# IAS BABA

# 60 DAY RAPID REVISION (RARE) SERIES Prelims 2025

## UPSC/IAS Prelims 2025

## RaRe Notes Compilations

### CSAT Part 1
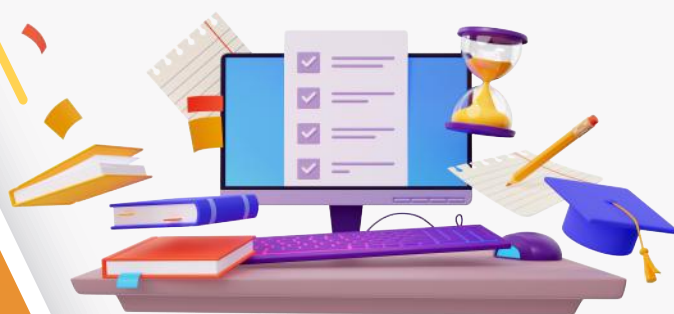
**Q.1) The number of zeros at the end of the product of all prime numbers between 1 and 1111 is?**

    a) 0
    b) 1
    c) 3
    d) 2

**Q.1) Solution (b)**

**Explanation:**

Prime numbers between 1 and 1111 are 2, 3, 5, 7, 11,…
There is no other prime no. ending with 5 as unit digit, except one '5'
2 x 5 = 10 gives only one zero in the product of all prime numbers
So, number of zeros at the end of the product = 1

**Q.2) The integers 573921 and 575713 when divided by a 3 digit number leave the same remainder. What is that 3 digit number?**

    a) 206
    b) 256
    c) 218
    d) 234

**Q.2) Solution (b)**

**Explanation:**

Remember: The difference between the numbers too leaves the same remainder!
Let N be the 3 digit number.
Let R be the remainder.
So, 573921 – R and 575713 – R will be divisible by N
This means the difference between them is also divisible by N.
Difference = (575713 – R – 573921 + R) is divisible by N
Or 1792 divisible by N
N can be 256 from the answer choices.

**Q.3) If a, b and c are positive integers such that ab = 432, bc = 96 and c &lt; 9, then the smallest possible value of a + b + c is**

a) 56
b) 49
c) 46
d) 59

**Q.3) Solution (c)**

**Explanation:**

Since the product is involved, we will keep the numbers as close as possible
bc = 96 and c = 9
b c
12 × 8 = 96
16 × 6 = 96
24 × 4 = 96
ab = 432
a b
12 × 36 = 432
16 × 27 = 432
24 × 18 = 432
So possible values of a = 36, b = 12, c = 8 Sum = 58
a = 27, b = 16, c = 6 Sum = 49
a = 18, b = 24, c = 4 Sum = 46
Least possible value = 46
Consider two statements followed by a Question:
Statement I: y - x = 2
Statement II: z - y = 2
Question: x, y, and z are three positive odd integers, is x+z divisible by 4?

**Q.4) Which one of the following is correct in respect of the Statements and the Question?**

a) The Question can be answered with the help of Statement I alone
b) The Question can be answered with the help of Statement II alone
c) Both Statement I and Statement II are needed to answer the Question
d) The Question cannot be answered even with the help of both the Statements

**Q.4) Solution (c)**

**Explanation:**

If only first statement is taken into consideration: y-x = 2 where x, y and z are three odd

integers.

Nothing absolute can be said about divisibility of x+z with 4.

Now if only second statement is taken into consideration: z-y = 2 and nothing absolute can be said about divisibility of x+z with 4.

If we consider both statement simultaneously then

We get x+z = 2y; Now as we know y is an odd integer, so 2y will never get a factor of 4

Hence x+z is not divisible by 4.

As we find an absolute answer by using both statements, answer will be option c.

Read the following passage and answer the items that follow. Your answer to these items should be based on the passages only

## Passage

The success of the bold direct taxation proposals contained in the Union budget for 2004-05 will have a crucial bearing on the realisation of the targeted fiscal deficit projection for the year, according to economists and tax consultants. In particular, the amnesty scheme introduced to harness black money is being seen as vital to the government's calculations. Finance minister P Chidambaram announced in his budget presentation that he was expecting to augment direct tax revenues by 15 to 16 per cent.

This has led analysts to conclude that the attainment of the government's direct taxation target would be largely dependent on widening the tax net and would also significantly depend on the success of the amnesty scheme announced to induct black money into the mainstream economy. Most tax consultants opined that the amnesty scheme would draw an extremely favourable response. "It is a tremendous opportunity."

The finance minister said that residents of metropolitan cities who owned cars, telephones and travelled abroad would be roped into tax net. The budget has also introduced an "estimated income scheme" for retail traders with a turnover less than Rs. 40 lakh. Their income would be estimated at 5 per cent of the turnover and those claiming lower incomes would be subjected to audit. "This would also serve to rope in assesses after the earlier presumptive Rs. 1,400 scheme was a failure." Another bold and much-sought-after change introduced in the budget is the abolition of taxation of dividend in the hands of the shareholder. Instead, companies would be liable to pay 20 per cent tax on dividend distributed.

**Q.5) What change has been introduced in the budget for 2004-05?**

a) Companies have been exempted from paying 10 percent tax on dividend.
b) Abolition of taxation of dividend to the shareholders
c) Support for corporate sector in particular
d) To impose double taxation on dividend income.

**Q.5) Solution (b)**

**Explanation:**

Refer these lines, "Another bold and much-sought-after change introduced in the budget is the abolition of taxation of dividend in the hands of the shareholder…. We can clearly infer from the 2nd last sentence of the last paragraph of the passage that the abolition of taxation of dividend in the hands of shareholder was a major change in the budget for 2004-05. Hence, option b is the correct answer.

**Passage**

We would find it almost impossible to imagine a life in total social isolation. Just try to imagine that you are stranded on an island in a room, with not a single soul (except you), either inside or in close vicinity. Even with all the necessary supply of food and water ensured, you may find it to be nothing short of a hellish life. Several studies done on children brought up in social isolation, due to any reason whatsoever, have revealed that they lag behind other children in social development, especially interpersonal relationships, cooperation and teamwork. Such children, when they were put in a normal social environment with elders and peers, had great difficulty in interpreting their social world and were able to adjust competently only after great effort.

**Q.6) Which of the following can be legitimately inferred from the paragraph above?**

a) Development of important social skills among adult humans necessitates a social environment having parents and siblings.
b) A social environment goes a long way in developing important social skills among children
c) The effects of total social isolation do not apply to animals.
d) Children brought up in a very social environment should find social isolation easier to handle.

**Q.6) Solution (b)**

**Q.7) In a circular path, 6 men start running at 4 o'clock in the evening from the same point with the speed of 6, 8, 12, 7, 14 and 10 km/hr respectively. If the perimeter of the circular path is 105 km, find the second time at which they meet.**

a) 12 PM
b) 8 PM
c) 12 AM
d) 8 AM

**Q.7) Solution (d)**

**Explanation:**

The speed of 6 men are = 6, 8, 12, 7, 14 and 10 km/hr
The perimeter of circle = Distance = 105 km
LCM of their speed = 6, 8, 12, 7, 14 and 10 = 840
i.e. 1st time they meet after 840 km
Time Taken = (840/105) hr = 8 hrs
2nd time they meet after = (2 × 8) hr = 16 hrs
So, 2nd meeting after 16 hours from 4 o'clock evening = 4 PM + 16 hr = 8 AM

**Q.8) Find the least number which must be added to the number 25272 to get a perfect square.**

      a) 8
      b) √9
      c) √81
      d) 81

**Q.8) Solution (c)**

**Explanation:**

The given number is 25272
$15^2 = 225$
$150^2 = 22500$
$16^2 = 256$
$160^2 = 25600$
The square root of given number is between 150 and 160.
$159^2 = 25281$
Required number to add = 25281 - 25272 = 09
√81 = 09
Hence, the least required number to add is √81.
**Trick:-** For squares between 151 and 175.
Ex-
159 = 159 + 59 = 218 ......(i)
The number is subtracted by 150 (base) and squaring the result.
$(159 - 150)^2 = 9^2 = 81$ .......(ii)
The number is subtracted by 125
(159 - 125) = 34 .....(iii)
now
Multiply by 100 in both eq (i) and (iii)
(i) 218 × 100 = 21800
(ii) 81
(iii) 34 × 100 = 3400

Add (i), (ii) and (iii)
we get, (21800 + 81 + 3400) = 25281

**Q.9) In a simultaneous throw of two coins, the probability of getting at least one head is**

    a)  1/ 2
    b)  1 /3
    c)  2 /3
    d)  3 /4

**Q.9) Solution (d)**

**Explanation:**

Here S [HH, HT, TH, TT]
Let E= event of getting at least one head [HT, TH,HH]
$P(E) = (n(E))/(n(S)) = 3/4$

**Q.10) Three unbiased coins are tossed. What is the probability of getting at least 2 heads?**

    a)  1/ 4
    b)  1 /2
    c)  1 /3
    d)  1 /8

**Q.10) Solution (b)**

Here S (TTT, TTH, THT, HTT, THH, HTH, HHT, HHH). Let E = event of getting at least two heads = (THH, HTH, HHT, HHH).
$P (E) = (n(E))/(n(S)) = 4/8 = 1/2$

## Passage

Due to the unconventional manufacturing of IoT devices and the vast amount of data they handle, there's a constant threat of cyber-attacks. Several high-profile incidents where a common IoT device was used to infiltrate and attack the larger network have drawn attention to the need for IoT security. The ever-looming possibility of vulnerabilities, data breaches and other risks associated with IoT device usage underscores the urgent need for strong IoT security. IoT security is vital for enterprises, as it includes a wide range of techniques, strategies, protocols, and actions that aim to mitigate the increasing IoT vulnerabilities of modern businesses. For those deploying IoT systems, hardware security and authentication are critical measures.

**Q.11) Based on the above passage, the following assumptions have been ma**de:

1. Unsecured IoT devices could have economic implications.
2. One of the ways to secure IoT devices is to enhance their data-handling capacities.

**Which of the above assumptions is/are valid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.11) Solution (a)**

**Assumption 1 is correct:** The given assumption is based on the lines "***IoT security is vital for enterprises, as it includes** a wide range of techniques, strategies, protocols, and actions that **aim to mitigate the increasing IoT vulnerabilities of modern businesses**.*" These lines show that if IoT is not secured then it may make modern businesses vulnerable to cyber-attacks which can have serious economic implications. Hence, this assumption is correct as per the passage.

**Assumption 2 is incorrect:** The given assumption is based on the lines "*Due to the unconventional manufacturing of IoT devices and the **vast amount of data they handle**, **there's a constant threat of cyber-attacks**.*" These lines show that IoT is under constant threat due to unconventional manufacturing of IOT devices, and the huge data they handle. This does not mean that their data handling capacities are not good. So, to assume that enhancing data handling capacities is a way to secure IoTs is not correct as per the passage.

**Q.12) A person has three cubes of different sizes. The sides of the cubes are of length 6 inch, 8 inch and 1 inch respectively. The person melts the cubes and forms a new cube from it. What shall be the surface area of the new cube?**

a) 486 inch$^2$
b) 496 inch$^2$
c) 586 inch$^2$
d) 658 inch$^2$

**Q.12) Solution (a)**

**Explanation:**

Total volume of the 3 small cubes = $6^3 + 8^3 + 1^3$ = 216 + 512 + 1 = 729 inch$^3$

Volume of the new cube formed = Total volume of the three smaller cubes = 729 inch$^3$ Side of the new large cube = $(729)^{1/3}$ = 9 inch

Total surface area of the cube of side 9 inch = 6 × (side)$^2$ = 6 × 9 × 9 = 486 inch$^2$ Hence, option (a) is the right answer.

**Q.13) If set P = {2, 3, 5, 7} and set Q = {2, 4, 6, 8}, then which of the following is true for the sets P and Q?**

- a) Number of elements in P x Q is 16.
- b) Number of elements in P x Q is 1.
- c) Number of elements in P x Q is 8.
- d) None of these

**Q.13) Solution (a)**

**Explanation:**

If you have two finite sets A and B, where A has M elements and B has N elements, then AxB has MxN elements.

