

CUET General Test 2023 Solution

June 7 Shift 1

Ques 51. If A: B: C=1:4:7 and B=(2x)% of (A+C), then x is:

- (1) 12
- (2) 25
- (3) 30
- (4) 45

Solu. Sure, here's the solution in a copyable format:

Given: A:B:C = 1:4:7

Let A = 1k, B = 4k, and C = 7k

B = (2x)% of (A + C)

$B = (2x/100) * (A + C)$

Substitute values of A and C:

$B = (2x/100) * (1k + 7k)$

$B = (2x/100) * 8k$

$B = (16xk/100)$

We know B = 4k, so:

$4k = (16xk/100)$

Now solve for x:

$400 = 16x$

$x = 400/16$

$x = 25$

So, the value of x is 25.

The correct answer is:

- (2) 25

Ques 52. The cost price 15 articles is equal to the selling price of 20 articles. Find the loss percentage.

- (1) 20%
- (2) 30%
- (3) 40%
- (4) 25%

Solu. The answer is (4) 25%.

Here's why:

- We are selling 20 articles but only recovering the cost of 15 articles.
- This indicates a loss on the sale.
- To calculate the loss percentage, we can find the difference between the selling price (20) and the recovered cost (15) relative to the selling price.

Loss = (Selling Price - Recovered Cost) / Selling Price
Loss = (20 articles - 15 articles) / 20 articles
Loss = 5 articles / 20 articles

Converting this fraction to a percentage:

Loss% = (Loss / Selling Price) * 100%
Loss% = (5 articles / 20 articles) * 100%
Loss% = 25%

Therefore, the loss percentage incurred is 25%.

Ques 53. The marked price of a chair is 150% of its cost price. A discount of 30% is given while selling the chair. What is the profit percentage ?

- (1) 7%
- (2) 5%
- (3) 4%
- (4) 6%

Solu. The scenario to find the profit percentage:

1. Marked Price: The marked price is 150% of the cost price. This means for every \$100 of cost price, the marked price is \$150.
2. Discount: A 30% discount is offered on the marked price. So, if the marked price was \$150, the discount would be $\$150 * (30/100) = \45 .
3. Selling Price: The selling price is the marked price minus the discount.
Therefore, selling price = $\$150 - \$45 = \$105$.

4. Profit: To determine the profit, we need to compare the selling price to the cost price. Let's assume the cost price was \$100 (remember, the marked price is 150% of the cost price).

$$\text{Profit} = \text{Selling Price} - \text{Cost Price} \quad \text{Profit} = \$105 - \$100 = \$5$$

5. Profit Percentage: Now, we calculate the profit percentage relative to the cost price.

$$\text{Profit Percentage} = (\text{Profit} / \text{Cost Price}) * 100\% \quad \text{Profit Percentage} = (\$5 / \$100) * 100\% = 5\%$$

Therefore, the profit percentage made on the chair is (2) 5%.

Ques 54. Two years ago, population of a city was 16,52,600 which increased by 10% in the first year and by 15% in the second year. Find the present population of the city.

- (1) 20,83,708
- (2) 19,08,753
- (3) 18,60,539
- (4) 20,90,539

Solu. The present population of the city is approximately (4) 20,90,539.

Here's how we can find the present population:

1. Base Population: We are given that the population two years ago (base population) was 16,52,600.
2. Increase in First Year: There was a 10% increase in the first year. So, the increase in population is $10/100 * 16,52,600 = 1,65,260$ people.
3. Population After First Year: Add the first year's increase to the base population to find the population after the first year.
Population after first year = 16,52,600 people + 1,65,260 people = 18,17,860 people.
4. Increase in Second Year: In the second year, the increase is 15% of the population after the first year.
Second year increase = $15/100 * 18,17,860$ people = 2,72,679 people.
5. Present Population: Finally, add the second year's increase to the population after the first year to find the present population.
Present population = 18,17,860 people + 2,72,679 people = 20,90,539 people.

Therefore, the present population of the city is approximately 20,90,539.

Ques 55. A sum of ₹ 10,000 becomes ₹ 14,400 on compound interest in 2 years. What is the rate of interest per annum ?

- (1) 10%
- (2) 40%
- (3) 20%
- (4) 15%

Solu. We can find the rate of interest using the compound interest formula and isolating R (rate) for a given principal (P), amount (A), and time (T).

Formula:

$$A = P (1 + R/100)^T$$

Given:

- Principal (P) = ₹ 10,000
- Amount (A) = ₹ 14,400
- Time (T) = 2 years

Steps to find R:

1. Divide both sides by P:

$$A/P = (1 + R/100)^T$$

2. Take the power of 1/T on both sides:

$$(A/P)^{(1/T)} = 1 + R/100$$

3. Subtract 1 from both sides:

$$(A/P)^{(1/T)} - 1 = R/100$$

4. Multiply both sides by 100:

$$100 [(A/P)^{(1/T)} - 1] = R$$

Calculation:

$$100 [(\text{₹ } 14,400 / \text{₹ } 10,000) ^ (1/2) - 1] = R$$

$$100 [1.44 ^ (1/2) - 1] = R$$

Note: You can approximate $1.44^{(1/2)}$ using a calculator or financial tables.

For this example, let's assume it's approximately 1.2.

$$100 [1.2 - 1] = R$$

$$100 * 0.2 = R$$

$$R = 20\%$$

Therefore, the rate of interest per annum is approximately (3) 20%.

Ques 56. The area of a circle is 154 cm^2 . Find the circumference of the circle. (Take $\pi = 22/7$)

- (1) 22 cm
- (2) 28 cm
- (3) 44 cm
- (4) 56 cm

Solu. Let's find the circumference of a circle with an area of 154 cm^2 .

We know the formula for the area of a circle: $A = \pi r^2$, where A is the area, π (pi) is a mathematical constant approximately equal to $22/7$, and r is the radius of the circle.

We can rearrange the formula to solve for the radius: $r = \sqrt{(A/\pi)}$.

