Video Solution

2. **(Home Work Question 11: CAT 2020 Set-2)** The number of pairs of integers (x, y) satisfying $x \geq y \geq -20$ and $2x + 5y = 99$ is

   Solution:

   Given that,

   $x \geq y \geq 20 \quad \longrightarrow (1)$

$2x + 5y = 99 \quad \longrightarrow (2)$

From equation (2), we get.

$x = \frac{99-5y}{2}$

Now, we can put the value of x in equation (1), we get.

$\frac{99-5y}{2} \geq y \geq -20 \quad \longrightarrow (3)$

First, we take,

$\frac{99-5y}{2} \geq y$

$\Rightarrow 2y \leq 99-5y$

$\Rightarrow 7y \leq 99$

$\Rightarrow y \leq \frac{99}{7}$

$\Rightarrow y \leq 14.1428$

$\Rightarrow y = \lfloor 14.1428 \rfloor$

$\Rightarrow \boxed{y = 14}$

So, $\boxed{-20 \leq y \leq 14} \quad \longrightarrow (4)$

From equation (2), we get

$\underbrace{2x}_{\text{Always even}} = \underbrace{99-5y}_{\text{Even}}$

$5y \rightarrow$ odd $y \rightarrow$ odd Therefore, we have to find out all the odd integers from the range of $y \in [-20, 14]$, and for each such value of y, we will find the unique of x.

Odd integer of y : ($\underbrace{-19,-17,-15,-13,-11,-9,-7,-,5,-3,-1}_{\text{Negative integers}}$, $\underbrace{1,3,5,7,9,11,13}_{\text{Positive integers}}$)

So, the total number of integers that, y can takes is 17.

$\therefore$ The number of pairs of integers (x, y) is 17.

Correct Answer : 17

https://aptitude.gateoverflow.in/8034/Cat-2020-set-2-question-66

3. **(Quiz Question 12: GATE ECE 2022)** Consider the following inequalities.

A.$2x-1 > 7$

B.$2x-9 < 1$

Which one of the following expressions below satisfies the above two inequalities?

A.$x \leq -4$

B.$-4 < x \leq 4$

C.$4 < x < 5$

D.$x \geq 5$

Solution:

Given that,

$2x-1 > 7 \quad \longrightarrow (1)$

$2x - 9 < 1 \quad \longrightarrow (2)$

From equation (1),

$2x - 1 > 7$

$\Rightarrow 2x > 8$

$\Rightarrow \boxed{x > 4}$

From equation (2),

$2x - 9 < 1$

$\Rightarrow 2x < 10$

$\Rightarrow \boxed{x < 5}$

We can write, $\boxed{4 < x < 5}$

Correct Answer : C

https://gateoverflow.in/411690/gate-ece-2022-ga-question-7

Video Solution

4. **(Home Work Question 12: CAT 2016)** What value of x satisfy $x^{2/3} + x^{1/3} - 2 \leq 0$?

A. $-8 \leq x \leq 1$

B. $-1 \leq x \leq 8$

C. $1 < x < 8$

D. $1 \leq x \leq 8$

E. $-8 \leq x \leq 8$

Solution: Given that, $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 \leq 0$

$\Rightarrow x^{\frac{1}{3}} \cdot x^{\frac{1}{3}} + x^{\frac{1}{3}} - 2 \leq 0 \quad \longrightarrow (1)$

Let $x^{\frac{1}{3}} = k$

Now, $k \cdot k + k - 2 \leq 0$

$\Rightarrow k^2 + k - 2 \leq 0$

$\Rightarrow k^2 + 2k - k - 2 \leq 0$

$\Rightarrow k(k+2) - 1(k+2) \leq 0$

$\Rightarrow (k+2)(k-1) \leq 0$

$\Rightarrow \boxed{\left(x^{\frac{1}{3}} + 2\right)\left(x^{\frac{1}{3}} - 1\right) \leq 0} \quad \longrightarrow (2)$

Case 1: $x^{\frac{1}{3}} + 2 \leq 0;\ x^{\frac{1}{3}} - 1 \geq 0$

$\Rightarrow x^{\frac{1}{3}} \leq -2;\ x^{\frac{1}{3}} \geq 1$

$\Rightarrow \boxed{x \leq -8; x \geq 1}$

IMAGE

For x solution is not possible.

Case 2: $x^{\frac{1}{3}} + 2 \geq 0;\ x^{\frac{1}{3}} - 1 \leq 0$

$\Rightarrow x^{\frac{1}{3}} \geq -2;\ x^{\frac{1}{3}} \leq 1$

$\Rightarrow \boxed{x \geq -8; x \leq 1}$

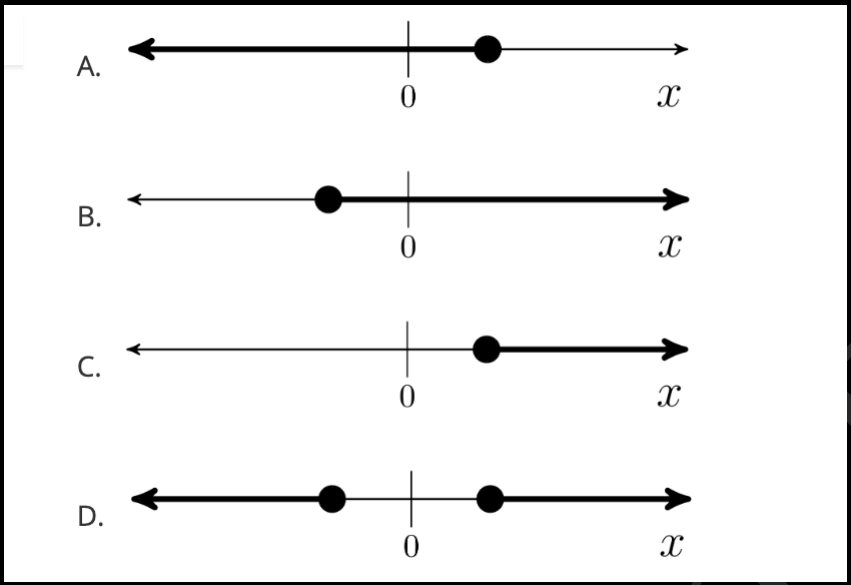
IMAGE

$\Rightarrow \boxed{-8 \leq x \leq 1}$

Correct Answer : A

https://aptitude.gateoverflow.in/5679/Cat-2016-question-89

5. **(Quiz Question 13: GATE Mechanical 2022 Set 2)** Which one of the following is a representation (not to scale and in bold) of all values of x satisfying the inequality $2-5x \leq -\dfrac{6x-5}{3}$ on the real number line?



Solution: Given that, $2-5x \leq -\frac{6x-5}{3}$

$\Rightarrow 6-15x \leq -6x+5$

$\Rightarrow 6-5 \leq -6x+15x$

$\Rightarrow 1 \leq 9x$

$\Rightarrow \boxed{x \geq \frac{1}{9}}$

Correct Answer : C

https://gateoverflow.in/411803/gate-mechanical-2022-set-2-ga-question-2

Video Solution

6. **(Home Work Question 13: CAT 2021 Set-2)** For all possible integers n satisfying $2.25 \leq 2+2^{n+2} \leq 202$, the number of integer values of $3+3^{n+1}$ is

Solution: Given that, $2.25 \leq 2+2^{n+2} \leq 202$

$\Rightarrow 0.25 \leq 2^{n+2} \leq 200$

$\Rightarrow 2^{-2} \leq 2^{n+2} < 2^8 \quad [\because 2^7 = 128, 2^8 = 256 \Rightarrow 2^7 < 200 < 2^8]$

$\Rightarrow -2 \leq n+2 < 8$

$\Rightarrow -4 \leq n < 6$

$\Rightarrow n \in \{-4,-3,-2,-1,0,1,2,3,4,5\}$

The integer value of $3+3^{n+1}$:

$\Rightarrow n+1 \geq 0$

$\Rightarrow \boxed{n \geq -1}$

$\Rightarrow n \in \{-1,0,1,2,3,4,5\}$

$\therefore$ The number of integer values of $3+3^{n+1}$ is 7.