So, Number of elements in P x Q = 4x4 = 16

Hence, option (a) is the right answer.

**Q.14) Working together, Rudra and Ananya can complete a piece of work in 24 days. Ananya and Chetan can complete the same work in 40 days, while Rudra and Chetan can complete it in 30 days. Find the number of days in which each of them can complete the same work while working alone?**

- a) 120, 40, 80
- b) 120, 60, 80
- c) 40, 60, 80
- d) None of these

**Q.14) Solution (d)**

Let Rudra, Ananya and Chetan be R, A and C respectively.

| Person | Days | Efficiency | Total work |
|--------|------|------------|------------|
| R + A  | 24   | 5          |            |
| A + C  | 40   | 3          | 120        |
| R + C  | 30   | 4          |            |

So, Efficiency-wise, 2(A+R+C) = 5 + 3 + 4 = 12

Or (A+R+C) = 6
C = (A+R+C) – (R + A) = 6 – 5 = 1
R = (A+R+C) – (A + C) = 6 – 3 = 3
A = (A+R+C) – (C + R) = 6 – 4 = 2
So, the number of days in which Rudra can complete the same work = 120/3 = 40 days
Similarly, the number of days in which Ananya can complete the same work = 120/2 = 60 days
Similarly, the number of days in which Chetan can complete the same work = 120/1 = 120 days
Hence, it is clear that option (d) is the right answer.

**Q.15) A train covers a distance in 100 minutes, if it runs at a speed of 63 km per hour on an average.  Find the speed at which the train must run to reduce the time of journey by 20 minutes.**

   a)  55 km/hr
   b)  70 km/hr
   c)  54 km/hr
   d)  78.75 km/hr

**Q.15) Solution (d)**

**Explanation:**

Initial speed of train = 63 km/hr
Time taken = 100 minutes
As we know that Distance = speed × time
Distance = 63 × 100/60 = 105 km.
It is given that the new time will be 80 minutes.  So, required speed = 105 /(80/60)  = 78.75 km/hr
Hence, option (d) is the right answer.

**Alternate Method:**
As distance is constant, speed should increase in the same proportion as the time is getting reduced.
As the time is getting reduced from 100 minutes to 80 minutes, i.e. a reduction of 20%, the speed must increase by 25%.
So new speed = 125% of 63 km/hr = 78.75 km/hr Hence, option (d) is the right answer.

**Q.16) Find the least common multiple (LCM) of 12 and 15.**

   a)  30
   b)  60
   c)  120
   d)  180

**Q.16) Solution (b)**

**Explanation**

To find the LCM, we need to list the multiples of each number:

Multiples of 12: 12, 24, 36, 48, 60
Multiples of 15: 15, 30, 45, 60

The smallest number that appears in both lists is 60, so the correct answer is: **b) 60**

**Q.17) What is the value of 2^3× 2^4?**

   a)  64
   b)  128
   c)  256
   d)  512

**Q.17) Solution (b)**

**Explanation**

Using the rule of exponents that states a^m × a^n = a^(m+n), we can simplify the expression as follows:
2^3 × 2^4 = 2^(3+4)
= 2^7
= 128
So, the correct answer is: b) 128

**Q.18) A committee of 3 members is to be formed from a group of 5 members. How many different committees can be formed?**

   a)  10
   b)  20
   c)  30
   d)  60

**Q.18) Solution (a)**

**Explanation**

This is a combination problem, as the order of selection does not matter. We can use the formula for combinations:

C(n, k) = n! / (k!(n-k)!)

where n is the total number of members (5), k is the number of members to be selected (3), and ! denotes the factorial function.

C(5, 3) = 5! / (3!(5-3)!)
= 5! / (3!2!)
= (5 × 4 × 3 × 2 × 1) / ((3 × 2 × 1)(2 × 1))
= 10

So, the correct answer is: a) 10


**Q.19) A password consists of 4 characters, each of which can be a digit (0-9) or a letter (A-F). How many different passwords can be formed?**

    a)  240
    b)  256
    c)  360
    d)  720


**Q.19) Solution (b)**

**Explanation**

This is a permutation problem, as the order of selection matters. We have 16 choices (10 digits + 6 letters) for each of the 4 characters.

Using the formula for permutations:

P(n, k) = n^k

where n is the number of choices (16) and k is the number of characters (4):

P(16, 4) = 16^4
= 65536 / 256
= 256

However, this is not among the options. Let's re-evaluate the problem. Since each character can be a digit or a letter, we have 16 choices for each character. But we need to consider that the password consists of 4 characters, and the order matters.

The correct calculation is:

16 × 16 × 16 × 16 = 65536

But this is not among the options. Since the password consists of 4 characters, each of which can be a digit or a letter, we can consider the following:

- For the first character, we have 16 choices.
- For the second character, we have 16 choices.
- For the third character, we have 16 choices.
- For the fourth character, we have 16 choices.

Since the order matters, we can arrange these choices in 4! = 24 ways. However, this is not necessary, as we can simply multiply the number of choices for each character.

The correct answer is: b) 256

**Passage**

Colonialism has never been only about the relentless exploitation of resources for economic gain. Enmeshed in the project to rob and dominate through violence and force was the project to transform the knowledge and governability of the territories called "colonies" and allegedly "civilize" their populations. When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently. For, helping vulnerable people (something unobjectionable) becomes itself a site of exploitation. Such harms are an intrinsic part of how these companies operate, a natural consequence of rationality at heart. A colonial rationality now applied within both Global North and Global South that underlies their business model. As such, no ethical guidelines can ensure that social good will truly be realized through such projects of datafication.

**Q.20) Which of the following is *most definitively implied* by the above passage?**

a) India should be careful to protect its digital sovereignty against the growing big tech companies.
b) In the context of the history of colonization, only the form has changed, not the nature.
c) Big Tech uses big data for data colonization of the global south.
d) Big Tech companies collect data of the people to help them.

**Q.20) Solution (b)**

**Explanation**

**Option (a) is incorrect:** The passage is not about India and how Big Tech companies are affecting India's digital sovereignty. So, this option is beyond the scope of the passage.

**Option (b) is correct:** The given statement captures the essence of the passage. The passage is about historical colonization and how the present big tech colonizes the world using data as seen in the lines *"Colonialism has never been only about the relentless exploitation of*

*resources for economic gain*. … *When Big Tech and their social divisions deploy datafication to do social good, here, too,* **economic, and moral ideals feed each other but differently***."* These lines show that only the form of colonization has changed from using violence and force to using technology, but the mindset of exploitation is the same. So, this is the best-implied meaning of the passage.

**Option (c) is incorrect**: Big Tech does data colonization as seen in the lines "**When Big Tech** *and their social divisions* **deploy datafication to do social good***, here, too, economic, and moral ideals feed each other but differently".* However, it is used in Global North as well as South, as seen in the lines - *"A colonial rationality now applied within both* **Global North and Global South that underlies their business model***."* Moreover, the option states that big data is being used, but it is not discussed in the passage.

**Option (d) is incorrect:** Consider the lines - "*When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently.* **For, helping vulnerable people (something unobjectionable) becomes itself a site of exploitation.***"* The main idea in the passage is how big tech uses data as a tool for colonization, not as a helping hand towards the people. This mindset is visible in option (b) which is the correct answer.

**Q.21) Find the least common multiple (LCM) of 12 and 15.**

  a)  30
  b)  60
  c)  120
  d)  180

**Q.21) Solution (b)**

**Explanation**

To find the LCM, we need to list the multiples of each number:

Multiples of 12: 12, 24, 36, 48, 60
Multiples of 15: 15, 30, 45, 60

The smallest number that appears in both lists is 60, so the correct answer is: **b) 60**

**Q.22) What is the value of 2^3× 2^4?**

   a) 64
   b) 128
   c) 256
   d) 512

**Q.22) Solution (b)**

**Explanation**

Using the rule of exponents that states a^m × a^n = a^(m+n), we can simplify the expression as follows:
2^3 × 2^4 = 2^(3+4)
= 2^7
= 128
So, the correct answer is: b) 128

**Q.23) A committee of 3 members is to be formed from a group of 5 members. How many different committees can be formed?**

   a) 10
   b) 20
   c) 30
   d) 60

**Q.23) Solution (a)**

**Explanation**

This is a combination problem, as the order of selection does not matter. We can use the formula for combinations:

C(n, k) = n! / (k!(n-k)!)

where n is the total number of members (5), k is the number of members to be selected (3), and ! denotes the factorial function.

C(5, 3) = 5! / (3!(5-3)!)
= 5! / (3!2!)
= (5 × 4 × 3 × 2 × 1) / ((3 × 2 × 1)(2 × 1))
= 10

So, the correct answer is: a) 10

**Q.24) A password consists of 4 characters, each of which can be a digit (0-9) or a letter (A-F). How many different passwords can be formed?**

a) 240
b) 256
c) 360
d) 720

**Q.24) Solution (b)**

**Explanation**

This is a permutation problem, as the order of selection matters. We have 16 choices (10 digits + 6 letters) for each of the 4 characters.

Using the formula for permutations:

P(n, k) = n^k

where n is the number of choices (16) and k is the number of characters (4):

P(16, 4) = 16^4
= 65536 / 256
= 256

However, this is not among the options. Let's re-evaluate the problem. Since each character can be a digit or a letter, we have 16 choices for each character. But we need to consider that the password consists of 4 characters, and the order matters.

The correct calculation is:

16 × 16 × 16 × 16 = 65536

But this is not among the options. Since the password consists of 4 characters, each of which can be a digit or a letter, we can consider the following:

- For the first character, we have 16 choices.
- For the second character, we have 16 choices.
- For the third character, we have 16 choices.
- For the fourth character, we have 16 choices.

Since the order matters, we can arrange these choices in 4! = 24 ways. However, this is not necessary, as we can simply multiply the number of choices for each character.

The correct answer is: b) 256

**Passage**

Colonialism has never been only about the relentless exploitation of resources for economic gain. Enmeshed in the project to rob and dominate through violence and force was the project to transform the knowledge and governability of the territories called "colonies" and allegedly "civilize" their populations. When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently. For, helping vulnerable people (something unobjectionable) becomes itself a site of exploitation. Such harms are an intrinsic part of how these companies operate, a natural consequence of rationality at heart. A colonial rationality now applied within both Global North and Global South that underlies their business model. As such, no ethical guidelines can ensure that social good will truly be realized through such projects of datafication.

**Q.25) Which of the following is *most definitively implied* by the above passage?**

a) India should be careful to protect its digital sovereignty against the growing big tech companies.
b) In the context of the history of colonization, only the form has changed, not the nature.
c) Big Tech uses big data for data colonization of the global south.
d) Big Tech companies collect data of the people to help them.

**Q.25) Solution (b)**

**Explanation**

**Option (a) is incorrect:** The passage is not about India and how Big Tech companies are affecting India's digital sovereignty. So, this option is beyond the scope of the passage.

**Option (b) is correct:** The given statement captures the essence of the passage. The passage is about historical colonization and how the present big tech colonizes the world using data as seen in the lines *"Colonialism has never been only about the relentless exploitation of resources for economic gain. … When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently."* These lines show that only the form of colonization has changed from using violence and force to using technology, but the mindset of exploitation is the same. So, this is the best-implied meaning of the passage.

**Option (c) is incorrect**: Big Tech does data colonization as seen in the lines "*When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently".* However, it is used in Global North as well as South, as seen in the lines - *"A colonial rationality now applied within both Global North and Global South that underlies their business model."* Moreover, the option states that big data is being used, but it is not discussed in the passage.

**Option (d) is incorrect:** Consider the lines - "*When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently. **For, helping vulnerable people (something unobjectionable) becomes itself a site of exploitation.***" The main idea in the passage is how big tech uses data as a tool for colonization, not as a helping hand towards the people. This mindset is visible in option (b) which is the correct answer.