Given that the area (A) is 154 cm^2 and π is $22/7$, let's find the radius:

$$r = \sqrt{(154 \text{ cm}^2 / (22/7))}$$

$$r \approx 7 \text{ cm}$$

Now that we know the radius is approximately 7 cm, we can find the circumference (c) using the formula: $c = 2\pi r$.

$$c = 2 * (22/7) * 7 \text{ cm}$$

$$c \approx 44 \text{ cm}$$

Therefore, the circumference of the circle is approximately 44 cm.

So the answer is (3) 44 cm.

Ques 57. If perimeter of a rhombus is 104 cm and length of one of its diagonals is 48 cm, then area of the rhombus (in cm^2) is:

- (1) 960
- (2) 240
- (3) 480
- (4) 1344

Solu. Sure, here's the solution in a copyable format:

Given:

Perimeter of the rhombus = 104 cm

Length of one diagonal = 48 cm

We need to find the area of the rhombus.

First, we find the length of the other diagonal using the Pythagorean theorem:

$$\begin{aligned}\left(\frac{104}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2 &= 48^2 \\ 52^2 + \left(\frac{d_2}{2}\right)^2 &= 2304 \\ \left(\frac{d_2}{2}\right)^2 &= 2304 - 2704 \\ \left(\frac{d_2}{2}\right)^2 &= -400\end{aligned}$$

Disregarding the negative root, we have:

$$\frac{d_2}{2} = \sqrt{-400} = 20$$

$$\text{So, } d_2 = 2 \times 20 = 40 \text{ cm.}$$

Now, we find the area of the rhombus:

$$\text{Area} = \frac{1}{2} \times d_1 \times d_2$$

$$\text{Area} = \frac{1}{2} \times 48 \times 40 = 960 \text{ cm}^2$$

So, the correct answer is:

(1) 960

Ques 58. If point B(0, 1) is equidistant from points A(5, 3) and C(x, 6), then find the values of x.

(1) ± 2

(2) ± 8

(3) ± 4

(4) ± 5

Solu. Since point B is equidistant from points A and C, we can set up the equations to find the distance between each point and B and equate them. Here's how to solve for x:

1. Distance Formula: We can find the distance between two points using the distance formula:

$$\text{Distance} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

- Point A is at (5, 3) and point B is at (0, 1). Let D_{AB} represent the distance between A and B.
 - Point C is at (x, 6) and point B is at (0, 1). Let D_{BC} represent the distance between B and C.
2. Setting Up Equations: Since B is equidistant from A and C, we can set up the following equation:

$$D_{AB} = D_{BC}$$

3. Substituting the Distance Formula:

$$\sqrt{((5 - 0)^2 + (3 - 1)^2)} = \sqrt{((x - 0)^2 + (6 - 1)^2)}$$

4. Simplifying:

$$\sqrt{(25 + 4)} = \sqrt{(x^2 + 25)}$$

$$\sqrt{29} = \sqrt{(x^2 + 25)}$$

5. Squaring Both Sides (Important Note):

Squaring both sides of the equation is necessary because we're dealing with square roots. However, squaring can introduce extraneous solutions.

We'll need to address this later.

$$29 = x^2 + 25$$

6. Solving for x:

$$x^2 = 4$$

$x = \pm\sqrt{4}$ (positive and negative square root for both positive and negative 4)

$$x = \pm 2$$

7. Checking for Extraneous Solutions:

Remember from step 5, squaring both sides might introduce extraneous solutions. Let's plug $x = 2$ and $x = -2$ back into the original equation before squaring to verify if they are valid solutions.

- For $x = 2$:

$$\sqrt{((2 - 0)^2 + (3 - 1)^2)} = \sqrt{(4 + 4)} = \sqrt{8} \text{ (valid solution)}$$

- For $x = -2$:

$$\sqrt{((-2 - 0)^2 + (3 - 1)^2)} = \sqrt{(4 + 4)} = \sqrt{8} \text{ (valid solution)}$$

Both $x = 2$ and $x = -2$ satisfy the original equation before squaring.

Therefore, the possible values of x are:

$$x = \pm 2$$

The answer is (1) ± 2 .

Ques 59. Find the median of the following data: 42, 19, 46, 17, 8, 35, 26, 39, 29

- (1) 8
- (2) 46
- (3) 29
- (4) 35

Solu. The median is the 'middle' number in a sorted list of numbers. To find the median, we first need to order the data set, giving:

| Data | |---|---| | 8 | | 17 | | 19 | | 26 | | 29 | | 35 | | 39 | | 42 | | 46 |

Since we have an odd number of numbers (9), the median is the 'middle' number, which is 29.

So the answer is (3) 29.

Ques 60. Three coins are tossed once. Probability of getting no head is:

- (1) $1/8$
- (2) $1/4$
- (3) $3/8$
- (4) $1/2$

Solu. The probability of getting no heads when 3 coins are tossed is (1) $1/8$.

Let's analyze the possibilities:

- Total Outcomes: When tossing 3 coins, each coin has 2 options (head or tail). So, the total number of possible outcomes is $2 \times 2 \times 2 = 8$ (HHH, HHT, HTH, THH, TTH, THT, HTT, TTT).
- Favorable Outcome: We only care about the outcome where none of the coins land on heads (TTT).
- Probability: Therefore, the probability of getting no heads is the number of favorable outcomes divided by the total number of outcomes:

Probability = Favorable Outcomes / Total Outcomes Probability = 1 (TTT) / 8

Therefore, the probability of getting no heads when tossing 3 coins is $1/8$.

Ques 61. Find the average of squares of first five natural numbers.

- (1) 8
- (2) 10

(3) 11

(4) 5

Solu. The average of squares of the first five natural numbers is 11.

Steps to solve:

1. Calculate the sum of squares:
 - We loop through the first five natural numbers (1 to 5) and square each number.
 - We add the squares of each number to a variable `sum_of_squares`.
2. Calculate the average:
 - We divide the `sum_of_squares` by the number of elements (which is 5 in this case).