Correct Answer : 7

https://aptitude.gateoverflow.in/8441/Cat-2021-set-2-quantitative-aptitude-question-12

7. **(Quiz Question 14: GATE Mechanical 2023)** Consider the following inequalities

$$p^2 - 4q < 4$$
$$3p + 2q < 6$$

where p and q are positive integers.

The value of $(p + q)$ is _____ .

A.2

B.1

C.3

D.4

Solution:

Correct Answer: A

https://gateoverflow.in/411813/gate-mechanical-2023-ga-question-7

Video Solution

8. **(Home Work Question 14: NIELIT Scientific Assistant A 2020)** Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

$A \leq B < C \geq D; C \leq E \leq F$

Conclusions:

I. $F \geq D$

II. $A > E$

A.if only conclusion (I) follows

B.if only conclusion (II) follows

C.if neither (I) nor (II) conclusion follows

D.both (I) and (II) conclusions follow

Solution:

correct Answer: A

https://gateoverflow.in/351424/nielit-scientific-assistant-a-2020-november-37

9. **(Quiz Question 15: NIELIT Scientific Assistant A 2020)** Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

$P \leq Q \leq R > S; T \geq R; S \geq U$

Conclusions:

I. $T > S$

II. $U < R$

A.if only conclusion (I) follows

B.if only conclusion (II) follows

C.if neither (I) nor (II) conclusion follows

D.if both (I) and (II) conclusions follow

Solution:

Correct Answer: E

https://gateoverflow.in/351425/nielit-scientific-assistant-a-2020-november-36

Video Solution

10. **(Home Work Question 15: GATE Overflow Test Series — Mock GATE — Test 4 —)** The solution for the inequality $5x - 7 < 2x < 13x - 31$ is

    A. $\left(-\infty, -\frac{7}{3}\right)$

    B. $\left(\frac{31}{3}, \infty\right)$

    C. $\left(-\infty, -\frac{31}{11}\right)$

    D. No solution

    Solution: Case 1 : $5x - 7 < 2x$

    $\implies 3x < 7$

    $\implies x < \frac{7}{3} \quad \rightarrow (1)$

    Case 2 : $2x < 13x - 31$

    $\implies -11x < -31$

    $\implies x > \frac{31}{11} \quad \rightarrow (2)$

    Since, there is no value of x that satisfies both (1) and (2), there is no solution.

    Correct Answer: D

    https://gateoverflow.in/356186/gate-overflow-test-series-mock-gate-test-4-question-7

4 Direction Sense

1. **(Quiz Question 16: GATE Mechanical 2021 Set 2)** The front door of Mr. X's house faces East. Mr. X leaves the house, walking 50 m straight from the back door that is situated directly opposite to the front door. He then turns to his right, walks for another 50 m and stops. The direction of the point Mr. X is now located at with respect to the starting point is _____ .

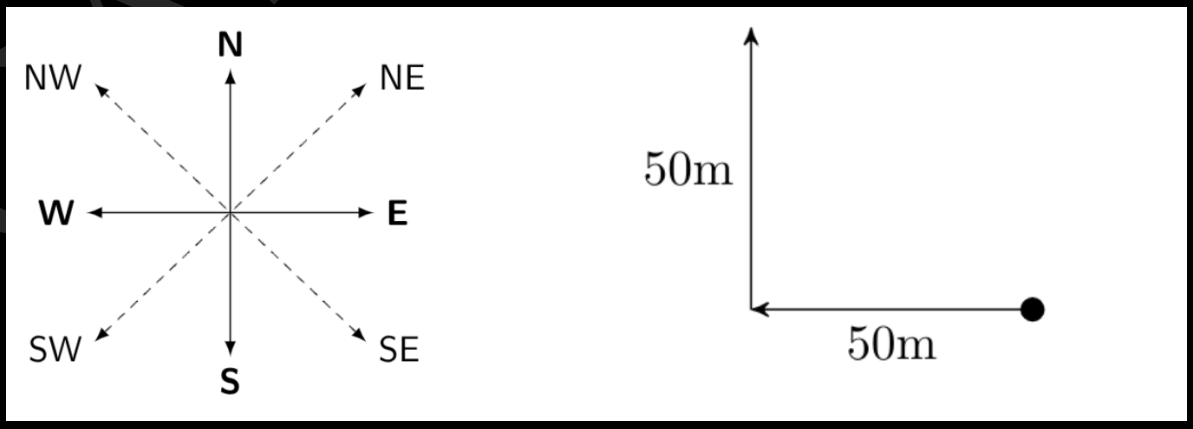
    A. South-East

    B. North-East

    C. West

    D. North-West

    Solution: The front door of Mr. X's house faces East. Then the back door of Mr. X's house faces West (the back door that is situated directly opposite to the front door).



∴ The direction of the point Mr. X is now located at with respect to the starting point is North-West.

Correct Answer: D

https://gateoverflow.in/359503/gate-mechanical-2021-set-2-ga-question-5

Video Solution

2. **(Home Work Question 16: NIELIT 2019 Feb Scientist C)** Radha's school bus is facing North when it reaches her school. After starting from Radha's house, it turns right twice and then left before reaching the school. What direction was the bus facing when it left the bus stop in front of Radha's house?

   A.South

   B.North

   C.East

   D.Cannot be determined

   Solution: The bus should be facing WEST, now when it took two right and then left, it'll end up bus in facing NORTH.

   Correct Answer: D

   https://aptitude.gateoverflow.in/6575/Nielit-2019-feb-scientist-c-section-a-21

3. **(Quiz Question 17: NIELIT 2016 MAR Scientist D)** A man is facing East, then he turns left and goes 10 m, then turns right and goes 5 m, then goes 5 m to the south and from there 5 m to West. In which direction is he, form this original place?

   A.East

   B.West

   C.North

   D.South

   Solution: According to the question after facing to the east he turns to the left and goes to $10m$ means moving to the north direction. After he turns to the right means east direction and goes $5m$, then $5m$ south means he is facing now south. now move to the west and goes $5m$ more. So from the original point, he is facing to the north. Correct Answer: *C*.

   https://aptitude.gateoverflow.in/6908/Nielit-2016-mar-scientist-d-75

   Video Solution

4. **(Home Work Question 17: NIELIT 2017 July Scientist B)** The town of Paranda is located on Green lake. The town of Akram is West of Paranda. Tokhada is East of Akram but West of Paranda. Kokran is East of Bopri but West of Tokhada and Akram. If they are all in the same district, which town is the farthest West?

   A.Paranda

   B.Kokran

   C.Akram

   D.Bopri

   Solution: From given information sequence of town is as follows:

   Bopri→Kokran→Akram→Tokhada→Paranda.