**Q.26) If a and b are positive integers such that a^2 - 2ab + b^2 = 25, then what is the value of a + b?**

    a) 5
    b) 7
    c) 10
    d) 12

**Q.26) Solution (a)**

**Explanation:**

We can factor the given equation as:
(a - b)^2 = 25

Taking the square root of both sides, we get:
a - b = ±5

Since a and b are positive integers, we can't have a - b = -5. Therefore:
a - b = 5

Now, we can express b as:
b = a - 5

Substituting this value of b into the original equation, we get:
a^2 - 2a(a - 5) + (a - 5)^2 = 25

Simplifying this equation, we get:
a^2 - 2a^2 + 10a + a^2 - 10a + 25 = 25

Combine like terms:
0 = 0

This equation is true for all values of a. However, since a and b are positive integers, we can try different values of a to find a corresponding value of b.
If a = 5, then b = 0 (not a positive integer).
If a = 6, then b = 1 (a positive integer).

Therefore, a = 6 and b = 1.

The value of a + b is: a) 7

**Q.27) If x, y, and z are integers such that x^3 + y^3 + z^3 - 3xyz = 50, then what is the value of x + y + z?**

   a)  5
   b)  6
   c)  7
   d)  8

**Q.27) Solution (a)**

**Explanation:**

We can factor the given equation as:

(x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx) = 50

Since x, y, and z are integers, we can try different values of x + y + z to find a corresponding value of x^2 + y^2 + z^2 - xy - yz - zx.

If x + y + z = 5, then we can find values of x, y, and z that satisfy the equation.

Therefore, the value of x + y + z is: a) 5

**Q.28) A committee of 5 members is to be formed from a group of 8 men and 4 women. In how many ways can the committee be formed if it must have at least 2 women?**

   a)  420
   b)  560
   c)  720
   d)  none

**Q.28) Solution (d)**

**Explanation:**

We can calculate the number of ways to form the committee as follows:

- Total number of ways to form a 5-member committee from 12 people (8 men + 4 women): 12C5 = 792.

- Number of ways to form a 5-member committee with 0 women (all men): 8C5 = 56.
- Number of ways to form a 5-member committee with 1 woman: 8C4 * 4C1 = 70 * 4 = 280.
- Number of ways to form a 5-member committee with at least 2 women: 792 - 56 - 280 = 456.

However, this answer is not among the options. Let's re-evaluate the problem:

- Number of ways to form a 5-member committee with exactly 2 women: 8C3 * 4C2

= 56 * 6 = 336.
- Number of ways to form a 5-member committee with exactly 3 women: 8C2 * 4C3 = 28 * 4 = 112.
- Number of ways to form a 5-member committee with exactly 4 women: 8C1 * 4C4 = 8 * 1 = 8.

Adding these up, we get:

336 + 112 + 8 = 456

However, we missed the case where all 5 members are women:

4C5 = 0 (since we can't choose 5 women from only 4)

So, the correct answer remains:

None of the above (correct answer is 456)


**Q.29) A person has 8 friends, of which 4 are relatives. He wants to invite 5 friends to a party, including at least 2 relatives. In how many ways can he invite the friends?**

    a)  160
    b)  200
    c)  256
    d)  052


**Q.29) Solution (d)**

**Explanation:**

We can calculate the number of ways to invite the friends as follows:

- Number of ways to invite exactly 2 relatives: 4C2 * 4C3 = 6 * 4 = 24.
- Number of ways to invite exactly 3 relatives: 4C3 * 4C2 = 4 * 6 = 24.
- Number of ways to invite exactly 4 relatives: 4C4 * 4C1 = 1 * 4 = 4.

Adding these up, we get:

24 + 24 + 4 = 52

However, this answer is not among the options. Let's re-evaluate the problem:

- Total number of ways to invite 5 friends from 8 friends: 8C5 = 56.
- Number of ways to invite 5 friends with 0 relatives: 4C5 = 0 (since we can't choose 5 non-relatives from only 4).
- Number of ways to invite 5 friends with 1 relative: 4C1 * 4C4 = 4 * 1 = 4.

So, the number of ways to invite 5 friends with at least 2 relatives is:

56 - 0 - 4 = 52

However, we missed the case where all 5 friends are relatives:

4C5 = 0 (since we can't choose 5 relatives from only 4)

So, the correct answer remains:

(correct answer is 52)


**Passage**


Microalgae, which form the base of the food chain in the ocean and capture carbon dioxide from the atmosphere, appear to rely on a unique strategy to cope with global warming, according to a new study. The findings are published in the journal Nature Microbiology. As climate change reduces the availability of nutrients in the sea, marine microalgae or eukaryotic phytoplankton fire up a protein called rhodopsin. It is related to the protein in the human eye responsible for vision in dim light. This light-responsive protein is helping the microalgae flourish with the help of sunlight in place of traditional chlorophyll. Microbial rhodopsins, per the study, are proposed to be major light capturers in the ocean. Estimates suggested they may absorb as much light as chlorophyll-based photosynthesis in the sea, which also captures light to generate energy and food. However, their biological role in these organisms was unclear before the study. "Global warming is increasing drought on land and the same thing happens in the ocean: The warmer the surface water gets, the lower are the nutrients in these surface water layers," Thomas Mock, professor of marine microbiology in University of East Anglia's School of Environmental Sciences and the study's author, said in a statement.


**Q.30) Which one of the following statements best reflects the crux of the passage?**

a) Owing to adaptation, a phenomenon that occurs on land can also occur in water.
b) It is possible to mitigate global warming using biochemical found in nature.
c) Adaptability is the key in managing a changing environment.
d) Adaptability to a changing environment reduces productivity.

**Q.30) Solution (c)**

**Statement Analysis:**

**Option (a) is not correct:** According to the passage, the protein rhodopsin is responsible for vision in humans and microalgae use it in place of chlorophyll to survive in the oceans. The same phenomenon is not taking place in both ecosystems, even though the same biochemical is used. It can be assumed that the biochemical rhodopsin is being utilised by humans and microalgae differently and hence as far as the information in the passage is concerned, it is not the 'same' phenomenon that is occurring on land and water. Even if it was, we could not have generalized it based on just one example. **Hence, option (a) is not correct.**

**Option (b) is not correct:** The passage mentions the adaptation of the microalgae to the changing environment and how it has adapted to the effects of global warming. The passage does not talk about climate mitigation, or whether biochemical like rhodopsin may prove helpful in such a cause.

**Option (c) is correct:** Consider the line, *"As climate change reduces the availability of nutrients in the sea, marine microalgae or eukaryotic phytoplankton fire up a protein called rhodopsin".* This implies that microalgae are adopting to changing external environment. It is further mentioned in the passage, *"Estimates suggested they may absorb as much light as chlorophyll-based photosynthesis in the sea, which also captures light to generate energy and food".* These lines imply that rhodopsin replaces chlorophyll in microalgae to facilitate food production. This way, the passage revolves around the theme of adaptability to changing external conditions. **Hence, option (c) is correct.**

**Option (d) is not correct:** The passage revolves around the theme of adaptability by taking the case of microalgae and discussing the process of their survival in the absence of chlorophyll. The passage does not mention the effects of adaptability on productivity. The passage only narrates how adaptability can help in survival in a changing environment. **Hence, option (d) is not correct.**

**Q.31) A bag contains 3/5 of apples, 1/5 of bananas, and the remaining is oranges. What is the ratio of the number of oranges to the total number of fruits?**

a) 1:5
b) 1:10
c) 1:20
d) 1:25

**Q.31) Solution (a)**

**Explanation:**

Let's say the total number of fruits is 5x.

Number of apples = 3/5 × 5x = 3x

Number of bananas = 1/5 × 5x = x

Number of oranges = 5x - 3x - x = x

Ratio of oranges to total fruits = x:5x = 1:5

**Q.32) The ratio of the number of boys to the number of girls in a school is 7:5. If the number of boys is increased by 20% and the number of girls is increased by 30%, what is the new ratio of the number of boys to the number of girls?**

    a) 7:6
    b) 14:13
    c) 21:19
    d) 28:25

**Q.32) Solution (d)**

**Explanation:**

Let's say the initial number of boys is 7x and the initial number of girls is 5x.

New number of boys = 7x + 20% of 7x = 7x + 1.4x = 8.4x

New number of girls = 5x + 30% of 5x = 5x + 1.5x = 6.5x

New ratio of boys to girls = 8.4x:6.5x = 84:65 = 28:25 (approximately)

**Q.33) A train travels from Station A to Station B at an average speed of 50 km/h. On the return journey, the train travels at an average speed of 60 km/h. What is the average speed of the train for the entire journey?**

    a) 54 km/h
    b) 55 km/h
    c) 56 km/h
    d) 57 km/h

**Q.33) Solution (a)**

**Explanation:**

Let's say the distance between Station A and Station B is x km.

Time taken for the journey from A to B = x/50

Time taken for the journey from B to A = x/60

Total time taken = x/50 + x/60 = (6x + 5x)/300 = 11x/300

Total distance = 2x

Average speed = Total distance/Total time = 2x/(11x/300) = 600/11 ≈ 54.55 km/h

**Q.34) A car travels from City A to City B at an average speed of 60 km/h. It then travels from City B to City C at an average speed of 75 km/h. If the total distance between City A and City C is 450 km, what is the distance between City B and City C?**

- a) 150 km
- b) 200 km
- c) 225 km
- d) 250 km

**Q.34) Solution (c)**

**Explanation:**

Let's say the distance between City A and City B is x km.

Time taken for the journey from A to B = x/60

Time taken for the journey from B to C = (450 - x)/75

Total time taken = x/60 + (450 - x)/75

Since the total distance is 450 km, we can set up the equation:

x + (450 - x) = 450

x/60 + (450 - x)/75 = (x + 450 - x)/150

x/60 + (450 - x)/75 = 3

Solving for x, we get:

x = 225 km

Distance between City B and City C = 450 - 225 = 225 km.

**Passage**

The Arctic Ocean, a critical component of the Earth's climate system, is witnessing unprecedented change due to the accelerated melting of ice. This dramatic shift profoundly impacts polar bears, iconic symbols of the region, as their primary habitat, sea ice, diminishes. Melting ice forces polar bears to travel longer distances in search of food, increasing their vulnerability. Conservation efforts, sustainable policies, and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations.

**Q.35)  Which one of the following is the most logical and rational inference that can be made from the above passage?**

a)  In the wake of climate change, polar bears can be shifted to other oceans for their survival.
b)  Climate change policies for the Arctic Ocean need to keep polar bears in focus.
c)  Reversing climate change is the only way to protect the polar bears from extinction.
d)  The polar bear is the keystone species of the Arctic Ocean affected by climate change.

**Q.35) Solution (b)**

**Explanation:**

**Option (a) is incorrect:** The context of polar bears being shifted to other oceans is not a part of the passage. The passage is about climate change and its impact on polar bears. So, this option is beyond the scope of the passage.

**Option (b) is correct**: The passage conveys that climate change has impacted polar bears and even threatened their survival. So, any policy for the Arctic Ocean must keep polar bears in focus. The lines "***Conservation efforts, sustainable policies,*** *and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and **ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future** in the wake of climate-induced transformations"* also carry the same essence. So, this is the most logical inference from the passage.

**Option (c) is incorrect**: The passage does not mention reversing climate change as the 'only' way to protect polar bears. It only mentions mitigation of climate change for the survival of polar bears in the lines "*Conservation efforts, sustainable policies, and international cooperation are imperative **to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears,*** *emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations."* Hence, this option is beyond the scope of the passage.

**Option (d) is incorrect:** The passage is about polar bears and the impact of climate change on them. The passage does not mention that polar bears are keystone species. Therefore, this option is not correct.

**Passage**

Due to the unconventional manufacturing of IoT devices and the vast amount of data they handle, there's a constant threat of cyber-attacks. Several high-profile incidents where a common IoT device was used to infiltrate and attack the larger network have drawn attention to the need for IoT security. The ever-looming possibility of vulnerabilities, data breaches and other risks associated with IoT device usage underscores the urgent need for strong IoT security. IoT security is vital for enterprises, as it includes a wide range of techniques, strategies, protocols, and actions that aim to mitigate the increasing IoT vulnerabilities of modern businesses. For those deploying IoT systems, hardware security and authentication are critical measures.

**Q.36) Based on the above passage, the following assumptions have been made:**

1. Unsecured IoT devices could have economic implications.
2. One of the ways to secure IoT devices is to enhance their data-handling capacities.