The average of squares of the first five natural numbers is 11.0.

Explanation:

The table below shows the squares of the first five natural numbers and their sum.

Number (i)	Square (i ²)
1	1
2	4
3	9
4	16
5	25
Total	55

The average is calculated by dividing the sum of squares (55) by the number of elements (5), which is 11.

Ques 62. Two bags of iron ore weight 180 kg 250 gm and 270 kg 50 gm respectively. How much iron ore (in gm) must be taken out from the first bag and added to the second bag so that weight of the first bag may then be two-third of the second bag?

- (1) 0.13
- (2) 13
- (3) 130
- (4) 500

Solu. Sure, here it is:

Let the weight of iron ore to be taken out from the first bag be x grams. Initially, the weight of the first bag is 180 kg 250 gm, which is equivalent to 180250 grams, and the weight of the second bag is 270 kg 50 gm, which is equivalent to 270050 grams.

After taking out x grams from the first bag and adding it to the second bag, the weight of the first bag becomes $180250 - x$ grams, and the weight of the second bag becomes $270050 + x$ grams.

According to the given condition, the weight of the first bag is then two-thirds of the weight of the second bag, so we have the equation:

$$\frac{180250-x}{270050+x} = \frac{2}{3}$$

To solve for x , let's cross multiply and simplify:

$$3(180250 - x) = 2(270050 + x)$$

$$540750 - 3x = 540100 + 2x$$

$$5x = 650$$

$$x = \frac{650}{5} = 130$$

So, 130 grams of iron ore must be taken out from the first bag and added to the second bag.

The correct answer is:

(3) 130

Ques 64. The heights of two right circular cones are in the ratio 1: 2 and the circumferences of their bases are in the ratio 3:4. Find the ratio of their volumes.

(1) 32:9

(2) 9:32

(3) 7:23

(4) 23:7

Solu. Let's find the ratio of the volumes of the two cones:

Cone Properties:

- We know that the volume (V) of a right circular cone is:

$$V = (1/3)\pi r^2 h$$

where:

- π (pi) is a mathematical constant approximately equal to 22/7
- r is the radius of the base
- h is the height

Given Information:

- The heights (h) of the two cones are in the ratio 1:2. Let h_1 represent the height of the first cone and h_2 represent the height of the second cone. So, $h_1/h_2 = 1/2$.
- The circumferences (c) of their bases are in the ratio 3:4. Circumference is related to the radius (r) by the formula $c = 2\pi r$. Since c is proportional to r, we can say $r_1/r_2 = 3/4$, where r_1 and r_2 are the radii of the first and second cones, respectively.

Finding the Ratio of Volumes:

1. Focus on Ratios: We want to find the ratio of the volumes (V_1/V_2) of the two cones.
2. Substitute the Formula:

$$V_1/V_2 = [(1/3)\pi r_1^2 h_1] / [(1/3)\pi r_2^2 h_2]$$

3. Cancel Common Factors:

We can cancel the $(1/3)\pi$ term from both sides because it's a constant factor.

4. Ratio of Squares:

The remaining part becomes $(r_1^2/r_2^2) * (h_1/h_2)$. Since we know $r_1/r_2 = 3/4$ and $h_1/h_2 = 1/2$, we can substitute these ratios:

$$V_1/V_2 = (3/4)^2 * (1/2)$$

5. Simplify:

$$(3/4)^2 * (1/2) = (9/16) * (1/2) = 9/32$$

Therefore, the ratio of the volumes of the two cones is 9:32.

Answer:

The answer is (2) 9:32.

Ques 66. Which of the following speeds is maximum?

(1) 7.3 m/s

(2) 28.4 km/h

(3) 6.5 m/min

(4) 0.0073 km/s

Solu. Certainly, let's find the maximum speed among the given options:

1. Convert all speeds to the same unit (m/s) for comparison:

- (2) 28.4 km/h: There are 1000 meters in 1 kilometer and 3600 seconds in 1 hour. So, we can convert it to m/s as follows: $28.4 \text{ km/h} * (1000 \text{ m/km}) / (3600 \text{ s/h}) = 7.89 \text{ m/s (approx.)}$
- (3) 6.5 m/min: There are 60 seconds in 1 minute. So, we can convert it to m/s as follows: $6.5 \text{ m/min} * (1 \text{ min}/60 \text{ s}) = 0.108 \text{ m/s (approx.)}$
- (4) 0.0073 km/s: This is already in km/s. We can convert it to m/s using the same conversion factor as above: $0.0073 \text{ km/s} * (1000 \text{ m/km}) = 7.3 \text{ m/s}$

2. Compare the speeds in m/s:

- 7.3 m/s (from option 1 and 4)
- 7.89 m/s (approx., from option 2)
- 0.108 m/s (approx., from option 3)

Maximum Speed:

From the comparison, we can see that 7.89 m/s (converted from 28.4 km/h) is the highest speed.

Answer: The maximum speed is (2) 28.4 km/h (which is approximately 7.89 m/s).

Ques 67. A thief is spotted by a policeman from a distance of 200 meters. The policeman starts chasing at a speed of 10 km/h while the thief is running at a speed of 8 km/h. After how much time (in minutes) will the thief be caught ?

- (1) 3
- (2) 5
- (3) 6
- (4) 8

Sol. Absolutely, we can solve this problem to find how long it takes for the policeman to catch the thief.

1. Convert Speeds to m/s:

- Policeman's speed: $10 \text{ km/h} * (1000 \text{ m/km}) / (60 * 60 \text{ s/h}) = 5/18 \text{ m/s}$ (approx.)
- Thief's speed: $8 \text{ km/h} * (1000 \text{ m/km}) / (60 * 60 \text{ s/h}) = 4/18 \text{ m/s}$ (approx.)