   Correct Answer: D

   https://aptitude.gateoverflow.in/6331/Nielit-2017-july-scientist-b-section-a-41

5. **(Quiz Question 18: NIELIT 2016 MAR Scientist D)** Rahim travelled straight from point E to F at a distance of 5 km. From F he turned left and travelled 6 km and reached point G, there he took a left turn and travelled 5 km to reach point H. He took another left turn and travelled 2 km and reached point I. How far is he from the starting point?

   A.3 km

   B.4 km

   C.5 km

   D.7 km

   Solution:

   Correct Answer: B

   https://aptitude.gateoverflow.in/6909/Nielit-2016-mar-scientist-d-74

   Video Solution

6. **(Home Work Question 18: UGCNET CSE December 2022)** A man walks 40 meters towards south. Then turning to his right he walks 40 meters again. Then he turns to his left and walks 20 meters. He again turns to his left and walks 40 meters. How far is the man now from his starting point?

   A.60 meters

   B.40 meters

   C.100 meters

   D.80 meters

   Solution:

   Correct Answer: A

   https://gateoverflow.in/404018/ugcnet-cse-december-2022-122

7. **(Quiz Question 19: GO Classes Test Series 2023 — NIELIT Mock Test 9 —)** A cyclist goes 30 km North and then turns East and goes 40 km. Again he turns to his right and goes 15 km. After this he turns to his right and goes 20 km. How far is he now from his starting point?

   A.0 km

   B.10 km

   C.25 km

   D.30 km

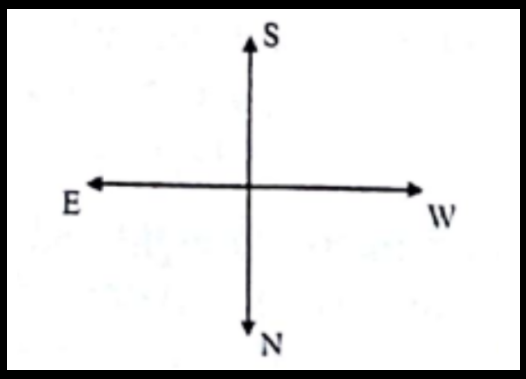
   Solution:

   https://gateoverflow.in/413420/go-classes-test-series-2023-nielit-mock-test-9-question-20

   Video Solution

8. **(Home Work Question 19)** Read the below paragraph and answer them:

   Alok starts walking from his school toward his house as shown in the figure here. He starts form the front gate of his school, walks 5 km, turns left, walks 2 km, then turns left again and walks 4kms, then he turns to his right and walks 3 km and then turns left, walks 1 km and then turns to his left again to walk 4 km and then to his right and walks 10 km and finally turns right, walks 3 km and thus reaches the front gate of his house.



If Alok's house is south-facing, in which direction did he start walking?

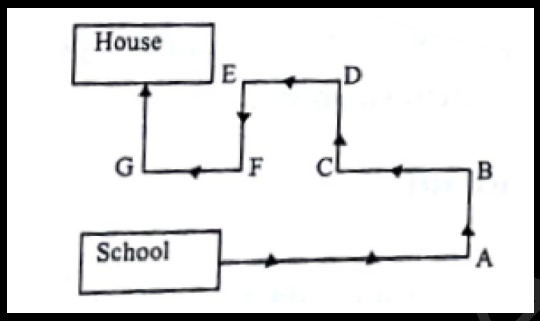
A.West

B.North

C.South

D.None of these

Solution:



We need to just work out the direction for this question. Since Alok's house is south-facing, the above figure will describe his journey correctly. Hence, the school faces east.

Correct Answer: D

9. **(Quiz Question 20: GATE Civil 2021 Set 2)** On a planar field, you travelled 3 units East from a point O. Next you travelled 4 units South to arrive at point P. Then you travelled from P in the North-East direction such that you arrive at a point that is 6 units East of point O. Next, you travelled in the North-West direction, so that you arrive at point Q that is 8 units North of point P.

   The distance of point Q to point O, in the same units, should be_____

   A.3

   B.4

   C.5

   D.6

   Solution:

   Correct Answer: C

   https://gateoverflow.in/359899/gate-civil-2021-set-2-ga-question-6

   Video Solution

10. **(Home Work Question 20: GATE Mechanical 2021 Set 1)** Ms. X came out of a building through its front door to find her shadow due to the morning sun failing to her right side with the building to her back. From this, it can be inferred that the building is facing_____

    A.North

B.East

C.West

D.South

Solution:

Correct Answer: D

https://gateoverflow.in/359486/gate-mechanical-2021-set-1-ga-question-2

5 Round Table Arrangement

1. **(Quiz Question 21: GATE CSE 2017 Set 1)** Six people are seated around a circular table. There are at least two men and two women. There are at least three right-handed persons. Every woman has a left-handed person to her immediate right. None of the women are right-handed. The number of women at the table is

   A.2

   B.3

   C.4

   D.Cannot be determined

   Solution:

   Correct Answer: A

   https://gateoverflow.in/118410/gate-cse-2017-set-1-question-ga-7

   Video Solution

2. **(Home Work Question 21: GATE Chemical 2020)** P, Q, R, S, T, U, V, and W are seated around a circular table.

   I.S is seated opposite to W

   II.U is seated at the second place to the right of R

   III.T is seated at the third place to the left of R

   IV.V is a neighbour of S

   Which of the following must be true?

   A.P is a neighbour of R

   B.Q is a neighbour of R

   C.P is not seated opposite to Q

   D.R is the left neighbour of S

   Solution:

   Correct Answer: C

   https://gateoverflow.in/359814/gate-chemical-2020-ga-question-7

3. **(Quiz Question 22: GATE2017 CE-2)** P, Q, R, S, T, and U are seated around a circular table R is seated two places to the right of Q. P is seated three places to the left of R. S is seated opposite U. If P and U now switch seats, which of the following must necessarily be true?

   A.P is immediately to the right of R

   B.T is immediately to the left of P

   C.T is immediately to the left of P or P is immediately to the right of Q

   D.U is immediately to the right of R or P is immediately to the left of T

Solution:

$P\ Q\ \_\ R$

Since S is seated opposite of U it means on its left and right side there must be 2 members. So, only option is to be seated to the left of P and right of Q. This leaves the space to the immediate right of R for T.

$P\ Q\ \_\ R\ T\ \_$

Now, P and U switch the seats:

$U\ Q\ \_\ R\ T\ \_$

The gaps are taken by P and S but their exact positions are unknown

Now seeing the options:

(A) is false as T is immediately to the right of R

(B) may of may not be true as we have two choices for P

(C) is TRUE

(D) is false as T is immediately to the right of R and R is immediately to the left of T

Correct Answer: C

`https://gateoverflow.in/313417/gate2017-ce-2-ga-8`

Video Solution

4. **(Home Work Question 22: GATE2017 EC-1)** S, T, U, V, W, X, Y and Z are seated around a circular table. T's neighbors are Y and V. Z is seated third to the left of T and second to the right of S. U's neighbors are S and Y; and T and W are not seated opposite each other. Who is third to the left of V?

   A.X

   B.W

   C.U

   D.T

   Solution:

   Correct Answer: A

   `https://gateoverflow.in/313521/gate2017-ec-1-ga-7`

5. **(Quiz Question 23: GATE Civil 2020 Set 1)** Five friends P, Q, R, S and T went camping. At night, they had to sleep in a row inside the tent. P, Q, and T refused to sleep next to R since he snored loudly. P and S wanted to avoid Q as he usually hugged people in sleep.