**Which of the above assumptions is/are valid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.36) Solution (a)**

**Explanation:**

**Assumption 1 is correct:** The given assumption is based on the lines "***IoT security is vital for enterprises, as it includes** a wide range of techniques, strategies, protocols, and actions that **aim to mitigate the increasing IoT vulnerabilities of modern businesses**.*" These lines show that if IoT is not secured then it may make modern businesses vulnerable to cyber-attacks which can have serious economic implications. Hence, this assumption is correct as per the passage.

**Assumption 2 is incorrect:** The given assumption is based on the lines "*Due to the unconventional manufacturing of IoT devices and the **vast amount of data they handle, there's a constant threat of cyber-attacks**.*" These lines show that IoT is under constant threat due to unconventional manufacturing of IOT devices, and the huge data they handle. This does not mean that their data handling capacities are not good. So, to assume that enhancing data handling capacities is a way to secure IoTs is not correct as per the passage.

**Q.37) A train covers a distance in 100 minutes, if it runs at a speed of 63 km per hour on an average. Find the speed at which the train must run to reduce the time of journey by 20 minutes.**

    a)  55 km/hr
    b)  70 km/hr
    c)  54 km/hr
    d)  78.75 km/hr

**Q.37) Solution (d)**

**Explanation:**

Initial speed of train = 63 km/hr
Time taken = 100 minutes
As we know that Distance = speed × time
Distance = 63 × 100/60 = 105 km.
It is given that the new time will be 80 minutes. So, required speed = 105 /(80/60) = 78.75 km/hr Hence, option (d) is the right answer.
**Alternate Method:**
As distance is constant, speed should increase in the same proportion as the time is getting reduced. As the time is getting reduced from 100 minutes to 80 minutes, i.e. a reduction of 20%, the speed must increase by 25%.
So new speed = 125% of 63 km/hr = 78.75 km/hr Hence, option (d) is the right answer.

**Q.38) In Anil's store, there are 20 flashlights, two fifths of which are defective. For a marriage party decoration, his servant Ram randomly chose three flashlights to place them in the hall. What is the probability that the hall will be lighted?**

    a)  126/285
    b)  217/285
    c)  216/285
    d)  271/285

**Q.38) Solution (d)**

**Explanation:**

Total number of flashlights = 20
Number of defective flashlight = 20 × (2/5) = 8
Number of working flashlights = 20 – 8 = 12
Three flashlights can be selected from 20 flashlights in $^{20}C_3$ ways.
Number of ways of drawing 3 flashlights from 8 defective flashlights is $^{8}C_3$.

So, the probability that all the three flashlights are defective = $^8C_3/^{20}C_3$ = [8!/{3!(8 − 3)!}] / [20!/{3!(20 − 3)!}] = 14/285
The probability that at least one flash light is good = 1 – Probability that no flashlight is good = 1– (14/285) = 271/285
Hence, option (d) is the right answer.


**Q.39) How many natural numbers divide exactly one out of 5400 and 9000, but not both?**

a) 24
b) 36
c) 48
d) 72


**Q.39) Solution (a)**

**Explanation:**

5400 = $2^3$x$3^3$x$5^2$; 9000 = $2^3$x$3^2$x$5^3$
HCF of 5400 and 9000 = $2^3$x$3^2$x$5^2$
Number of factors of 5400 = (3+ 1) (3+ 1) (2+ 1) = 4x4x3 = 48.
Total number of factors of $a^x$X $b^y$ X $c^z$= (x+1) (y+1) (z+1).
Here a, b and c should be prime numbers
Similarly, number of factors of9000 = (3+ 1) (2+ 1) (3+1) = 4x3x4 = 48.
Number of factors of HCF of the two numbers= (3+ 1) (2+ 1) (2+1) = 4x3x3 = 36. Hence, the required number of divisors= (48 + 48) - 2x 36 = 96 - 72 = 24.
Hence, option (a) is the right answer.


**Q.40) Two boys, who study in a school, start walking to their homes from their school at 1 pm. The first boy, whose home is 5 km away from the school walks at a speed of 5 km/hr and the second boy whose home is 8 km away from the school walks at a speed of 6 km/hr. If their homes are in directly opposite directions, what will be the distance between the two boys at 2:10 pm?**

a) 12 km
b) 12.8 km
c) 11 km.
d) 10 km.

**Q.40) Solution (a)**

**Explanation:**

At the beginning, both the boys walk away from each other. After one hour, first boy reaches home and his distance from school is 5 km. This distance does not change after 2 pm.
The second boy walks at the speed of 6 km per hour for the entire 1 hour 10 min.
Distance covered by second boy in 1 hour 10 min = 7 km.
So, Total distance between the boys at 2:10 pm = 7 + 5 = 12 km.  So, option (a) is the right answer.

**Passage**

The Arctic Ocean, a critical component of the Earth's climate system, is witnessing unprecedented change due to the accelerated melting of ice. This dramatic shift profoundly impacts polar bears, iconic symbols of the region, as their primary habitat, sea ice, diminishes. Melting ice forces polar bears to travel longer distances in search of food, increasing their vulnerability. Conservation efforts, sustainable policies, and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations.

**Q.41)  Which one of the following is the most logical and rational inference that can be made from the above passage?**

a) In the wake of climate change, polar bears can be shifted to other oceans for their survival.
b) Climate change policies for the Arctic Ocean need to keep polar bears in focus.
c) Reversing climate change is the only way to protect the polar bears from extinction.
d) The polar bear is the keystone species of the Arctic Ocean affected by climate change.

**Q.41) Solution (b)**

**Statement Analysis:**

**Option (a) is incorrect:** The context of polar bears being shifted to other oceans is not a part of the passage. The passage is about climate change and its impact on polar bears. So, this option is beyond the scope of the passage.
**Option (b) is correct**: The passage conveys that climate change has impacted polar bears and even threatened their survival. So, any policy for the Arctic Ocean must keep polar bears in focus. The lines "***Conservation efforts, sustainable policies,*** *and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and **ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future** in the wake of climate-induced transformations"* also carry the same essence. So, this is the most logical inference from the passage.

**Option (c) is incorrect**: The passage does not mention reversing climate change as the 'only' way to protect polar bears. It only mentions mitigation of climate change for the survival of polar bears in the lines "*Conservation efforts, sustainable policies, and international cooperation are imperative* **to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears,** *emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations.*" Hence, this option is beyond the scope of the passage.

**Option (d) is incorrect:** The passage is about polar bears and the impact of climate change on them. The passage does not mention that polar bears are keystone species. Therefore, this option is not correct.

**Q.42) Following information is known about a six digit number:**

1. Fourth digit of the number is the largest and it is the sum of fifth and sixth digits.
2. The value of second digit is the sum of first and third digits.
3. The sixth digit is the units' digit. iv. Values of first and third digits are the same.
4. The fifth digit is the sum of third and second digits.
5. Sixth digit is the sum of third and fifth digits.

**What is the ratio of the fifth and the fourth digit?**

a) 2 : 5
b) 3 : 7
c) 7 : 3
d) 1 : 5

**Q.42)  Solution (b)**

**Explanation:**

Let the first digit be n.
Third digit is equal to first digit. So, it will also be n.
Second digit = Sum of first and third digits = n + n = 2n
Fifth digit = Sum of third and second digits = n + 2n = 3n
Sixth digit = Sum of third and fifth digits = n + 3n = 4n
Fourth digit = Sum of fifth and sixth digits = 3n + 4n = 7n Ratio of fifth and fourth digit = 3n : 7n = 3 : 7 Hence, option (b) is the correct answer.

**Q.43) Point P lies between A and B, such that the length of BP is four times that of AP. Car 1 starts from A and moves towards B. Simultaneously, Car 2 starts from B and moves towards A. Car 2 reaches P two hours after Car 1 had already reached P. If the speed of Car 2 is 80% that of Car 1, then the time taken by Car 1 to reach P from A is:**

a) 40 minutes

b) 24 minutes
c) 30 minutes
d) 32 minutes

**Q.43) Solution (c)**

**Explanation:**

C1 →                         <-C2
A→1→P→→→→4→→→→B
Let Car C1 took "t" hours to reach at point P. Then Car C2 will take "t+2" hours to reach point P.
If AP = d km, then BP = 4d km
It is given that speed of C2 is 80% (4/5th) that of C1. So, if speed of Car C1 is d/t km/hr, then speed of Car C2 would be 4d/5t km/hr.
So, d/(d/t) + 2 = 4d/(4d/5t)
Or t + 2 = 5t
Or t = 2/4 = ½ hour = 30 minutes
So, option (c) is the correct answer.

**Q.44) What should come in place of (?) in the following series? 17, 23, 35, ?, 85, 127**

a) 56
b) 49
c) 53
d) 55

**Q.44) Solution (d)**

**Explanation:**

17 + (2 * 3) = 23
23 + (3 * 4) = 35
35 + (4 * 5) = 55
55 + (5 * 6) = 85
85 + (6 * 7) = 127
Hence, option (d) is the right answer.

**Q.45) When Abhishek and Aishwarya got married 10 years ago, their ages were in the ratio of 5 : 4. Today Abhishek's age is one sixth more than Aishwarya's age. After marriage they had six children, including a triplet and twins. The ages of triplets, twins and the sixth child are in the ratio of 3 : 2 : 1. What is the present total age of the family if the youngest child is 3 years old?**

a) 83 years
b) 112 years
c) 74 years
d) 107 years

**Q.45) Solution (d)**
**Explanation:**

Let 10 years ago the ages of Abhishek and Aishwarya were 5x and 4x.
So, the present ages of Abhishek and Aishwarya would be (5x + 10) and (4x + 10) respectively.
According to the question,
5x + 10 = 4x + 10 + (1/6) × (4x + 10)
Or 5x = 4x + (1/6) × (4x + 10)
Or x = (1/6) × (4x + 10)
Or 6x = (4x + 10)
Or 2x = 10
Or x = 5
So, Present age of Abhishek = 5x + 10 = 5×5 + 10 = 25 + 10 = 35 years
Present age of Aishwarya = 4x + 10 = 4×5 + 10 = 20 + 10 = 30 years The total present age of the family = 35 + 30 + (9×3) + (6×2) + 3 = 107 years Hence, option (d) is the correct answer.

**Passage**

There are thousands of legislative bodies in India, ranging from the panchayat, block panchayat, zila parishad, municipal corporations to State legislatures and Union Parliament at the national level. Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level. Parliament and State legislative secretariats recruit their pool of bureaucrats separately. Ensuring competent and robust legislative institutions demands having qualified and well-trained staff in place. The growth of modern government and expansion of governmental activities require a matching development and laborious legislative exercise. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to Union Parliament.

**Q.46) With reference to the above passage, which of the following is/are the most rational and practical implication/implications?**

1. There is an urgent need for a decentralized system of recruitment and training keeping in mind the local needs and aspirations.
2. There is an urgent need for all the Indian legislative services to fulfill the mandate of maximum governance from local bodies to the Parliamentary level.
3. Indian governance architecture is mired with red-tapism and cumbersome processes which at times creates hindrances to development and growth prospects.
4. Strengthening the legislative institutions by common public recruiting agencies will ensure effective policy making.

**Select the correct answer using the code given below.**

a) 1 and 3 only
b) 2 and 4 only
c) 2 only
d) 2, 3 and 4 only

**Q.46) Solution (b)**

**Explanation:**

Statement (1) is incorrect. The passage mentions, "Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level". Also "A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So, the passage mentions that it is not a decentralized system of recruitment and training, but a common system of public recruiting and training agency at the national level that is needed for competent and robust legislative institutions and their functioning. Hence, this answer option is incorrect.

Statement (2) is correct. It is given in the passage, "The growth of modern government and expansion of governmental activities require a matching development and laborious legislative exercise. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So it can be implied that there is a need for all-India legislative services that will fulfill the mandate of maximum governance from local bodies to Parliament level. These arguments are aptly captured in this answer option.

Statement (3) is incorrect. The passage is advocating for a common public recruiting and training agency at the national level. It is also mentioned that a qualified and well-trained staff will ensure a competent and robust legislative institution. But there is nothing mentioned about 'red-tapism' and cumbersome processes'. So, this statement is incorrect.