2. Find the Relative Speed:

The relative speed is the difference between the policeman's speed and the thief's speed. Since they are running in opposite directions, we add their speeds.

Relative speed = Policeman's speed + Thief's speed = $5/18 \text{ m/s} + 4/18 \text{ m/s}$
 $= 9/18 \text{ m/s} = 1/2 \text{ m/s}$ (approx.)

3. Calculate Time Taken:

We know the distance (200 meters) and the relative speed (1/2 m/s). We need to find the time (t) it takes for the policeman to catch the thief.

Time = Distance / Relative speed $t = 200 \text{ meters} / (1/2 \text{ m/s})$

4. Simplify and Convert to Minutes:

$t = 200 \text{ meters} * (2 \text{ s/m})$ [flip the division to multiply by the reciprocal] $t = 400 \text{ seconds}$

There are 60 seconds in a minute. So, convert the time to minutes:

$t = 400 \text{ seconds} * (1 \text{ minute} / 60 \text{ seconds}) t = 6.67 \text{ minutes (approx.)}$

5. Round to Nearest Minute:

Since catching the thief likely takes whole seconds, we round the time to the nearest minute. In this case, 6.67 minutes rounds up to:

$t = 7 \text{ minutes}$

Answer:

Therefore, it takes approximately 7 minutes for the policeman to catch the thief. So the answer is (3).

Ques 68. If 7-digit number 485A64B is divisible by 8 and 9, then find the greatest value of A + B.

(1) 18

(2) 6

(3) 9

(4) 12

Solu. For a number to be divisible by 8, the last three digits must form a number divisible by 8.

For a number to be divisible by 9, the sum of its digits must be divisible by 9.

Given the 7-digit number 485A64B:

For divisibility by 8, we need to check if the number formed by the last three digits (A64) is divisible by 8.

For divisibility by 9, we need to check if the sum of the digits of the entire number is divisible by 9.

Let's first check for divisibility by 8:

The number formed by the last three digits (A64) must be divisible by 8.

A64 can be replaced by 064 to get the largest value of A + B. The largest 3-digit number divisible by 8 is 064.

Now, let's check for divisibility by 9:

The sum of the digits of the entire number (485A64B) must be divisible by 9.

Sum of the digits = $4 + 8 + 5 + 0 + 6 + 4 + B = 27 + B$

For the entire number to be divisible by 9, $27 + B$ must be divisible by 9. The largest value of B that satisfies this condition is 9, making $27 + B = 36$, which is divisible by 9.

Therefore, the greatest possible value of $A + B = 0 + 9 = 9$.

So, the correct answer is: (3) 9

Ques 69. A ladder 25 feet long is leaning against a wall such that it touches 24 feet high window. How far is the foot of the ladder from the wall?

- (1) 24.5 feet
- (2) 12 feet
- (3) 9 feet
- (4) 7 feet

Solu. Absolutely, we can use the Pythagorean theorem to solve this problem.

1. Identify the right triangle:

Imagine the ladder, the wall, and the ground forming a right triangle. The length of the ladder (25 feet) is the hypotenuse (the side opposite the right angle). We need to find the distance from the foot of the ladder to the wall, which is the base of the right triangle. Let's call this distance "x" feet.

2. Apply the Pythagorean theorem:

The Pythagorean theorem states that in a right triangle, the square of the hypotenuse (c) is equal to the sum of the squares of the other two sides (a and b). In this case:

$$a^2 + b^2 = c^2$$

where:

- a = height of the window (known to be 24 feet)
- b = distance from the foot of the ladder to the wall (what we're solving for, represented by x)
- c = length of the ladder (25 feet)

3. Plug in the values and solve for x :

$$24^2 + x^2 = 25^2$$

- Substitute the known values: $576 + x^2 = 625$
- Isolate x^2 : $x^2 = 625 - 576$ $x^2 = 49$

- Take the square root of both sides to find x (remember there might be positive and negative solutions, but the distance cannot be negative): $x = \pm\sqrt{49} \Rightarrow x = \pm 7$

4. Select the valid solution:

The distance from the foot of the ladder to the wall (x) cannot be negative.

Therefore, the valid solution is $x = 7$ feet.

Answer:

The foot of the ladder is (4) 7 feet from the wall.

Ques 70. In an A.P., the product of the first term and the second term is 120 and the product of the second term and the third term is 168. Find the tenth term of the A.P. when common difference $d > 0$.

- (1) 132
- (2) 71
- (3) 28
- (4) 30

$$1. a \cdot (a + d) = 120$$

$$2. (a + d) \cdot (a + 2d) = 168$$

We find:

$$a = \frac{120d}{24} = 5d$$

So, the 10th term of the A.P. is $14d$.

Now, substituting the given options for d :

$$1. 14 \times 132 = 1848 \text{ (Doesn't match)}$$

$$2. 14 \times 71 = 994 \text{ (Doesn't match)}$$

$$3. 14 \times 28 = 392 \text{ (Doesn't match)}$$

$$4. 14 \times 30 = 420 \text{ (Matches)}$$

Solu.

So, the correct option is **(4) 30**.

Ques 71. Chairman of First Finance Commission was

- (1) Mahavir Tyagi
- (2) A.K. Chandra
- (3) K.C. Neogi
- (4) K.C. Pant

Solu. The Chairman of the First Finance Commission was K.C. Neogi. So, the correct option is **** (3) K.C. Neogi ****.

Ques 72. Which one of the following is Greenhouse Gas?

- (1) Oxygen
- (2) Hydrogen
- (3) Methane

(4) Nitrogen

Solu. The greenhouse gas among the options provided is ****(3) Methane****. Methane is a potent greenhouse gas, along with others like carbon dioxide (CO₂) and water vapor. It contributes to the greenhouse effect, which is the warming of the Earth's surface due to certain gases trapping heat in the atmosphere.

Ques 73. Lucknow city is situated on which Bank of River ?

- (1) Ganga**
- (2) Gomati**
- (3) Tapti**
- (4) Sutlej**

Solu. Lucknow city is situated on the banks of the ****(2) Gomati River****.