   Assuming everyone was satisfied with the sleeping arrangements, what is the order in which they slept?

   A.$RSPTQ$

   B.$SPRTQ$

   C.$QRSPT$

   D.$QTSPR$

   Solution:

   Five friends P, Q, R, S, and T are sleeping together.

   1. P, Q, and T refused to sleep next to R since he snored loudly. That means the only possible neighbor for R is S and we should have either $R, S, \_, \_, \_$ or $\_, \_, \_, S, R$.

   2. P and S wanted to avoid Q as he usually hugged people in sleep. That means the only possible neighbor for Q is T. Thus we get the two possible orders: R, S, P, T, Q and Q, T, P, S, R.

Only satisfying option is A.

So, the correct answer is (A) (question should have mentioned "what could be the order" instead of "what is the order" as there are 2 possibilities)

Correct Answer: A

https://gateoverflow.in/359854/gate-civil-2020-set-1-ga-question-7

Video Solution

6. **(Home Work Question 23: GATE Electrical 2021)** Seven cars P, Q. R, S, T, U and V are parked in a row not necessarily in that order. The cars T and U should be parked next to each other. The cars S and V also should be parked next to each other, whereas P and Q cannot be parked next to each other. Q and S must be parked next to each other. R is parked to the immediate right of V. T is parked to the left of U.

   Based on the above statements, the only INCORRECT option given below is:

   A.There are two cars parked in between Q and V.

   B.Q and R are not parked together.

   C.V is the only car parked in between S and R.

   D.Car P is parked at the extreme end.

   Solution:

   1.The cars T and U should be parked next to each other. This means we can park these two cars in two ways, either TU or UT.

   2.The cars S and V also should be parked next to each other. This means we can park these cars also in two ways, either SV or VS.

   3.The cars P and Q cannot be parked next to each other. This means we can not park the cars as PQ or QP.

   4.The cars Q and S must be parked next to each other. This means we can park these two cars in two ways, either QS or SQ.

   5.R is parked to the immediate right of V. This means we can park these two cars in only one way VR.

   6.T is parked to the left of U. This is not "immediately left" but combining with statement 1, "immediately left" follows. So, we can park these two cars in only one way TU.

   Now we can combine the statements (2) &(4) and get two possible ways for cars Q, S and V.

   QSV

   VSQ

   But VSQ is not possible because it violates statement 5.

   Now, using statement 5, we get the possible car parking sequence $QSVR$.

   Now, we can check each and every option.

   There are two cars parked in between Q and V, it is incorrect because only S is in between Q and V. Q and R are not parked together, it is correct. V is the only car parked in between S and R, it is correct. Car P is parked at the extreme end. For this option, we can consider all possible combinations of car parking which are only four as given below. (P cannot come near Q due to statement 3)

   - $QSVR\,P\,TU$
   - $QSVR\;\;TU\,P$
   - $TU\;QSVR\,P$
   - $P\;TU\;QSVR$

Here, we can see that car P can be parked at the extreme (either left of right) end in three out of the four possible combinations. That is, though this is not a guarantee, it is still a possibility.

Correct Answer: A

https://gateoverflow.in/359737/gate-electrical-2021-ga-question-10

6 Logical Reasoning

1. **(Quiz Question 24: GATE CSE 2015 Set 3)** The head of newly formed government desires to appoint five of the six selected members P, Q, R, S, T and U to portfolios of Home, Power, Defense, Telecom, and Finance. U does not want any portfolio if S gets one of the five. R wants either Home or Finance or no portfolio. Q says that if S gets Power or Telecom, then she must get the other one. T insists on a portfolio if P gets one.

   Which is the valid distribution of portfolios?

   A.P-Home, Q-Power, R-Defense, S-Telecom, T-Finance

   B.R-Home, S-Power, P-Defense, Q-Telecom, T-Finance

   C.P-Home, Q-Power, T-Defense, S-Telecom, U-Finance

   D.Q-Home, U-Power, T-Defense, R-Telecom, P-Finance

   Solution: "U does not want any portfolio if S gets one of the five"

   So, S and U cannot come together. Option C eliminated.

   "R wants either Home or Finance or no portfolio"

   So, options A and D eliminated.

   So, the answer is B.

   Just to confirm:

   Q says that if S gets Power or Telecom, then she must get the other one

   In B, S gets Power and Q gets Telecom

   "T insists on a portfolio if P gets one"

   In B, T is getting a portfolio.

   Correct Answer: B

   https://gateoverflow.in/8308/gate-cse-2015-set-3-question-ga-7

   Video Solution

2. **(Home Work Question 24: GATE CSE 2017 Set 2)** There are three boxes. One contains apples, another contains oranges and the last one contains both apples and oranges. All three are known to be incorrectly labeled. If you are permitted to open just one box and then pull out and inspect only one fruit, which box would you open to determine the contents of all three boxes?

   A.The box labeled 'Apples'

   B.The box labeled 'Apples and Oranges'

   C.The box labeled 'Oranges'

   D.Cannot be determined

   Solution: B. the box labelled 'Apples and Oranges'.

   Reason.

   We know that the box labeled "Apples and Oranges" can't contain both, so whatever we pick will be the correct label.

   Without the loss of generality say picked item was an orange, what that means is that the box that is labeled "Apples" can't contain just oranges. It also can't contain just apples as it is known to be

wrong. So it only can contain combination of oranges and apples. Now the third box labeld "Oranges" contains only apples.

Correct Answer: B

https://gateoverflow.in/118421/gate-cse-2017-set-2-question-ga-7

3. **(Quiz Question 25: GATE CSE 2021 Set 2)** Six students P, Q, R, S, T and U, with distinct heights, compare their heights and make the following observations.

   I. Observation I: S is taller than R.

   II. Observation II: Q is the shortest of all.

   III. Observation III: U is taller than only one student.

   IV. Observation IV: T is taller than S but is not the tallest

   The number of students that are taller than R is the same as the number of students shorter than_____

   A.T

   B.R

   C.S

   D.P

   Solution: Let us arrange people in decreasing order of heights:

   By looking at each observation, we fill these stars : $*,*,*,*,*,*$ where the left-most star corresponds to the tallest person and the rightmost star corresponds to the shortest person.

   S is taller than R. So, S > R

   Q is the shortest of all. So, we have $*,*,*,*,*,Q$

   U is taller than only one student. So, U is second tallest. Hence, $*,*,*,*,U,Q$

   T is taller than S but not tallest. T is taller than S implies $T > S$.

   From observations i and iv, we have T > S > R.

   Thus, we have one of these possibilities:

   $*,T,S,R,U,Q$ or

   $T,*,S,R,U,Q$ or

   $T,S,*,R,U,Q$ or

   $T,S,R*,U,Q$

   But it is mentioned that T is not the tallest person.

   So we are left with only one possibility:

   $*,T,S,R,U,Q$

   Since, we have only one student P left, we fill the blank with P

   P,T,S,R,U,Q

   Number of students taller than R = 3 (P, T, S)

   Number of students shorter than T = 4

   Number of students shorter than R = 2

   Number of students shorter than S = 3

   Correct Answer: C

   https://gateoverflow.in/357540/gate-cse-2021-set-2-ga-question-10

   Video Solution

4. **(Home Work Question 25: GATE2018 EE)** $P, Q, R,$ and S crossed a lake in a boat that can hold a maximum of two persons, with only one set of oars. The following additional facts are available.

   i. The boat held two persons on each of the three forward trips across the lake and one person on each of the two return trips.

   ii. P is unable to row when someone else is in the boat.

   iii. Q is unable to row with anyone else except R.

   iv. Each person rowed for at least one trip.

   v. Only one person can row during a trip.