Statement (4) is correct. The passage mentions "Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level. Ensuring competent and robust legislative institutions demands having qualified and well-trained staff in place. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So, it can be implied that enhancing governmental activities necessitates strengthening the legislative institutions by common public recruiting agencies. And from the phrase "to serve" it can be inferred that they will ensure effective policy making. So, this statement is correct.

**Q.47)** In a 20 over cricket match, a top-class opener batsman started his innings from the non-strikers end. Whenever he faces 1st ball of the over he hits a six and whenever he faces the last ball of the over he hits a four. Throughout his innings he has taken 10 singles (one run), 5 doubles (two runs) and 3 triples (three runs). If he has faced 1st ball of the over 7 times and last ball of the over 9 times, then find the total runs scored by him.

a) 110
b) 95
c) 107
d) 102

**Q.47) Solution (a)**

**Explanation:**

**Organization O1:**
Number of members on January 1, 2018 = x,
Number of members on February 1, 2018 = x + p,
Number of members on March 1, 2018 = x + 2p and so on.
So, Number of members on July 1, 2018 = x + 6p
[A.P. (arithmetic progression)],
Number of members on July 15, 2018 = x + 6p = x + 6(10.5x) (Given, p = 10.5x) = 64x.
**Organization O2:**
Number of members on January 1, 2018 = x,
Number of members on February 1, 2018 = xq,
Number of members on March 1, 2018 = $xq^2$
and so on. So, Number of members on July 1, 2018 = $xq^6$
[G.P. (geometric progression)],
Number of members on July 15, 2018 = $xq^6$.
Now, 64x = $xq^6$ (Given)
$q^6$ = 64
$q^6 = 2^6$
q = 2.

**Q.48)** On January 1, 2018, two new organizations O1 and O2 were formed, each having 'x' members. On the first day of each subsequent month, O1 adds 'p' members while O2 multiples its current numbers by a constant factor 'q'. Both the organizations have the same number of members on July 15, 2018. If p = 10.5x, what is the value of 'q'?

a) 2
b) 3
c) 4
d) 5

**Q.48) Solution (c)**

**Explanation:**

x can be obtained by using the information provided in both S1 and S2.
Using S1, we get x= 4, or 12.
Using S2, we get that x is a multiple of 2.
Using both S1 and S2,  LCM × HCF = 1$^{st}$ number × 2$^{nd}$ number
36 × 2 = x × 18
or, x = 4.
Hence, S1 and S2 together are sufficient to answer the question.

**Q.49) In how many different ways can the letters of the word "THERAPY" be arranged so that the vowels never come together?**

    a)  720
    b)  1440
    c)  5040
    d)  3600

**Q.49) Solution (b)**

**Explanation:**

Let one's digit = x
Ten's digit = 2x
Number = 10(2x) + x = 21x
After interchange the digit number = 12x
Therefore, 21x – 12x = 27
9x = 27
x = 3
one's digit = 3
Ten's digit = 2 x 3 = 6
Number = 10x6 + 3 = 63

**Q.50) A shopkeeper buys a number of books for Rs.80. If he had bought 4 more for the same amount, each book would have cost Re. 1 less. How many books did he buy?**

    a)  8
    b)  16
    c)  24
    d)  28

**Q.50) Solution (c)**

**Explanation:**

The number would be of the form 6 _____5
The 5 missing digits have to be formed using the digits 0, 1, 2, 3, 4, 7, 8, 9 without repetition.
Thus, $^{8}C_{5}$ x 5! = 6720

**Passage**

The caste system in India is a division of society into strata, influenced by the classic Aryan Verna's of north India, and Dravida Jati system found in south India. Caste is a form of social stratification characterized by endogamy and hereditary transmission of a lifestyle, which often includes occupational and ritual states in a hierarchy and customary social interaction.

**Q.51) What is the most important message conveyed by the passage above?**

   a) The caste system is still widely prevalent in India
   b) The caste system is practices uniformly across various regions in India
   c) The caste system is a hierarchical classification and tends to persist over generations
   d) The caste system is an institutionalized mechanism of discrimination

**Q.51) Solution (c)**

**Explanation:**

The author opines that 'Caste is a form of social stratification characterized by endogamy and hereditary transmission of a lifestyle.'

**Q.52) Rahul divided `Rs. 1400 into three parts in such a way that half of the first part, onefourth of the second part and one-eighth of the third part were equal. What are these three parts?**

   a) Rs. 300, Rs. 600, Rs. 500
   b) Rs. 200, Rs. 400, Rs. 800
   c) Rs. 100, Rs. 400, Rs. 1000
   d) None of these

**Q.52) Solution (b)**

**Explanation:**

Let 1st part be 'A', 2nd part be 'B' and 3rd part be 'C'.

Half of the first part, one-fourth of the second part and one-eighth of the third part were equal.

A/2 = B/4 = C/8 Or A : B : C = 1 : 2 : 4

On checking with the options, we can see that only option (b) satisfies the given condition. Hence, option (b) is correct.

**Q.53) A private agency runs two schools, one on PPP model and the other on purely private basis. Average income from PPP model school is Rs. 12,000 per month, and average income from private model school is Rs. 50,000 per month. When the budgets of the two schools were merged into one, the average income became Rs. 20,000 per month. If the number of students in private model school is 160, then find the number of students in PPP model school.**

   a)  180
   b)  200
   c)  600
   d)  400

**Q.53) Solution (c)**

**Explanation:**

Let the number of students in PPP model school be x.

Then, Income from PPP model school = Rs. 12000x                    ...........(i)

Number of students in private model school = 160

So, Income from private model school = Rs. 50000 × 160            .......(ii)

When they merge together, total Income = 20000 (160 + x)          ......(iii)

From equations i, ii & iii we get:

12000x + 50000 × 160 = 20000 × 160 + 20000x

Or 50000 × 160 – 20000 × 160 = 20000x – 12000x

Or 30000 × 160 = 8000x

Or x = (30000 × 160)/8000 = 600

Therefore, the number of students in PPP model school is 600.

Hence, option (c) is the correct answer.

**Q.54) A competitive exam has 20 questions with four options each. What is the number of ways in which a student can attempt these questions, if he also has an option to leave any question unanswered?**

a) $4^{20}$
b) $5^{20}$
c) $4^{20} - 1$
d) $5^{20} - 1$

**Q.54) Solution (b)**

**Explanation:**

Each question can be answered in five ways, i.e. each of the four options and option to not attempt the question.

So, Number of ways of attempting each question = 5

And so, total number of ways of attempting 20 questions = $5^{20}$

Hence, option (b) is correct.

**Q.55) Two trains moving towards each other cross one another in 15 seconds. If both of them move in the same direction, one will cross the other in 25 seconds. If both are of the same length, find the ratio of the speed of the faster train to the slower train.**

a) 5 : 2
b) 4 : 3
c) 5 : 1
d) 4 : 1

**Q.55) Solution (d)**

**Explanation:**

Let the length of the two trains be 'L', and the speed of the two trains be S1 and S2 (S1 > S2), then,

Relative speed when they move towards each other = S1 + S2

Relative speed when they are moving in the same direction = S1 – S2

Time taken by two trains to cross each other when they move towards each other = Sum of the lengths of the two trains/Relative speed = $(L + L)/(S1 + S2) = 2L/(S1 + S2)$

Or $15 = 2L/(S1 + S2)$

Or $2L = 15 \times (S1 + S2)$     ----(1)

Time taken by one train to cross the other when they are moving in the same direction = Sum of the lengths of the two trains/Relative speed = $(L + L)/(S1 – S2) = 2L/(S1 – S2)$

Or $25 = 2L/(S1 – S2)$

Or $2L = 25 \times (S1 – S2)$     ----(2)

Equating (1) and (2), we get:

$15 \times (S1 + S2) = 25 \times (S1 – S2)$

$\Rightarrow 3S1 + 3S2 = 5S1 – 5S2$

$\Rightarrow 8S2 = 2S1$

$\Rightarrow 4S2 = S1$

$\Rightarrow S1/S2 = 4$

∴ The ratio of the speed of the faster train to the slower train is 4 : 1.

Hence, option (d) is correct.

## Passage

Wildfires are predicted to worsen in the coming years and decades, the United Nations Environment Programme (UNEP) has warned in its annual Frontiers report released February 17, 2022. Wildfires are a natural phenomenon, but are becoming more dangerous and affecting larger areas. The UN report has attributed this to climate change and human activities. "The trends towards more dangerous fireweather conditions are likely to increase due to rising concentrations of atmospheric greenhouse gases and the attendant escalation of wildfire risk factors," Inger Andersen, executive director, UNEP, said in her foreword. Such extreme events are disastrous for human health and the environment, the report warned. The document has been released 10 days ahead of the UN Environment Assembly. There has been a rapid expansion of cities towards forest areas in many regions in recent decades. This wildland-urban interface is the area where wildfire risks are most pronounced, the report said, citing rising fires in California, United States.

**Q.56) Which one of the following statements best implies the crux of the passage?**

a) Wildfires occur due to climate change.
b) The rising concentrations of green-house gases will intensify the wildfires, whose geo-spatial pattern and consequences are worth serious attention, especially at wildland-urban interface.
c) Human health is at risk due to wildfires.
d) Wildfires are highly conspicuous at the wildland-urban interface

**Q.56) Solution (b)**

**Statement Analysis:**

***Statement (a) is incorrect.*** According to the passage, wildfires are a natural phenomenon. They may be caused even without climate change. Human activities and climate change have increased their scale and intensity. Even if the statement is partially correct on its own, it is not the best implied crux of the passage.

***Statement (b) is correct.*** The entire passage is based on the occurrence and the reasons for intensification of the wildfires. The passage mentions that greenhouse gas emission will intensify the occurrence of wildfires. The greenhouse gases emitted by human activity are responsible for climate change, which in turn is responsible for intensification of wildfires. Furthermore, their adverse consequences and relatively high intensity in wildland-urban interface should be carefully studied to minimise the damages. Hence, it is a correct option.

***Statement (c) is incorrect.*** The passage mentions that such events are harmful and disastrous for human health and the environment. It is a correct statement but cannot be the crux of the entire passage.

***Statement (d) is incorrect.*** According to the passage, the place where an intersection of urban areas and wild land occurs, are the areas where risk of wildfire is very noticeable. It is a correct statement but does not reflect the crux of the passage.

**Q.57) If x959y is divisible by 44 and y > 5, then what are the values of digits x and y?**

a) x =7, y = 6
b) x = 4, y = 8
c) x = 6, y = 7
d) x = 2, y = 9

**Q.57) Solution (a)**

**Explanation:**

A Given number: x959y

Here, 44 = 11 × 4

∴ The number must be divisible by 4 and 11 respectively.

Divisibility test of 4 says that 9y must be divisible by 4 and since y > 5, so y = 6

Again x9596 is divisible by 11, so:  x + 5 + 6 = 9 + 9 ⮕ x = 7 Thus x = 7, y = 6 Hence, option (a) is correct.

**Q.58) Eleven books, consisting of five Engineering books, four Mathematics books and two Physics books, are arranged in a shelf at random. What is the probability that the books of each kind are all together?**

   a)  5/1155
   b)  2/1155
   c)  3/1155
   d)  1/1155

**Q.58) Solution (d)**

**Explanation:**

(5! X 4! X 2! X 3!) / 11!

= 24 x 2 x 6 / 11 x 10 x 9 x 8 x 7 x 6

= 1/1155

**Q.59) Three natural numbers X, Y, Z are prime numbers less than 20 are in arithmetic progression. If X > Y > Z, then how many possible values can we get for X + Y + Z?**

   a)  4
   b)  6
   c)  3
   d)  8

**Q.59) Solution (a)**

**Explanation:**

X, Y, Z are in A.P. Let the common difference between them is d then following cases are possible.

Case 1: When d = 1, no triplet possible.

Case 2: When d= 2, possible triplet is (3, 5, 7). Sum = 15

Case 3: When d= 3, no triplet possible.

Case 4: When d= 4, possible triplet is (3, 7, 11).

Sum = 21

Case 5: When d= 5, no triplet possible.

Case 6: When d = 6, possible triplet is (5, 11, 17),

(7, 13, 19).

Sum = 33, 39

Case 7: When d= 7, no triplet possible.