Ques 74. Quit India Movement Started in

- (1) 1944**
- (2) 1942**
- (3) 1940**
- (4) 1946**

Solu. The Quit India Movement started in ****(2) 1942****.

Ques 75. The original name of Swami Vivekananda was

- (1) Narendranath Dutt**
- (2) Aloknath Dutt**
- (3) Ajay Dutt**
- (4) Virendranath Dutt**

Solu. The original name of Swami Vivekananda was ****(1) Narendranath Dutt****.

Ques 76. Champaran movement was meant for

- (1) Solving Problems of Indian Farmers**

- (2) Protest against the Government's Education Policy**
- (3) To remove defects of the Civil Services**
- (4) Separate Elections of Muslims**

Solu. The Champaran movement was primarily meant to address and protest against the exploitation of indigo farmers by British landlords. So, the correct option is ***(1) Solving Problems of Indian Farmers***.

Ques 78. Bamboo dance is an important folk dance of which state ?

- (1) Assam**
- (2) Bengal**
- (3) Nagaland**
- (4) Tripura**

Solu. The Bamboo dance, also known as the "Bamboo Dance of Mizoram," is an important folk dance of ***(3) Nagaland***.

Ques 79. First Female IAS officer of India was

- (1) Tina Dabi**
- (2) Kiran Bedi**
- (3) Kamaljeet Sandhu**
- (4) Anna George**

Solu. The first female IAS officer of India was ***(3) Kamaljeet Sandhu***.

Ques 80. The basis for modern Periodic Table is

- (1) Atomic Mass**
- (2) Physical Property**
- (3) Atomic Weight**
- (4) Atomic Number**

Solu. The basis for the modern Periodic Table is ***(4) Atomic Number***.

Ques 81. The boiling point of water

- (1) is always 100°C**

- (2) depends on atmospheric pressure
- (3) depends on the material of the container
- (4) depends on relative humidity

Solu. The boiling point of water **(2)** depends on atmospheric pressure. It changes with variations in atmospheric pressure.

Ques 82. The value of Avogadro's Number is

- (1) 1.6×10^{-19}
- (2) 6.023×10^{20}
- (3) 1.6×10^{23}
- (4) 6.023×10^{23}

Solu. The value of Avogadro's Number is **(4)** 6.023×10^{23} .

Ques 83. An electric bulb has a filament made of

- (1) Iron
- (2) Lead
- (3) Copper
- (4) Tungsten

Solu. An electric bulb typically has a filament made of **(4)** Tungsten. Tungsten is chosen for its high melting point and durability, making it suitable for withstanding the high temperatures generated by the electric current passing through the filament.

Ques 84. Homi Jahangir Bhabha played an important role in the Discovery of

- (1) Photoelectric effect
- (2) Quantum theory
- (3) Photosynthesis
- (4) Nucleus Discovery

Solu. Homi Jahangir Bhabha played an important role in the **** (4) Discovery of the Nucleus****. He was an Indian nuclear physicist known for his contributions to quantum theory and the field of nuclear physics.

Ques 85. Pluto was the famous author of Book

- (1) Republic**
- (2) The Prince**
- (3) Great Tragedy**
- (4) Mother India**

Solu. Pluto is not a famous author associated with any of the given books. Instead, Pluto is known as a dwarf planet in our solar system. It was discovered by astronomer Clyde Tombaugh in 1930. Therefore, none of the options provided match with Pluto as an author.

Ques 86. Which of the city in the world is known as the Name of 'City of Gold' ?

- (1) Johannesburg**
- (2) Rome**
- (3) Delhi**
- (4) Sydney**

Solu. The city in the world known as the "City of Gold" is **** (1) Johannesburg****.

Ques 87. The UNO was formed on

- (1) 21 August, 1944**
- (2) 7 October, 1944**
- (3) 24 October, 1945**
- (4) 24 October, 1946**

Solu. The UNO, or the United Nations Organization, was formed on **** (3) 24 October, 1945****.

Ques 88. Which country will host the Common Wealth Games 2026 ?

- (1) Newzealand
- (2) India
- (3) Australia
- (4) Pakistan

Solu. The country that will host the Commonwealth Games 2026 is **India**.

Ques 89. Who won the Men's single title of Wimbledon 2022 ?

- (1) Novak Djokovic
- (2) C. Alcaraz Garbia
- (3) Rafael Nadal
- (4) C. Ruud

Solu. As of my last update in January 2022, I don't have access to real-time data, so I can't provide the winner of the Men's singles title at Wimbledon 2022. You may want to check the latest news or sports updates for the most accurate information.

Ques 90. The headquarters of SAARC is situated at _____

- (1) India
- (2) Srilanka
- (3) Bhutan
- (4) Nepal

Solu. The headquarters of SAARC (South Asian Association for Regional Cooperation) is situated in **Nepal**.

Ques 91. Find the next term of the given Alphanumeric series : 4 CV, 9 FU, 20 IT, 43 LS, _ ?

- (1) 89 OR
- (2) 90 OR
- (3) 91 OR
- (4) 91 QR

Solu. Here's how to decode the logic and find the next term in the alphanumeric series:

Pattern Analysis:

1. Number Pattern: The series follows a simple multiplication pattern. Each number is the product of the previous number and $2 + 1$ (or 3).

Observe:

- $4 * 3 = 12$
- $9 * 3 = 27$
- $20 * 3 = 60$
- $43 * 3 = 129$

2. Letter Pattern: The letters seem to progress by 3 steps forward in the alphabet.

Finding the Next Term:

1. Number: Following the pattern, the next number should be $129 * 3 = 387$.
2. Letter: Starting from 'S' (the 19th letter), move forward by 3: S (19) + 3 = V (22nd letter).

Answer: The next term in the series is (4) 387 VR.

Ques 92. Rakesh goes 20 m North, then turns right and walk 25 m, then again turns right and walks 15 m, then again turns right and walks 25 m. How far is he from his original position?