   Who rowed twice?

   A.P

   B.Q

   C.R

   D.S

   Solution: P is unable to row when someone else is in the boat.

   Each person rowed for at least one trip.

   These two statements mean that P must return at least once. So, one return trip is by P alone.

   1. Q is unable to row with anyone else except R.

   2.This also means that Q cannot come back since

   if P comes back in first return, and Q comes back in second, P and Q will be left for third forward trip which is not possible

   if P comes back in second return, it means Q must have come back in first return, which again means both P and Q are left for the final trip.

   3. Since Q cannot come back, it means both Q and R must go together in the forward trip.

   Suppose P, S goes first and S rows.

   P comes back and then Q and R returns with Q rowing.

   R comes back and takes P with R rowing.

   Other alternative is Q and R going first.

   In both cases R has to row twice.

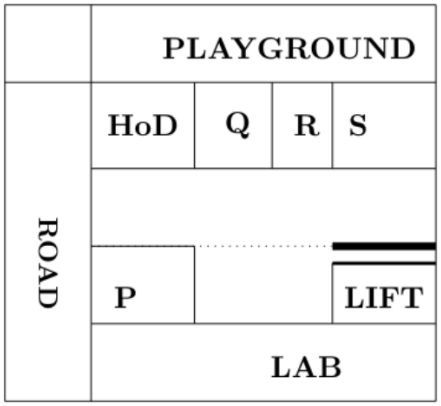
   Correct Option: C.

   https://gateoverflow.in/205190/gate2018-ee-ga-10

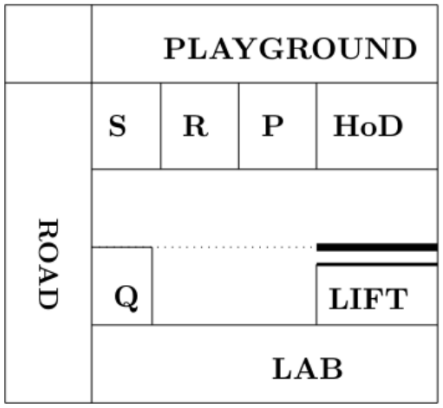
5. **(Quiz Question 26: GATE Civil 2020 Set 2)** After the inauguration of the new building, the Head of the Department (HoD) collated faculty preferences for office space. P wanted a room adjacent to the lab. Q wanted to be close to the lift. R wanted a view of the playground and S wanted a corner office.

   Assuming that everyone was satisfied, which among the following shows a possible allocation?

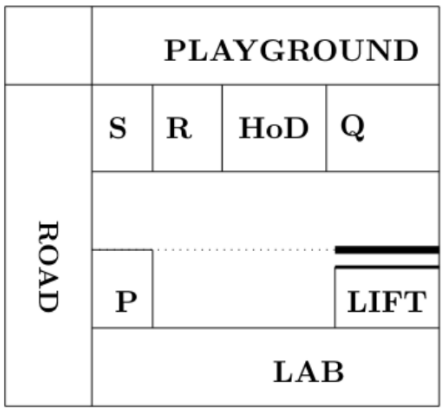
A.



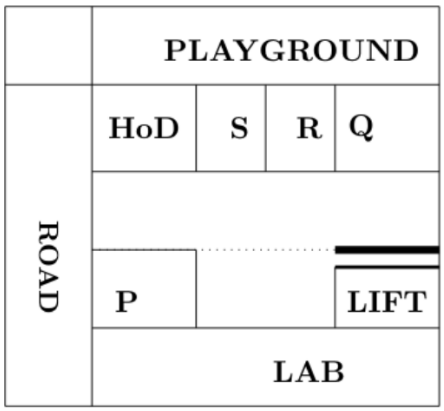
B.



C.



D.



Solution:

Let's number the given requirements

- *P* wanted a room adjacent to the lab.
- *Q* wanted to be close to the lift.
- *R* wanted a view of the playground and
- *S* wanted a corner office.

Option A: The requirement numbered 2 is not satisfied.

Option B: Requirements numbered 1, 2 are not satisfied.

Option C: All requirements are satisfied.

Option D: The requirement numbered 4 is not satisfied.

Correct option: C

https://gateoverflow.in/359840/gate-civil-2020-set-2-ga-question-4

Video Solution

6. **(Home Work Question 26: GATE2019 EC)** Four people are standing in a line facing you. They are Rahul, Mathew, Seema and Lohit. One is an engineer, one is a doctor, one a teacher and another a dancer. You are told that:

   - Mathew is not standing next to Seema

- There are two people standing between Lohit and the engineer
- Rahul is not a doctor
- The teacher and the dancer are standing next to each other
- Seema is turning to her right to speak to the doctor standing next to her

Who among them is an engineer?

A. Seema

B. Lohit

C. Rahul

D. Mathew

Solution:

Correct Answer: D

https://gateoverflow.in/313529/gate2019-ec-ga-6

7. **(Quiz Question 27: GATE2017 CE-1)** Students applying for hostel rooms are allotted rooms in order of seniority. Students already staying in a room will move if they get a room in their preferred list. Preferences of lower-ranked applicants are ignored during allocation.

   Given the data below, which room will Ajit stay in?

Names	Student seniority	Current room	Room preference list
Amar	1	P	R, S, Q
Akbar	2	None	R, S
Anthony	3	Q	P
Ajit	4	S	Q, P, R

   A. *P*

   B. *Q*

   C. *R*

   D. *S*

   Solution:

   Correct Answer: B

   https://gateoverflow.in/313485/gate2017-ce-1-ga-7

   Video Solution

8. **(Home Work Question 27: GATE2019 EE)** Consider five people- Mita, Ganga, Rekha, Lakshmi, and Sana. Ganga is taller than both Rekha and Lakshmi. Lakshmi is taller than Sana. Mita is taller than Ganga.

   Which of the following conclusions are true?

   (a) Lakshmi is taller than Rekha

   (b) Rekha is shorter than Mita

   (c) Rekha is taller than Sana

   (d) Sana is shorter than Ganga

   A. (*a*) and (*c*)

   B. (*c*) only

   C. (*b*) and (*d*)

   D. (*a*) only

Solution:

Correct Answer: C

https://gateoverflow.in/313749/gate2019-ee-ga-10

9. **(Quiz Question 28: GATE2019 IN)** Five numbers 10, 7, 5, 4 and 2 are to be arranged in a sequence from left to right following the directions given below:

   - No two odd or even numbers are next to each other.
   - The second number from the left is exactly half of the left-most number.
   - The middle number is exactly twice the right-most number.

   Which is the second number from the right?