Case 8: When d= 8, possible triplet is (3, 11, 19).

Sum = 33

For d > 8 no triplet possible. Hence, we see that the possible sums for X, Y and Z are 15, 21,

33 & 39

respectively.

Hence, a total of 4 possibilities.


**Q.60) In the basement of an apartment, the total number of wheels of all cars and bikes is 70 more than twice the number of parked vehicles. The number of cars parked in the basement is:**

    a)  35
    b)  70
    c)  20
    d)  25


**Q.60) Solution (a)**

**Explanation:**

Let the total number of cars and bikes parked in the basement be 'a' and 'b' respectively.

As we know that a car and a bike have four and two wheels respectively.

Therefore, total number of wheels = 4a + 2b

Also, it is given that the total number of wheels is 70 more than twice the number of parked

vehicles.

Accordingly,

4a + 2b = 2(a + b) + 70

On simplifying we get,  a = 35.

Hence, option (a) is the correct answer.

**Passage**

Due to the unconventional manufacturing of IoT devices and the vast amount of data they handle, there's a constant threat of cyber-attacks. Several high-profile incidents where a common IoT device was used to infiltrate and attack the larger network have drawn attention to the need for IoT security. The ever-looming possibility of vulnerabilities, data breaches and other risks associated with IoT device usage underscores the urgent need for strong IoT security. IoT security is vital for enterprises, as it includes a wide range of techniques, strategies, protocols, and actions that aim to mitigate the increasing IoT vulnerabilities of modern businesses. For those deploying IoT systems, hardware security and authentication are critical measures.

**Q.61) Based on the above passage, the following assumptions have been made:**

Unsecured IoT devices could have economic implications.
One of the ways to secure IoT devices is to enhance their data-handling capacities.

**Which of the above assumptions is/are valid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.61) Solution (a)**

**Explanation:**

**Assumption 1 is correct:** The given assumption is based on the lines "***IoT security is vital for enterprises, as it includes*** *a wide range of techniques, strategies, protocols, and actions that* ***aim to mitigate the increasing IoT vulnerabilities of modern businesses***." These lines show that if IoT is not secured then it may make modern businesses vulnerable to cyber-attacks which can have serious economic implications. Hence, this assumption is correct as per the passage.

**Assumption 2 is incorrect:** The given assumption is based on the lines "*Due to the unconventional manufacturing of IoT devices and the* ***vast amount of data they handle, there's a constant threat of cyber-attacks.***" These lines show that IoT is under constant threat due to unconventional manufacturing of IOT devices, and the huge data they handle. This does not mean that their data handling capacities are not good. So, to assume that enhancing data handling capacities is a way to secure IoTs is not correct as per the passage.

**Q.62) Which one of the following statements *best reflects the most critical inference* that can be made from the passage given above?**

a) In light of cyber-attacks, IoT manufacturing and security cannot be taken lightly.

b) India is not yet fully ready to adopt IoTs, given the imminent security challenges.
c) While the IoT is the future, it is unsafe.
d) Implementation of IoT is not easy.

**Q.62) Solution (a)**

**Explanation:**

**Option (a) is correct:** The given option is based on the following lines "***Due to the unconventional manufacturing of IoT devices** and the vast amount of data they handle, there's a constant threat of cyber-attacks"* and "*IoT security is vital for enterprises, as it includes a wide range of techniques, strategies, protocols, and actions that aim to mitigate the **increasing IoT vulnerabilities of modern businesses**. For those deploying IoT systems, hardware security and authentication are critical measures.*" It shows that IoT needs to be secured considering its vulnerability to cyber-attacks. Also, they are vulnerable due to their large scale manufacturing and the concomitant impact on modern businesses. Hence, their security is crucial and must be taken seriously. So, it is the most rational inference of the passage.

**Option (b) is incorrect:** This option mentions India, which is not discussed in the passage. So, this option is beyond the scope of the passage.

**Option (c) is incorrect**: The given option seems to be correct, but it is not because the passage is not pessimistic about the future based on IoT. The author just lays down the challenges associated with this technology. So, this option is not the best rational inference.

**Option (d) is incorrect:** The given option is about the implementation of IoT being easy. However, the passage is about security challenges in the context of IoT. Whether the implementation of IoT is easy or not is not discussed in the passage. This option statement is very general in nature, while the passage is very much focused on the security aspect of IoTs. Hence, this option is not the most rational inference of the passage.

**Q.63) Working together, Rudra and Ananya can complete a piece of work in 24 days. Ananya and Chetan can complete the same work in 40 days, while Rudra and Chetan can complete it in 30 days. Find the number of days in which each of them can complete the same work while working alone?**

a) 120, 40, 80
b) 120, 60, 80
c) 40, 60, 80
d) None of these

**Q.63) Solution (d)**

**Explanation**

Let Rudra, Ananya and Chetan be R, A and C respectively.

| Person | Days | Efficiency | Total work |
|--------|------|-----------|-----------|
| R + A | 24 | 5 | |
| A + C | 40 | 3 | 120 |
| R + C | 30 | 4 | |

So, Efficiency-wise, 2(A+R+C) = 5 + 3 + 4 = 12
Or (A+R+C) = 6
C = (A+R+C) – (R + A) = 6 – 5 = 1
R = (A+R+C) – (A + C) = 6 – 3 = 3
A = (A+R+C) – (C + R) = 6 – 4 = 2
So, the number of days in which Rudra can complete the same work = 120/3 = 40 days
Similarly, the number of days in which Ananya can complete the same work = 120/2 = 60 days
Similarly, the number of days in which Chetan can complete the same work = 120/1 = 120 days
Hence, it is clear that option (d) is the right answer.


**Q.64) Upon observing the water shortage in the village, the Gram Pradhan, Babu Bhaiya, constructed a water tank capable of holding enough water for the entire village for 50 days. It was filled till the brim. However, a sudden discovery was made that there was a leak at the bottom of the tank, resulting in the drainage of 20,000 liters of water daily. Due to this leak, the water supply lasted only 40 days for the entire village. If Ramvilas, a local iron-smith of the village, would have partially plugged the leak the very first day, allowing only 5,000 liters of water to be drained per day, on which day had the tank got emptied?**

- a) 42<sup>th</sup> day
- b) 44<sup>th</sup> day
- c) 48<sup>th</sup> day
- d) Can't be determined

**Q.64) Solution (c)**

**Explanation**

These are consecutive terms of an AP. Mean of first 5 such numbers will be third such number, which is given to be as 39.
Hence, the series is: 33, 36, 39, 42, 45, 48, 51, 54, 57 and so on.
Now, mean of all the thirteen numbers = {[(13 -1)/2] + l} th term= 7th term from the start, i.e. 51. Hence, option (c) is the right answer.

**Q.65) Examine the following two figures in which the numbers follow a specific pattern.**

| 35 | 24 | 17 | 39 |

( 22 )                    ( ? )

| 48 | 15 | 19 | 22 |
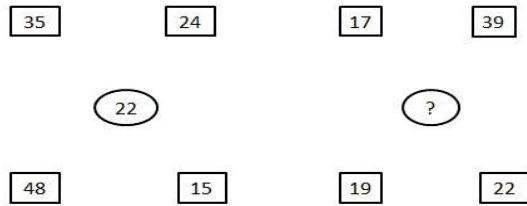
What is the missing number in the second figure?

a) 28
b) 19
c) 15
d) 23

**Q.65) Solution (b)**

**Explanation**

In 1st figure: (48 + 24) – (35 + 15) = 22
Similarly in 2nd figure: (39 + 19) – (22 + 17) = 58 – 39 = 19 (Required missing number) Hence, option (b) is the right answer.

**Passage**

The Arctic Ocean, a critical component of the Earth's climate system, is witnessing unprecedented change due to the accelerated melting of ice. This dramatic shift profoundly impacts polar bears, iconic symbols of the region, as their primary habitat, sea ice, diminishes. Melting ice forces polar bears to travel longer distances in search of food, increasing their vulnerability. Conservation efforts, sustainable policies, and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations.

**Q.66) Which one of the following is the most logical and rational inference that can be made from the above passage?**

a) In the wake of climate change, polar bears can be shifted to other oceans for their survival.
b) Climate change policies for the Arctic Ocean need to keep polar bears in focus.
c) Reversing climate change is the only way to protect the polar bears from extinction.
d) The polar bear is the keystone species of the Arctic Ocean affected by climate change.

**Q.66) Solution (b)**

**Statement analysis:**

**Option (a) is incorrect:** The context of polar bears being shifted to other oceans is not a part of the passage. The passage is about climate change and its impact on polar bears. So, this option is beyond the scope of the passage.

**Option (b) is correct:** The passage conveys that climate change has impacted polar bears and even threatened their survival. So, any policy for the Arctic Ocean must keep polar bears in focus. The lines "Conservation efforts, sustainable policies, and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations" also carry the same essence. So, this is the most logical inference from the passage.

**Option (c) is incorrect:** The passage does not mention reversing climate change as the 'only' way to protect polar bears. It only mentions mitigation of climate change for the survival of polar bears in the lines "Conservation efforts, sustainable policies, and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations." Hence, this option is beyond the scope of the passage.

**Option (d) is incorrect:** The passage is about polar bears and the impact of climate change on them. The passage does not mention that polar bears are keystone species. Therefore, this option is not correct.

### Passage

Democracy, a cornerstone of political systems, thrives when accompanied by political maturity among citizens. A politically mature populace actively engages in informed discourse, values the diversity of opinion, and understands the nuances of governance. However, challenges arise when political maturity falters, leading to conflicts within democratic frameworks. Misinformation, polarization, and intolerance can jeopardize the democratic spirit, fuelling internal strife. Striking a balance between individual rights and collective responsibility becomes paramount for the sustenance of a robust democracy. Political maturity acts as a stabilizing force, fostering constructive dialogue and conflict resolution, ensuring that democratic ideals withstand internal tensions and external pressures, and allowing nations to navigate challenges.

**Q.67) Which one of the following is best implied by the passage?**

a) Political maturity plays a vital role in deciding the strength of a democratic nation.
b) A mature democracy consists of a biologically mature population.

c) Democracy is 'for the people,' so, individual rights are more important than collective responsibility.
d) Democracy is not only about dialogue and diversity, but also about political maturity.

**Q.67) Solution (a)**

**Statement analysis:**

**Option (a) is correct:** The option captures the main theme of the passage, which is the role of political maturity in strengthening democracy. It is visible in the lines "Democracy, a cornerstone of political systems, thrives when accompanied by political maturity among citizens … Political maturity acts as a stabilizing force, fostering constructive dialogue and conflict resolution, ensuring that democratic ideals withstand internal tensions and external pressures, and allowing nations to navigate challenges." These lines reflect that political maturity plays an important role in strengthening democracy. Hence, this is the correct and best answer.

**Option (b) is incorrect:** The option is not correct because it states that a mature democracy consists of a "biologically mature population" instead of saying a "politically mature population". The central theme of the passage focusses upon the role of political maturity in making democracy stronger. So, this option is not the correct answer.

**Option (c) is incorrect:** Refer to the lines "Striking a balance between individual rights and collective responsibility becomes paramount for the sustenance of a robust democracy." The author clearly talks about balancing individual rights and collective responsibility. A democracy might become chaotic if there is no balance between individual rights and collective responsibility. Hence, this option is not the correct answer.

**Option (d) is incorrect**: The central theme of the passage is political maturity and its significance for strengthening democracy. However, the option talks about the elements of democracy, which is neither the main idea of the passage, nor is covered in the passage per se. Hence, this answer option is incorrect.

**Q.68) A and B are two workers. B needs 20% more time to finish a job than A does. Together they can finish a job in 9 days. A works alone till 30% of the job is done, then A and B work together for two days, and thereafter B works alone to complete the remaining 33.33% of the job. In how many days can B alone finish the entire job?**

a) 12 days
b) 16 days
c) 14 days
d) 18 days

**Q.68) Solution (a)**

**Explanation:**

30% of the work is done by A alone. It means A did 3/10 unit of work alone.

33.33% of the work is done by B alone. It means B did 1/3 unit of work alone.