- (1) 10 m
- (2) 5 m
- (3) 15 m
- (4) 6 m

Solu. Let's visualize Rakesh's movements:

1. He goes 20 m North.
2. Then, he turns right and walks 25 m.
3. After that, he turns right again and walks 15 m.
4. Finally, he turns right once more and walks 25 m.

Now, let's analyze the directions:

- Rakesh initially moves 20 m North, so he's 20 m away from his original position.
 - After taking three right turns, he effectively made a full clockwise turn, which brings him back to his original direction.
- Thus, he's 20 m away from his original position, which means he's $20\sqrt{2}$ m away from his original position.

Ques 93. Study the following information to answer the given question :

A, B, C, D, E, F, G and H are eight family members sitting around a circle facing towards the centre.

- (i) H is on the immediate left of A but is not the neighbour of E or D.**
- (ii) F is on the immediate right of B and G is the neighbour of E.**
- (iii) C is between E and F.**

What is the position of D?

- (1) on the immediate left of B**
- (2) between A and G**
- (3) between B and F**
- (4) between G and C**

Solu. From the given information:

- (i) H is on the immediate left of A but is not the neighbour of E or D.
- (ii) F is on the immediate right of B and G is the neighbour of E.
- (iii) C is between E and F.

Let's analyze each statement:

- (i) Since H is on the immediate left of A and neither the neighbour of E nor D, it means that H must be sitting between A and G.
- (ii) F is on the immediate right of B and G is the neighbour of E. This implies that B must be sitting between F and G.
- (iii) C is between E and F.

Putting all the information together:

- We have A, H, and G sitting consecutively.
- B is between F and G.

- C is between E and F.
 - D must be sitting on the immediate left of B.
- So, the position of D is **(1)** on the immediate left of B.

Ques 94. There are six Professors in a Physics department. They are P, Q, R, S, T and W. all are sitting around a hexagonal dinning table to have Lunch. Q is sitting between W and R, P is sitting between T and S and W is sitting to the left of S. Who is sitting between P and W?

- (1) T
- (2) R
- (3) Q
- (4) S

Solu. Let's analyze the given information:

1. Q is sitting between W and R.
2. P is sitting between T and S.
3. W is sitting to the left of S.

From statement 1, we can deduce that the seating arrangement must be either WQR or RWQ.

From statement 3, W is to the left of S. This implies that the seating arrangement cannot be RWQ because in that case W would be to the right of S. So, the seating arrangement must be WQR.

Now, from statement 2, P is sitting between T and S. Since W is to the left of S, and P is between T and S, the only position left for P is between S and T.

So, the seating arrangement is: W, Q, R, P, S, T.

Who is sitting between P and W? It's **(3) Q**.

Ques 95. Read the Conclusions and then decide which of the given conclusion logically follows the given two statements, disregarding the known facts.

Statements:

Some Books are Parks.

Some Parks are Festival.

No Festival is Bank.

Conclusions:

- (I) Some Books are Bank.**
- (II) Some Parks are not Bank.**
- (1) only conclusion I follows**
- (2) only conclusion II follows**
- (3) both conclusion I and II follows**
- (4) none of the conclusion follows**

Ontioner

Solu. To determine which conclusions logically follow the given statements, let's analyze them:

Statements:

1. Some Books are Parks.
2. Some Parks are Festival.
3. No Festival is Bank.

Conclusions:

- I. Some Books are Bank.
- II. Some Parks are not Bank.

Now, let's evaluate each conclusion:

I. Some Books are Bank:

This conclusion cannot be directly inferred from the given statements. Since there is no direct relationship established between Books and Bank, we cannot conclude that some Books are Bank. Therefore, conclusion I does not follow.

II. Some Parks are not Bank:

This conclusion can be logically deduced from the given statements. Since "No Festival is Bank" and there are some Parks that are Festivals, those Parks cannot be Banks. Therefore, conclusion II follows.

So, the correct answer is:

- (2) only conclusion II follows**

Ques 96. On which day of the week was birthday of Arjun if week is starting from Monday ?

(I) Arjun celebrated his birthday the very next day on which Sahil celebrated his birthday.

(II) The sister of Arjun was born on the fifth day of the week and two days after Arjun was born.

(1) if the data in statement I alone are sufficient to answer the question

(2) if the data in statement II alone are sufficient to answer the question

(3) if the data either in statement I alone or in statement II alone are sufficient to answer the question

(4) if the data in both statement I and II together are necessary to answer the question

Solu. Let's analyze each statement:

Statement I: Arjun celebrated his birthday the very next day on which Sahil celebrated his birthday.

This statement alone does not provide any specific information about which day of the week Arjun's birthday falls on. It only establishes a relationship between Arjun's birthday and Sahil's birthday, but without knowing when Sahil's birthday is, we cannot determine Arjun's birthday. So, statement I alone is not sufficient to answer the question.

Statement II: The sister of Arjun was born on the fifth day of the week and two days after Arjun was born.

This statement provides more concrete information. If Arjun's sister was born two days after Arjun and was born on the fifth day of the week, then Arjun must have been born on the third day of the week. Given that the week starts from Monday, the third day of the week would be Wednesday. Therefore, statement II alone is sufficient to determine the day of the week Arjun's birthday falls on.

So, the correct answer is:

(2) if the data in statement II alone are sufficient to answer the question

Ques 98. A Clock was set correct at 10 O'clock. It loses 10 minutes per hour. What will be the angle between the hour and minute hands of the clock after one hour ?

(1) 65°

(2) 50°

(3) 25°

(4) 67°

Solu. The clock loses 10 minutes every hour, so after one hour, it will actually show 11:50 instead of 12:00.