   A. 2

   B. 4

   C. 7

   D. 10

   Solution:

   Correct Answer: C

   https://gateoverflow.in/313547/gate2019-in-ga-4

   Video Solution

10. **(Home Work Question 28: GATE Mechanical 2021 Set 1)**

    If $\begin{cases} \text{“}\oplus\text{” means “}-\text{”} \\ \text{“}\otimes\text{” means “}\div\text{”} \\ \text{“}\triangle\text{” means “}+\text{”} \\ \text{“}\nabla\text{” means “}\times\text{”} \end{cases}$

    then, the value of the expression $\triangle 2 \oplus 3 \triangle ((4 \otimes 2) \nabla 4)) =$

    A. -1

    B. -0.5

    C. 6

    D. 7

    Solution:

    Correct Answer: D

    https://gateoverflow.in/359482/gate-mechanical-2021-set-1-ga-question-4

11. **(Quiz Question 29: GATE Mechanical 2021 Set 2)** If $\bigoplus \div \odot = 2$; $\bigoplus \div \Delta = 3$; $\odot + \Delta = 5$; $\Delta \times \bigotimes = 10$,

    Then, the value of $\left(\bigotimes - \bigoplus\right)^2$, is :

    A. 0

    B. 1

    C. 4

    D. 16

    Solution:

    Correct Answer: B

    https://gateoverflow.in/359505/gate-mechanical-2021-set-2-ga-question-4

    Video Solution

12. **(Home Work Question 29: NIELIT 2016 DEC Scientist B)** Read the following information carefully and answer the question given below :

    - P, Q, R, S, T and U six members of a family, each of them engaged in a different profession Doctor, Lawyer, Teacher, Engineer, Nurse and Manager.
    - Each of them remains at home on a different day of the week from Monday to Saturday.
    - The lawyer in the family remain at home on Thursday.
    - R remains at home on Tuesday.
    - P, a Doctor, does not remain at home either on Saturday or on Wednesday.
    - S is neither the doctor nor the Teacher and remains at home on Friday.
    - Q is the Engineer and T is the Manager.

    Which of the following combinations is not correct?

    A. R-Teacher

    B. Q-Engineer

    C. T- Manager

    D. S-Lawyer

    Solution:

    Correct Answer: D

    https://aptitude.gateoverflow.in/6419/Nielit-2016-dec-scientist-b-section-a-13

7 Clock Time

1. **(Quiz Question 30: GATE ECE 2020)** It is quarter past three in your watch. The angle between the hour hand and the minute hand is _____.

    A. 0°

    B. 7.5°

    C. 15°

    D. 22.5°

    Solution:

    Correct Answer: B

    https://gateoverflow.in/359766/gate-ece-2020-ga-question-7

2. **(Home Work Question 30: GATE Mechanical 2021 Set 2)** A digital watch X beeps every 30 seconds while watch Y beeps every 32 seconds. They beeped together at 10 AM.

    The immediate next time that they will beep together is _____.

    A. 10.08 AM

    B. 10.42 AM

    C. 11.00 AM

    D. 10.00 PM

    Solution:

    Correct Answer: A

    https://gateoverflow.in/359507/gate-mechanical-2021-set-2-ga-question-3

3. **(Quiz Question 31: GATE Mechanical 2022 Set 1)** In a 12-hour clock that runs correctly, how many times do the second, minute, and hour hands of the clock coincide, in a 12-hour duration from 3 PM in a day to 3 AM the next day?

   A. 11

   B. 12

   C. 144

   D. 2

   Solution:

   Correct Answer: A

   https://gateoverflow.in/411765/gate-mechanical-2022-set-1-ga-question-10

4. **(Home Work Question 31: GATE Mechanical 2023)** The minute-hand and second-hand of a clock cross each other _____ times between 09 : 15 : 00 AM and 09 : 45 : 00 AM on a day.

   A. 30

   B. 15

   C. 29

   D. 31

   Solution:

   Correct Answer: A

   https://gateoverflow.in/411819/gate-mechanical-2023-ga-question-4

5. **(Quiz Question 32: GATE2016 EC-2)** Two and quarter hours back, when seen in a mirror, the reflection of a wall clock without number markings seemed to show 1 : 30. What is the actual current time shown by the clock?

   A. 8 : 15

   B. 11 : 15

   C. 12 : 15

   D. 12 : 45

   Solution:

   Correct Answer: D

   https://gateoverflow.in/108724/gate2016-ec-2-ga-8

6. **(Home Work Question 32: GATE2019 ME-1)** A worker noticed that the hour hand on the factory clock had moved by 225 degrees during her stay at the factory. For how long did she stay in the factory?

   A. 3.75 hours

   B. 4 hours and 15 mins

   C. 8.5 hours

   D. 7.5 hours

   Solution:

   Correct Answer: D

   https://gateoverflow.in/313597/gate2019-me-1-ga-3

8 Calendar

1. **(Quiz Question 33: GATE Civil 2020 Set 2)** For the year 2019, which of the previous year's calendar can be used?

   A. 2011

   B. 2012

   C. 2013

   D. 2014

   Solution:

   Correct Answer: C

   https://gateoverflow.in/359834/gate-civil-2020-set-2-ga-question-7

2. **(Home Work Question 33: GATE Mechanical 2022 Set 2)** A person was born on the fifth Monday of February in a particular year.

   Which one of the following statements is correct based on the above information?

   A. The 2^{nd} February of that year is a Tuesday

   B. There will be five Sundays in the month of February in that year

   C. The 1^{st} February of that year is a Sunday

   D. All Mondays of February in that year have even dates

   Solution:

   Correct Answer: A

   https://gateoverflow.in/411799/gate-mechanical-2022-set-2-ga-question-4

3. **(Quiz Question 34)** How many days are there in x weeks x days?

   A. 7

   B. $14x$

   C. $7x$

   D. $8x$

   Solution:

   Correct Answer: D

4. **(Home Work Question 34)** It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

   A. Sunday

   B. Saturday

   C. Friday

   D. Wednesday

   Solution:

   On 31^{st} December, 2005 it was Saturday.

   Number of odd days from the year 2006 to the year 2009 = $(1+1+2+1) = 5$ days.

   On 31^{st} December 2009, it was Thursday.

   Thus, on 1^{st} Jan, 2010 it is Friday.

   Correct Answer: C

5. **(Quiz Question 35: NIELIT 2016 MAR Scientist D)** Given: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

   What day comes three days after the day which comes two days after the day which comes immediately after the day which comes two days after Monday?

   A. Sunday

   B. Tuesday

   C. Thursday

   D. Saturday

   Solution:

   Correct Answer: B

   https://aptitude.gateoverflow.in/6928/Nielit-2016-mar-scientist-d-55

6. **(Home Work Question 35)** The calendar of 1996 will be the same for which year's calendar and an equal number of days to 1996?

   A. 2012

   B. 2024

   C. 2007

   D. 2002

   Solution:

   Repetition of calendars:

   Leap Year: In order to find the next same leap year calendar, we add 28 to the given leap year.

   Ordinary year:

Leap Year (say 2004)	Add
1st year after the leap year (2005)	6
2nd year after the leap year (2006)	11
3rd year after the leap year (2007)	11

   As, 1996 is a leap year. So, we'll directly add 28 years to that.

$$1996 + 28 \text{ years } = 2024$$

   Correct Answer: B

9 Ordering and Ranking

1. **(Quiz Question 36: NIELIT 2017 OCT Scientific Assistant A)** There is a queue in a ticketing office. Amanda is 10^{th} from the front while Murthy is 25^{th} from behind and Marta is just in the middle of the two. If there be 50 persons in the queue. What position does Marta occupy from the front?

   A. 16

   B. 18

   C. 15

   D. 17

   Solution:

   Correct Answer: B

   https://aptitude.gateoverflow.in/6552/Nielit-2017-oct-scientific-assistant-a-section-a-13

2. **(Home Work Question 36)** In a row of persons. A is 12th from the left corner and B is 17th from Right Corner. If 3 persons are there between A & B then find the total number of persons in between them.