Portion of work done by A and B together in 2 days = [1 – {(3/10) + (1/3)}

= 1 – (19/30) = 11/30

So, the portion of work done by A and B together in 1 day = 11/60

It is given that B takes 20% more time than A. Let A completes a work in x days. Then B will
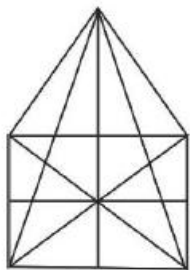
complete the same work in 1.2x days.

So, (1/x) + (1/1.2x) = 11/60
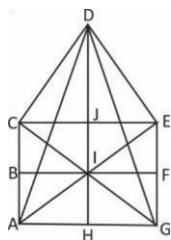
Or (1/x) + (5/6x) = 11/60

Or (11/6x) = 11/60

Or x = 10 days

B can complete the work in 1.2x days, i.e. 1.2 × 10 = 12 days So, option (a) is the correct answer.

**Q.69) What is the number of straight lines in the following figure?**



    a)  10
    b)  12
    c)  13
    d)  17

**Q.69) Solution (b)**

**Explanation:**

The figure:

There are 3 horizontal lines, namely AG, BF, and CE.

There are 3 vertical lines, namely AC, HD, and GE.

There are 6 slant lines, namely AD, AE, GC, GD, CD, and ED.

Thus, there are 3 + 3 + 6 = 12 straight lines in all.

Hence, option (b) is the right answer.

**Q.70) There are six sections in a class, and they have planned to visit a zoo. The number of students in the sections is 160, 224, 96, 128, 192, and 64, respectively. They need to be seated in buses with equal seating capacity. What is the minimum number of buses required, given that any given bus can have students of only one section?**

a)   25
b)   27
c)   32
d)   29

**Q.70) Solution (b)**

**Explanation:**

HCF of 160, 224, 96, 128, 192 and 64 = 32

So, minimum number of buses required = (160 + 224 + 96 + 128 + 192 + 64)/32 = 864/32 = 27
Hence, option (b) is the correct answer.

**Passage**

There are thousands of legislative bodies in India, ranging from the panchayat, block panchayat, zila parishad, municipal corporations to State legislatures and Union Parliament at the national level. Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level. Parliament and State legislative secretariats recruit their pool of bureaucrats separately. Ensuring competent and robust legislative institutions demands having qualified and well-trained staff in place. The growth of modern government and expansion of governmental activities require a matching

development and laborious legislative exercise. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to Union Parliament.

**Q.71) With reference to the above passage, which of the following is/are the most rational and practical implication/implications?**

5. There is an urgent need for a decentralized system of recruitment and training keeping in mind the local needs and aspirations.
6. There is an urgent need for all the Indian legislative services to fulfill the mandate of maximum governance from local bodies to the Parliamentary level.
7. Indian governance architecture is mired with red-tapism and cumbersome processes which at times creates hindrances to development and growth prospects.
8. Strengthening the legislative institutions by common public recruiting agencies will ensure effective policy making.

**Select the correct answer using the code given below.**

e) 1 and 3 only
f) 2 and 4 only
g) 2 only
h) 2, 3 and 4 only
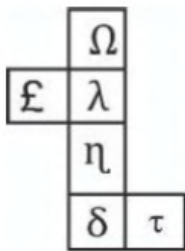
**Q.71) Solution (b)**

**Explanation:**

Statement (1) is incorrect. The passage mentions, "Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level". Also "A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So, the passage mentions that it is not a decentralized system of recruitment and training, but a common system of public recruiting and training agency at the national level that is needed for competent and robust legislative institutions and their functioning. Hence, this answer option is incorrect.

Statement (2) is correct. It is given in the passage, "The growth of modern government and expansion of governmental activities require a matching development and laborious legislative exercise. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So it can be implied that there is a need for all-India legislative services that will fulfill the mandate of maximum governance from local bodies to Parliament level. These arguments are aptly captured in this answer option.

Statement (3) is incorrect. The passage is advocating for a common public recruiting and training agency at the national level. It is also mentioned that a qualified and well-trained staff will ensure a competent and robust legislative institution. But there is nothing mentioned about 'red-tapism' and cumbersome processes'. So, this statement is incorrect.

Statement (4) is correct. The passage mentions "Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level. Ensuring competent and robust legislative institutions demands having qualified and well-trained staff in place. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So, it can be implied that enhancing governmental activities necessitates strengthening the legislative institutions by common public recruiting agencies. And from the phrase "to serve" it can be inferred that they will ensure effective policy making. So, this statement is correct.

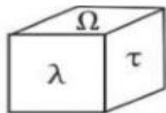**Q.72) Consider the following figure of an unfolded dice:**



**Which of the following dice is identical to the unfolded dice shown above?**

(a)
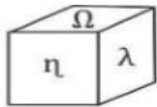


(b)



(c)
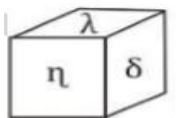


(d)

**Q.72) Solution (b)**

**Explanation:**

In this series 1st term consists of 4 consonants, 2nd term consists of 3 consonants, 3rd term consists of 4 consonants, 4th term consists of 3 consonants and 5th term consists of 4 consonants.
Hence, the missing term will consist of 3 consonants. "Apple" consists of 3 consonants.
Hence, option (b) is correct.


**Q.73) A student was asked to complete the following square where the sum of the numbers in each row and in each diagonal is the same.**

| 2 | x | 6 |
|---|---|---|
| 1 | 5 | y |
| 4 |   | 8 |

**What is the sum x + y?**

   a) 16
   b) 12
   c) 18
   d) 10


**Q.73) Solution (b)**

**Explanation:**

We can draw the following Venn diagrams based on the information provided in the question.



Using the diagrams given above we can visualize that only II follows.

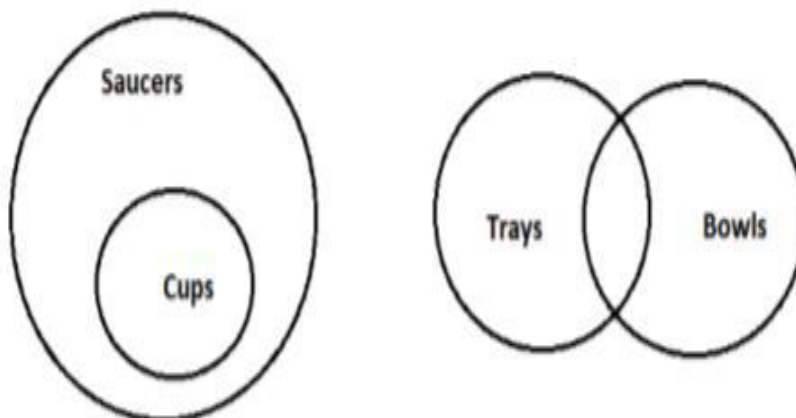**Q.74) Santram bought two horses from the market for carrying goods. Efficiency of the first horse is thrice the second one, and it can finish a particular work in 3 hours less time than the time taken by the second horse. If both of them work together, they can finish the same work in–**

a) 1 hour
b) 7/8 hours
c) 9/8 hours
d) Can't be determined

**Q.74) Solution (b)**

**Explanation:**

Option (a) is incorrect. The passage does not mention anything about newer methods of Urban agriculture. Therefore, this option is not the central idea of the passage.

Option (b) is correct. The lines "For all the bucolic if not romanticized portrayals of farming and a rural lifestyle, it is a thankless, risky, and even back-breaking job, especially as undertaken by the masses, which is subsistence agriculture... Younger generations do not want to follow their parents" footsteps, which pushes urbanization.". It reflects that agriculture needs incentivization. Hence, this best reflects the central idea of the passage.

Option (c) is incorrect. The line "One bad yield, whether due to errant rains, pests, etc., and most farmers have no buffer available". This line does not present any specific cause for loss of yield. It just mentions the consequences. Hence this is not the central idea of the passage.

Option (d) is incorrect. The lines "Younger generations do not want to follow their parents" footsteps, which pushes urbanization". These lines talk only about migration and not about job creation. So, this statement is not the central idea of the passage. Also, the use of the word „must" makes it rather extreme.

**Q.75) There is a 7-digit telephone number with all different digits. If the digit at extreme right and extreme left are 5 and 6 respectively, find how many such telephone numbers are possible.**

a) 120
b) 1,00,000
c) 6720
d) None of these

**Q.75) Solution (a)**

**Explanation:**

The last 3 digits of the number would determine the remainder when it is divided by 8. The number upto the 120ᵗʰ digit would be 1234567891011… 646. 646 divided by 8 gives us a remainder of 6.

**Passage**

The caste system in India is a division of society into strata, influenced by the classic Aryan Verna's of north India, and Dravida Jati system found in south India. Caste is a form of social stratification characterized by endogamy and hereditary transmission of a lifestyle, which often includes occupational and ritual states in a hierarchy and customary social interaction.

**Q.76) What is the most important message conveyed by the passage above?**

- e) The caste system is still widely prevalent in India
- f) The caste system is practices uniformly across various regions in India
- g) The caste system is a hierarchical classification and tends to persist over generations
- h) The caste system is an institutionalized mechanism of discrimination

**Q.76) Solution (c)**

**Explanation:**

The author opines that 'Caste is a form of social stratification characterized by endogamy and hereditary transmission of a lifestyle.'

**Q.77) If the letters of the word 'DOLPHIN' are arranged as they appear in the English alphabetical order, which of the following letters will be the 5th from left?**

- a) O
- b) D
- c) I
- d) None of these

**Q.77) Solution (d)**

**Explanation:**

Original word, D O L P H I N

New arrangement, D H I L N O P

1 2 3 4 5 From left
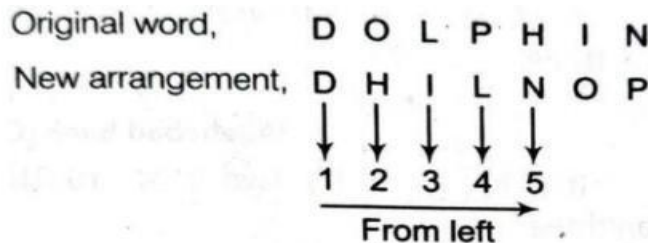
**Q.78) Two statements S1 and S2 are given below followed by a question.**

**S1:** X + Y = 6
**S2:** X + 2K = 15, Y + K = 10

**Question:  Is X greater than Y?**

a) S1 alone is sufficient to answer the Question.
b) S2 alone is sufficient to answer the Question.
c) S1 and S2 together are sufficient to answer the Question, but neither S1 alone nor S2 alone is sufficient to answer the Question.
d) S1 and S2 together are not sufficient to answer the Question.

**Q.78) Solution (c)**

**Explanation:**

In S1 there is one equation and two variables, so we won't be able to solve.
 In S2 there are two equations and three variables, so we won't be able to solve.
Hence, to determine whether X > Y or not, we would need help of both the statements.
Hence, we can say that S1 and S2 together are sufficient to answer the question.
Hence, option (c) is the correct answer.

**Passage**

Before examining the determinants of food security, understanding several concepts associated with the definition of food security is necessary. This is because many developing countries continue to suffer from chronic food insecurity and high levels of malnutrition, and they are under constant threats of hunger caused by economic crises and natural disasters. Designing policies and programs to improve nutritional status requires an understanding of the factors that cause malnutrition, knowledge of the pathways in which these factors affect

vulnerable groups and households, and an awareness of policy options available to reduce the impact of these factors on hunger and malnutrition.

**Q.79) Which one of the following statements best implies the suggestion given by the author of the passage?**

a) Before designing any policy for malnutrition, it is important to understand its root cause.
b) India suffers from ineffective policy implementation for dealing with nutritional hunger.
c) Developing countries should adopt policies of the developed world to solve the issue of food insecurity.
d) Mere policy will not be enough; adequate funds must also be allocated for addressing hunger.

**Q.79) Solution (a)**

**Explanation:**

Option (a) is correct. The lines "Designing policies and programs to improve nutritional status requires an understanding of the factors that cause malnutrition, knowledge of the pathways in which these factors affect vulnerable groups and households, and an awareness of policy options available to reduce the impact of these factors on hunger and malnutrition", reflect that it is important to design policies based on an understanding of the various factors causing malnutrition.

Option (b) is incorrect. This statement in general is true. However, the context of the passage is not about India. The passage is about developing countries in a broader context, their issues of hunger and malnutrition and the importance of policies for addressing those issues.