Here's how to find the angle between the hour and minute hands:

1. Angle Made by the Hour Hand:

- In a normal clock, the hour hand moves 360 degrees in 12 hours.
- Since the clock loses minutes, it effectively moves slower than a normal clock.
- To account for the lost time, we need to calculate the effective hourly movement of the hour hand.
 - Time lost in 1 hour = 10 minutes
 - Effective time the hour hand moves in 1 hour = 60 minutes - 10 minutes = 50 minutes
- In 50 minutes, the hour hand moves:
 - Angle covered in 60 minutes (normal clock) = $360^\circ / 12$ hours = 30° per hour
 - Angle covered in 50 minutes = $(30^\circ \text{ per hour}) * (50 \text{ minutes} / 60 \text{ minutes}) = 25^\circ$

2. Angle Made by the Minute Hand:

- In a normal clock, the minute hand completes a full revolution (360°) in 60 minutes.
- Since the clock shows 11:50, the minute hand has moved 50 minutes after 11 o'clock.
 - Angle covered in 50 minutes = $(360^\circ / 60 \text{ minutes}) * 50 \text{ minutes} = 300^\circ$

3. Angle Between the Hands:

- To find the angle between the hands, we can use the formula:
 $|0.5 * (60 * \text{Hour value} + \text{Minute value}) - 6 * \text{Minute value}|$
degrees
- In this case:

- Hour value (considering the lost time) = 11 (since it shows close to 11:50)
- Minute value = 50
- $|0.5 * (60 * 11 + 50) - 6 * 50| = |330 - 300| = 30^\circ$

The closest option available is:

(3) 25°

Ques 99. What was the day on 10th January, 1951 ?

(1) Tuesday

(2) Wednesday

(3) Thursday

(4) Friday

Solu. You can look up the day of the week for a specific date using online calendars or reference tables. However, we can also solve this problem logically without relying on external resources.

1. Identifying the Leap Year Cycle:

- Regular years have 365 days.
- Leap years have 366 days and occur every 4 years (with some exceptions for divisibility by 100 but not 400).

2. Calculating Days from 1900 to 1950:

- We need to find the total number of days between January 1, 1900, and December 31, 1950.
 - Number of years (excluding 1900): $1950 - 1900 = 50$ years
 - Since these are all regular years (no leap years in this range), the total days contributed by these years: $50 \text{ years} * 365 \text{ days/year} = 18250 \text{ days}$

3. Leap Years:

- We need to consider leap years that occurred between 1900 and 1950. There's a leap year every 4 years except for multiples of 100 that are not divisible by 400.
 - Dividing 50 (number of years) by 4, we get a quotient of 12 and a remainder of 2. This means there are 12 sets of 4 years (with a leap year in each set) and an additional 2 years.

- Out of these 12 sets of 4 years, we need to exclude leap years that are multiples of 100 but not divisible by 400 (these are not leap years).
 - There are 2 multiples of 100 between 1900 and 1950 (1900 and 1900).
 - However, only 1900 is not divisible by 400. Therefore, we need to exclude 1 leap year.
- Total leap years to be considered: $(12 \text{ sets} * 1 \text{ leap year/set}) - 1 \text{ excluded leap year} = 11 \text{ leap years}$.

4. Total Days:

- Days from regular years (18250 days)
- Days from leap years (11 leap years * 1 extra day/leap year) = 11 days

Total days from January 1, 1900, to December 31, 1950: 18250 days + 11 days = 18261 days

5. Days in January 1951:

- January 1951 has 31 days.

6. Finding the Day of the Week:

- The total number of days from January 1, 1900 (which was a Monday), to January 10, 1951, is: 18261 days + 9 days (from January 1, 1951, to January 10, 1951) = 18270 days.
- We know that every odd multiple of 7 gives a remainder of 0 when divided by 7, which means it's a Sunday.
- Since a regular year has 365 days, and 365 is a multiple of 7, adding the number of regular years (excluding leap years) doesn't change the remainder when dividing by 7 (i.e., it remains a Sunday).
- Leap years add one extra day, which gives a remainder of 1 when divided by 7.

Therefore, to find the remainder of days (18270 days) when divided by 7, we can consider:

- Regular years contribute a remainder of 0 (multiple of 7).
- Leap years contribute a total remainder of $(\text{number of leap years}) * (\text{remainder per leap year}) = 11 \text{ years} * 1 \text{ day/year (remainder)} = 11$.

Remainder when 18270 days are divided by 7: 0 (from regular years) + 11 (from leap years) = 11

A remainder of 11 when divided by 7 corresponds to Wednesday.
Answer: The 10th of January, 1951, was a (2) Wednesday.

Ques 100. Arjun said to Rohan, "That boy playing hockey is the younger of the two brothers of the daughter of my father's wife." How is the boy playing hockey related to Arjun?

- (1) Son
- (2) Brother
- (3) Nephew
- (4) Brother-in-law

Solu. Let's break down the complex sentence to understand the relationship:

1. Arjun's father's wife: This is Arjun's stepmother.
2. Daughter of Arjun's stepmother: This is Arjun's stepsister.
3. Two brothers of the daughter of Arjun's stepmother: These are Arjun's stepsister's brothers.
4. Younger of the two brothers: This is the boy playing hockey.

Therefore, the boy playing hockey is Arjun's stepsister's younger brother.

Now, let's analyze the answer choices:

1. Son: Not possible, Arjun and the boy have different fathers.
2. Brother: Not possible either, they share the same father only if they are full brothers.
3. Nephew: This is the correct answer. A nephew is the child of your sibling (in this case, stepsister).
4. Brother-in-law: This refers to the spouse of your sibling, not their child.

Answer: The boy playing hockey is Arjun's (3) Nephew.

Ques 101. Some sentences are coded in a an artificial language. Find the correct sentence for the given code:

"qust ovlb" means Spritual journey

"tuxn qust" means Spritual people

"pusb ovlb" means Beautiful journey

What does "Healthy People" mean?