   A.32

   B. Either 30 or 25

   C. 24

   D. Either 32 or 24

   Solution:

   Correct Answer: D

3. **(Quiz Question 37: NIELIT 2017 OCT Scientific Assistant A)** There are five janitors. Pali, Qureshi, Rohan, Sant and Timber. They all have a different height, Qureshi is shorter than only Timber and Sant is shorter than Pali and Qureshi. Who among them is the shortest?

   A. Rohan

   B. Sant

   C. Pali

   D. Data inadequate

   Solution:

   Correct Answer: D

   https://aptitude.gateoverflow.in/6551/Nielit-2017-oct-scientific-assistant-a-section-a-14

4. **(Home Work Question 37)** In a row of 30 persons, A is 14th from the right corner and B is 20th from the left corner then the number of persons between A & B is?

   A. 5

   B. 4

   C. 3

   D. 2

   Solution:

   Correct Answer: D

5. **(Quiz Question 38)** In a row of Boys, Prabhas is 15th from the left, and Kartik is 23rd from the right. If they interchange their positions, then Prabhas becomes 18th from the left. Then at what position will Kartik be from the right?

   A. 23

   B. 24

   C. 25

   D. 26

   Solution:

   Correct Answer: D

6. **(Home Work Question 38)** In a row of Boys, Ashok is 19th from the left corner and Devesh is 10th from the right corner,5 persons are there between them, then the maximum strength of the row is?

   A. 34

   B. 33

   C. 36

   D. 38

   Solution:

   Correct Answer: A

10 Statement Follows

1. **(Quiz Question 39: GATE CSE 2022)** Given below are four statements.

   - Statement 1 : All students are inquisitive.
   - Statement 2 : Some students are inquisitive.
   - Statement 3 : No student is inquisitive.
   - Statement 4 : Some students are not inquisitive.

   From the given four statements, find the two statements that CANNOT BE TRUE simultaneously, assuming that there is at least one student in the class.

   A. Statement 1 and Statement 3

   B. Statement 1 and Statement 2

   C. Statement 2 and Statement 4

   D. Statement 3 and Statement 4

   Solution:

   Correct Answer: A

   https://gateoverflow.in/371502/gate-cse-2022-ga-question-4

2. **(Home Work Question 39: GATE2013 AE)**

   - All professors are researchers
   - Some scientists are professors

   Which of the given conclusions is logically valid and is inferred from the above arguments?

   A. All scientists are researchers

   B. All professors are scientists

   C. Some researchers are scientists

   D. No conclusion follows

   Solution:

   Correct Answer: C

   https://gateoverflow.in/40250/gate2013-ae-ga-9

3. **(Quiz Question 40: GATE Civil 2021 Set 2)**

   1. Some football players play cricket.
   2. All cricket players play hockey.

   Among the options given below, the statement that logically follows from the two statements 1 and 2 above, is :

   A. No football player plays hockey

   B. Some football players play hockey

   C. All football players play hockey

   D. All hockey players play football

   Solution:

   Correct Answer: B

   https://gateoverflow.in/359895/gate-civil-2021-set-2-ga-question-8

4. **(Home Work Question 40: GATE2015 ME-3)** Given below are two statements followed by two conclusions. Assuming these statements to be true, decide which one logically follows.

   Statements:

   I. No manager is a leader.

   II. All leaders are executives.

   Conclusions:

   I. No manager is an executive.

   II. No executive is a manager.

   A. Only conclusion I follows.

   B. Only conclusion II follows.

   C. Neither conclusion I nor II follows.

   D. Both conclusions I and II follow.

   Solution:

   Correct Answer: C

   https://gateoverflow.in/40172/gate2015-me-3-ga-7

5. **(Quiz Question 41: GATE ECE 2021)** Given below are two statements and two conclusions.

   Statement 1: All purple are green.

   Statement 2: All black are green.

   Conclusion I: Some black are purple.

   Conclusion II: No black is purple.

   Based on the above statements and conclusions, which one of the following options is logically CORRECT?

   A. Only conclusion I is correct

   B. Only conclusion II is correct

   C. Either conclusion I or II is correct

   D. Both conclusion I and II are correct

   Solution:

   Correct Answer: C

   https://gateoverflow.in/359795/gate-ece-2021-ga-question-6

6. **(Home Work Question 41)** Some tables are shelves. Some shelves are chairs. All chairs are benches. Which of the following conclusions can be deduced from the preceding sentences?

   i. At least one bench is a table

   ii. At least one shelf is a bench

   iii. At least one chair is a table

   iv. All benches are chairs

   A. Only i

   B. Only ii

   C. Only ii and iii

   D. Only iv

   Solution:

   Correct Answer: B

   https://gateoverflow.in/313523/gate2017-ec-1-ga-5

7. **(Quiz Question 42: GATE Mechanical 2021 Set 2)** Given below are two statements 1 and 2, and two conclusions I and II.

   Statement 1 : All entrepreneurs are wealthy.

   Statement 2 : All wealthy are risk seekers.

   Conclusion I : All risk seekers are wealthy.

   Conclusion II : Only some entrepreneurs are risk seekers.

   Based on the above statements and conclusions, which one of the following options is CORRECT?

   A. Only conclusion I is correct

   B. Only conclusion II is correct

   C. Neither conclusion I nor II is correct

   D. Both conclusions I and II are correct

   Solution:

   Correct Answer: C

   https://gateoverflow.in/359499/gate-mechanical-2021-set-2-ga-question-6

8. **(Home Work Question 42: GATE2018 ME-1)** Consider the following three statements:

   i. Some roses are red.

   ii. All red flowers fade quickly.

   iii. Some roses fade quickly.

   Which of the following statements can be logically inferred from the above statements?

   A. If (i) is true and (ii) is false, then (iii) is false.

   B. If (i) is true and (ii) is false, then (iii) is true.

   C. If (i) and (ii) are true, then (iii) is true.

   D. If (i) and (ii) are false, then (iii) is false.

   Solution:

   Correct Answer: C

   https://gateoverflow.in/313657/gate2018-me-1-ga-10

9. **(Quiz Question 43: GATE2017 CE-1)** Consider the following sentences:

   All benches are beds. No bed is bulb. Some bulbs are lamps.

   Which of the following can be inferred?

   i. Some beds are lamps.

   ii. Some lamps are beds.

   A. Only i

   B. Only ii

   C. Both i and ii

   D. Neither i nor ii

   Solution:

   Correct Answer: D

   https://gateoverflow.in/313487/gate2017-ce-1-ga-3

10. **(Home Work Question 43: GATE2019 IN)** Some students were not involved in the strike.
    If the above statement is true, which of the following conclusions is/are logically necessary?
    1. Some who were involved in the strike were students.
    2. No student was involved in the strike.
    3. At least one student was involved in the strike.
    4. Some who were not involved in the strike were students.

    A. 1 and 2

    B. 3

    C. 4

    D. 2 and 3

    Solution:

    Correct Answer: C

    https://gateoverflow.in/313551/gate2019-in-ga-2

11 Sequence & Series

1. **(Quiz Question 44: GATE CSE 2023)** A series of natural numbers $F_1, F_2, F_3, F_4, F_5, F_6, F_7, \ldots$ obeys $F_{n+1} = F_n + F_{n-1}$ for all integers $n \geq 2$.
   If $F_6 = 37$, and $F_7 = 60$, then what is F_1?