- (1) **qust zomr**
- (2) **pusb zomr**
- (3) **tuxn zomr**
- (4) **ovlb zomr**

Solu. Let's analyze the given codes and their meanings:

"qust ovlb" means Spiritual journey

"tuxn qust" means Spiritual people

"pusb ovlb" means Beautiful journey

From the given codes, we can observe that:

- The first word in each code corresponds to a descriptive word (e.g., "qust" corresponds to "Spiritual" or "pusb" corresponds to "Beautiful").

- The second word in each code corresponds to a noun (e.g., "ovlb" corresponds to "journey" or "qust" corresponds to "people").

Now, let's find the code for "Healthy People." The descriptive word "Healthy" could correspond to one of the words used in the other codes.

Since "ovlb" corresponds to "journey" in the given codes, it's likely that "Healthy" corresponds to either "qust" or "pusb."

Given that "qust" corresponds to "people" and "pusb" corresponds to "Beautiful," it's reasonable to assume that "qust" corresponds to "Healthy."

So, the correct code for "Healthy People" would be the one where "Healthy" is represented by "qust" and "People" is represented by "qust'."

Therefore, the correct answer is:

- (3) **tuxn zomr**

Ques 102. Choose the missing terms out of given alternatives: **A3, E4, 110, 033, U136, ?**

- (1) **A680**
- (2) **E681**
- (3) **1684**
- (4) **A685**

Solu. Let's analyze the given terms:

A3, E4, 110, 033, U136

The pattern seems to involve combining a letter with a number in each term. Let's break down each term:

1. A3: Starts with the letter "A" and is followed by the number 3.
2. E4: Starts with the letter "E" and is followed by the number 4.
3. 110: This term doesn't follow the pattern of combining a letter with a number directly. It could be a numerical representation.
4. 033: Similar to term 3, this could be a numerical representation.
5. U136: Starts with the letter "U" and is followed by the number 136.

Now, let's try to find a pattern or rule. Notice that the numbers seem to be related to the positions of the corresponding letters in the alphabet. For example:

- A is the 1st letter of the alphabet, and 3 could represent its position.
- E is the 5th letter of the alphabet, and 4 could represent its position.
- U is the 21st letter of the alphabet, and 136 could represent its position.

Now, let's apply this pattern to find the missing term:

The missing term seems to correspond to the letter "A" (1st letter of the alphabet), so we need to find the number that corresponds to the position of "A" in the alphabet.

The letter "A" is in the 1st position, so the corresponding number is 1.

Therefore, the missing term should start with "A" and be followed by the number 1.

Among the given options, only option (4) A685 follows this pattern.

So, the correct answer is:

(4) A685

Ques 103. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): A person jumping out of the moving bus falls forward because his feet suddenly come to rest, while his body is in motion with the bus.

Reason (R): This is based on Newton's Second law of motions, which states that a body continues to be in it's state of rest or of uniform motion in a straight line unless compelled by an external force to change that state.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A)**
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)**
- (3) (A) is correct but (R) is not correct**
- (4) (A) is not correct but (R) is correct**

Solu. The correct answer is:

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A)**

Explanation:

- Assertion (A) correctly explains that when a person jumps out of a moving bus, their feet suddenly come to rest when they touch the ground, while the rest of their body is still in motion with the bus. This causes the person to fall forward.
- Reason (R) correctly refers to Newton's Second Law of Motion, which states that an object in motion tends to stay in motion unless acted upon by an external force. In this case, the external force is the friction between the person's feet and the ground, which brings their feet to rest while the rest of their body is still in motion.

Ques 105. The door of Aman's house faces the East. From the back side of his house, he walk straight 100 meters, then turns to the left and walks 100 metre again. Finally, he turns towards left and stops after walking 50 meters. Now, Aman is in which direction from the starting point ?

- (1) North-East**
- (2) North-West**
- (3) South-East**
- (4) South-West**

Solu. To find Aman's direction from the starting point, let's break down his movements:

1. From the starting point facing East, he walks straight 100 meters.

2. Then, he turns left (which would be towards the North) and walks 100 meters again.

3. Finally, he turns left again (which would be towards the West) and walks 50 meters.

So, after these movements, Aman has essentially formed a right-angled triangle. The first leg of the triangle is 100 meters to the East, the second leg is 100 meters to the North, and the third leg (the hypotenuse) is 50 meters to the West.

Now, we can use basic trigonometry to find the direction. Since the length of the Westward leg is half of the length of the Northward leg, it means it's a 30-60-90 triangle. Thus, the direction from the starting point is North-West.

So, the correct answer is:

(2) North-West

Ques 108. Read the following information carefully and answer the questions:

(a) Six persons P, Q, R, S, T and U are sitting in two rows, three in each.

(b) T is not at the end of any row

(c) S is second to the left of U

(d) R, the neighbour of T, is sitting diagonally opposite to S

(e) Q is the neighbour of U

Which of the following group of people are in the same row?

(1) PTU

(2) PTR

(3) RSP

(4) QTR

Solu. Let's analyze the given information:

1. There are two rows, each containing three persons.

2. T is not at the end of any row.

3. S is second to the left of U.

4. R, the neighbor of T, is sitting diagonally opposite to S.

5. Q is the neighbor of U.

Now, let's proceed step by step:

From statement (b), we know that T cannot be at the end of any row. So, T must be in the middle of one of the rows.

From statement (c), S is second to the left of U. This implies that U must be at one end of a row and S must be sitting to the immediate left of U.

From statement (d), R, the neighbor of T, is sitting diagonally opposite to S. Since T cannot be at the end of a row and R is the neighbor of T, R must be in the middle of the other row, opposite S.

From statement (e), Q is the neighbor of U. Since U is at one end of a row, Q must be on the same side as U.

So, the arrangement could look like this:

Row 1: | U | S | ? |

Row 2: | R | T | Q |

Now, considering statement (a) that there are three persons in each row, the only possibility is:

Row 1: | U | S | T |

Row 2: | R | Q | P |

From this arrangement, we can see that P must be the remaining person in Row 2.

So, the groups of people in the same row are:

(2) PTR