   A. 4

   B. 5

   C. 8

   D. 9

   Solution:

   Correct Answer: A

   https://gateoverflow.in/399253/gate-cse-2023-ga-question-3

2. **(Home Work Question 44: GATE2019 EE)** The missing number in the given sequence $343, 1331, \_\_\_\_\_, 4913$ is

   A. 3375

   B. 2744

   C. 2197

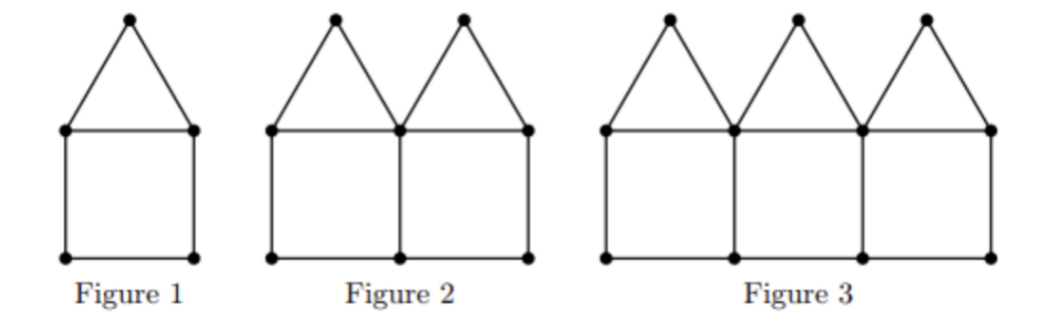
   D. 4096

   Solution:

   Correct Answer: C

   https://gateoverflow.in/313558/gate2019-ee-ga-3

3. **(Quiz Question 45)** Consider the following sequence of figures.



The total number of line segments in the first 20 figures is _____. (Numerical Answer Type)

Solution:

Correct Answer: 1070

4. **(Home Work Question 45: GATE Electrical 2020)** In four-digit integer numbers from 1001 to 9999, the digit group "37" (in the same sequence) appears _____ times.

   A. 270

   B. 279

   C. 280

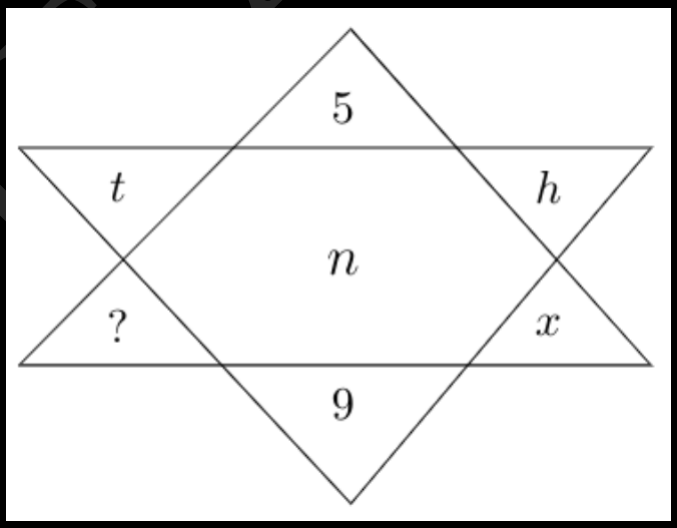
   D. 299

   Solution:

   Correct Answer: C

   https://gateoverflow.in/359715/gate-electrical-2020-ga-question-8

5. **(Quiz Question 46: GATE Mechanical 2020 Set 2)** Find the missing element in the following figure.



   A. d

   B. e

   C. w

   D. y

Solution:

Correct Answer: A

https://gateoverflow.in/359544/gate-mechanical-2020-set-2-ga-question-7

6. **(Home Work Question 46: GATE CSE 2018)** What is the missing number in the following sequence?

$$2, 12, 60, 240, 720, 1440, \_\_\_\_, 0$$

A. 2880

B. 1440

C. 720

D. 0

Solution:

Correct Answer: B

https://gateoverflow.in/204066/gate-cse-2018-question-ga-5

12 Code Words

1. **(Quiz Question 47: GATE2014 EC-3)** Find the next term in the sequence: $7G, 11K, 13M$, _____.

A. $15Q$

B. $17Q$

C. $15P$

D. $17P$

Solution:

Correct Answer: B

https://gateoverflow.in/41145/gate2014-ec-3-ga-6

2. **(Home Work Question 47: GATE2015 EC-3)** Find the missing sequence in the letter series below: $A, CD, GHI, ?, UVWXY$

A. LMN

B. MNO

C. $MNOP$

D. $NOPQ$

Solution:

Correct Answer: C

https://gateoverflow.in/39517/gate2015-ec-3-ga-4

3. **(Quiz Question 48: GATE2014 EC-4)** If 'KCLFTSB' stands for 'best of luck' and 'SHSWDG' stands for 'good wishes', which of the following indicates 'ace the exam'?

A. MCHTX

B. MXHTC

C. XMHCT

D. XMHTC

Solution:

Correct Answer: B

https://gateoverflow.in/41469/gate2014-ec-4-ga-7

4. **(Home Work Question 48: GATE2019 CE-1)** If $E = 10, J = 20, O = 30$, and $T = 40$, what will be $P + E + S + T$?

   A. 51

   B. 82

   C. 120

   D. 164

   Solution:

   Correct Answer: C

   https://gateoverflow.in/313439/gate2019-ce-1-ga-4

5. **(Quiz Question 49)** In a certain code 'BUILT' is written as '5#32@' and 'TRIBE' is written as '@935'. How is 'RULE' written in that code?

   A. 9#2

   B. 92#

   C. @#2

   D. @2#

   E. None of these

   Solution:

   Correct Answer: A

   https://aptitude.gateoverflow.in/11/In-a-certain-code

6. **(Home Work Question 49: NIELIT 2017 July Scientist B)** If gorblflur means fan belt pixngorbl means ceiling fan arthtusl means tile roof, which word could mean "ceiling tile"?

   A. gorbltusl

   B. flurgorbl

   C. arthflur

   D. pixnarth

   Solution:

   Correct Answer: D

   https://aptitude.gateoverflow.in/6332/Nielit-2017-july-scientist-b-section-a-40

7. **(Quiz Question 50: NIELIT 2017 DEC Scientist B)** In a certain code language, Zat Poo, Tim means Eat Good Mangoes; Pus Tim Sim means Mangoes and Sweets and Sim Poo Kit means Purchase Good sweets. Which word in that language means Good?

   A. Poo

   B. Pus

   C. Tim

   D. Sim

   Solution:

   Correct Answer: A

   https://aptitude.gateoverflow.in/6288/Nielit-2017-dec-scientist-b-section-a-24

8. **(Home Work Question 50)** In a certain code language.

   'economics is not money' is written as 'ka la ho ga' 'demand and supply economics' is written as 'mo ta pa ka' 'money makes only part' is written as 'zi la ne ki' 'demand make supply economics' is written as 'zi mo ka ta'

What may be the possible code for ‘demand only more’ in the given code language?

A. xi ne mo

B. mo zi ne

C. ki ne mo

D. mo zi ki

E. xi ka ta

Solution:

Correct Answer: A

https://aptitude.gateoverflow.in/2815/Coding-decoding

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Total 100 Questions