Option (c) is incorrect. This option is not covered directly or indirectly. The passage does not mention policies of the developed world related to hunger and whether they could be adopted in developing countries. So, to assume that adoption should be done without any context in the passage will not be correct.

Option (d) is incorrect. This option is beyond the scope of the passage. There is no discussion on the aspect of funding for hunger in the passage.

**Q.80) How many two-digit numbers have the first digit smaller than the second digit?**

a) 37
b) 38
c) 36
d) 35

**Q.80) Solution (c)**

**Explanation:**

12 to 19 -- > 8
23 to 29 -- > 7
34 to 39 -- > 6
45 to 49 -- > 5
56 to 59 -- > 4
67 to 69 -- > 3
78 to 79 -- > 2
89 to 89-- > 1
90 to 99 --> 0
Total = 36

**Passage**

While national income provides useful information on the structure and performance of the economy, people mistakenly use it as a proxy for human welfare and sustainability. Economic performance and improved well-being depend on more than growth in income and GDP. Inclusive wealth includes a holistic assessment of produced capital (manufacturing output or GDP), human capital and natural capital within a country. It is a multipurpose indicator capable of measuring not only traditional stocks of wealth but also those less tangible and unseen— such as educational levels, skill sets, health care, as well as environmental assets and the functioning of key ecosystem services that form the backbone of human well-being and ultimately set the parameters for sustainable development.

**Q.81) Which of the following statements best reflects the logical inference from the passage given above?**

a) GDP represents the quantitative aspect of growth, while the human and natural capital reflects the qualitative aspect.
b) Governments should not consider GDP as a parameter for growth.
c) Development is meaningless without improvement in natural capital.
d) Not only the economic, but human and natural capital should also be the parameters of growth and development.

**Q.81) Solution (d)**

**Explanation:**

**Option (a) is incorrect:** Though true, this is not the main inference of the passage. The passage reflects how economic capital and natural and human capital are important for growth, and so all of them should be taken in account to measure and achieve sustainable development.

**Option (b) is incorrect**: The passage does not include the context of the role of government per se. It only mentions that GDP has certain limitations, but that does not mean giving up GDP completely as suggested in the option. So, this option is not the logical inference from the passage.

**Option (c) is incorrect**: Though true, this statement covers only a part of the argument presented in the passage.

**Option (d) is correct:** The following lines in the passage - "*It is a multipurpose indicator capable of measuring **not only traditional stocks of wealth** but also those less tangible and unseen—such as **educational levels, skill sets, health care, as well as environmental assets** and the functioning of key ecosystem services that form the backbone of human well-being and **ultimately set the parameters for sustainable development***", show that economic capital, human capital and natural capital determine sustainable growth/development. So, it is correct to infer that economic, human and natural capital should be the parameters of growth.

**Q.82) Find the number that should come in the white circle in the figure given below:**
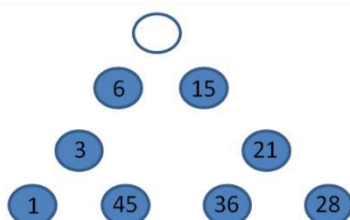


a) 10
b) 12
c) 23
d) None of the above

**Q.82) Solution (a)**

**Explanation:**

The number in the circles are given by the sum of first n natural numbers. So, Sn = n(n+1)/2
S1 = 1; S2 = 3; S3 = 6; **S4 = 10;** S5 = 15; S6 = 21; S7 = 28; S8 = 36; S9 = 45
Note: You may also solve it considering it to be a question of series, wherein the difference between the terms is continuously increasing by 1.
Hence, option (a) is the correct answer

**Q.83) There is polygon of 12 sides. How many triangles can be drawn using the vertices of that polygon?**

a) 440
b) 220
c) 1220
d) 720

**Q.83) Solution (b)**

**Explanation:**

We know that there would be 12 vertices in a polygon having 12 sides. And, to form a triangle we need just 3 vertices of the polygon.
Then, required number of triangles would be equal to the number of ways in which 3 vertices can be chosen out of 12 vertices.
∴ Required number of ways- = 12C3
= (12!)/ {3! × 9!} = 220 ways
Hence, the required number of triangles is 220.

**Q.84) Susie can buy apples from two stores: a supermarket that sells apples only in bundles of 4 and a convenience store that sells single, unbundled apples. If Susie wants to ensure that the total number of apples she buys is a multiple of 5, then what is the minimum number of apples she must buy from the convenience store?**

- a) 0
- b) 1
- c) 2
- d) 3

**Q.84) Solution (a)**

**Explanation:**

Since the supermarket sells apples in bundles of 4, we can represent the number of apples that Susie buys from the supermarket as 4x, where x can be any integer ≥ 0.
If the number of apples that Susie buys from the convenience store is simply y, the total number of apples she buys is (4x + y).
We are asked to find the smallest possible value of y such that (4x + y) can be a multiple of 5.
If y = 0, (4x + y) can still be a multiple of 5.
The value of (4×5 + 0) is 20, which is a multiple of 5. Hence, option (a) is the correct answer.

**Q.85) The ratio of a man's age and his son's age is 7: 3 and the product of their ages is 756. The ratio of their ages after 6 years will be?**

- a) 5: 2
- b) 2: 1
- c) 11: 7
- d) 13: 9

**Q.85) Solution (b)**

**Explanation:**

Let the man's age be 7x years,
Then son's age = 3x years
∴ 7x * 3x = 756
⇒ $21x^2$ = 756
⇒$x^2$ = 756
⇒$x^2$ = 36
⇒x = 6

## Passage

One of the big things that we usually try to encourage in relationship therapy, is empathy. Most people agree that they want people to feel empathy for them, their struggles, and their feelings. But is this focus on empathy as a ground zero for ethical and close relationships misguided? In a new book, The Other Side of Empathy, author Jade E. Davis argues that we should be sceptical of the recent cultural focus on empathy and its accompanying strategies and methods. One of her main arguments is that empathy often presumes that we can truly know another person, particularly the specifics of their suffering. This can "flatten" suffering by presuming how the other is truly feeling. In worst cases, this can become patronising, paternalistic, and even dismissive as it turns the other's pain into something of your own (the listener). It can make it more about you, the listener, than those who are listened to, by relating their experience to something that has happened to you.

**Q.86) Which of the following statements *best reflects the crux* of the passage?**

a) Properly understanding empathy is fundamental to solving the issues of the sufferer.
b) We as a society should be open to different interpretations of empathy and morality.
c) The understanding of empathy is not limited to only one interpretation.
d) The value of empathy is not clearly understood in the psychological world and probably will never be.

**Q.86) Solution (c)**

**Explanation:**

**Option (a) is incorrect:** The passage is about the evolving interpretations of empathy. However, this option focuses on solving the issues of the sufferer based on the understanding of empathy which is not the main theme of the passage. This context of solving issues of the sufferer is not covered in the passage. So, this does not best reflect the crux of the passage.
**Option (b) is incorrect**: The given option focuses that society must accept different interpretations of empathy which is not the core theme of the passage. The passage is about the evolving interpretations of empathy. It is nowhere indicated that society is not open to

different interpretations of empathy.  Also, the concept of morality has not been discussed in the passage. Hence, this is not the crux of the passage.

**Option (c) is correct**: The given option captures the essence of the passage which is the evolving interpretation of the term empathy. The following lines show that interpretations have evolved and are varied: "*In a new book, **The Other Side of Empathy**, author **Jade E. Davis argues that we should be sceptical of the recent cultural focus on empathy** and its accompanying strategies and methods."* These lines show that author Jade presents empathy from different perspective. So, its interpretations are not limited to only one view.

**Option (d) is incorrect:** The passage is on the evolving interpretations of empathy. To state that the concept is not understood would not be correct. The passage describes how the author has given a new interpretation of empathy. Also, to say that the value of empathy will never be understood is rather an extreme statement. So, this is not the best crux of the passage.

**Q.87) A manager was given the task to make a garden ready before a certain wedding. So, the manager appointed 30 men to complete the task in 38 days. But after 25 days he appointed 5 more men and the work got completed one day earlier. If he had not appointed additional men, then which of the following would be true?**

a) He would have been 5 days behind the deadline.
b) He would have been 2 days behind the deadline.
c) He would have been 2 days ahead of the deadline.
d) He would have been 1 day behind the deadline.

**Q.87) Solution (d)**

**Explanation:**

After 25 days, 35 men finished the remaining work in (38 – 25 – 1), i.e. 12 days.
∴ 30 men would have finished it in (12 ×35)/30, i.e. 14 days, i.e. 1 day behind the deadline. Hence, option (d) is the right answer.

**Q.88) Rohan starts driving his car from office at a speed of 50 km/hour. After 30 minutes, her colleague Rohini starts driving her car from the same office and in the same direction at a speed of 60 km/hour. In how many hours will Rohini overtake Rohan?**

a) 2.5 hours
b) 5/6 hours
c) 3.5 hours
d) 5/4 hours

**Q.88) Solution (a)**

**Explanation:**

Distance covered by Rohan in 30 minutes = 50 × (30/60) = 25 km Time taken by Rohini to overtake Rohan = 25/(60 - 50) = 2.5 hours  Hence, option (a) is the right answer.

**Q.89) The following sequence is generated by dividing 75 by consecutive natural numbers: 0, 1, 0, 3, 0, 3, x, 3, …**
**What is x?**

    a) 3
    b) 2
    c) 1
    d) 5

**Q.89) Solution (d)**

**Explanation:**

On dividing 75 by consecutive natural numbers (starting from 1), the sequence of remainders will be:
75 ÷ 1 → Remainder = 0
75 ÷ 2 → Remainder = 1
75 ÷ 3 → Remainder = 0
75 ÷ 4 → Remainder = 3
75 ÷ 5 → Remainder = 0
75 ÷ 6 → Remainder = 3
75 ÷ 7 → Remainder = 5
75 ÷ 8 → Remainder = 3

**Q.90) Find the missing number in the following matrix.**

| 96 | 48 | 6 |
|----|----|----|
| 48 | 12 | 12 |
| 72 | ? | 12 |

    a) 18
    b) 6
    c) 4
    d) 16

**Q.90) Solution (a)**

**Explanation:**

In each row, 2nd element = (1st element/3rd element) × 3
In 1st row,
2nd element = (96÷6) × 3 = 48
In 2nd row,
2nd element = (48÷12) × 3 = 12
In 3rd row,
2nd element = (72÷12) × 3 = 18
Hence, option (a) is the right answer.

**Passage**

Due to the unconventional manufacturing of IoT devices and the vast amount of data they handle, there's a constant threat of cyber-attacks. Several high-profile incidents where a common IoT device was used to infiltrate and attack the larger network have drawn attention to the need for IoT security. The ever-looming possibility of vulnerabilities, data breaches and other risks associated with IoT device usage underscores the urgent need for strong IoT security. IoT security is vital for enterprises, as it includes a wide range of techniques, strategies, protocols, and actions that aim to mitigate the increasing IoT vulnerabilities of modern businesses. For those deploying IoT systems, hardware security and authentication are critical measures.

**Q.91) Which one of the following statements best reflects the most critical inference that can be made from the passage given above?**

a) In light of cyber-attacks, IoT manufacturing and security cannot be taken lightly.
b) India is not yet fully ready to adopt IoTs, given the imminent security challenges.
c) While the IoT is the future, it is unsafe.
d) Implementation of IoT is not easy.

**Q.91) Solution (a)**

**Explanation:**

**Option (a) is correct:** The given option is based on the following lines "***Due to the unconventional manufacturing of IoT devices** and the vast amount of data they handle, there's a constant threat of cyber-attacks"* and "*IoT security is vital for enterprises, as it includes a wide range of techniques, strategies, protocols, and actions that aim to mitigate the **increasing IoT vulnerabilities of modern businesses**. For those deploying IoT systems, hardware security and authentication are critical measures*." It shows that IoT needs to be secured considering its vulnerability to cyber-attacks. Also, they are vulnerable due to their

large scale manufacturing and the concomitant impact on modern businesses. Hence, their security is crucial and must be taken seriously. So, it is the most rational inference of the passage.

**Option (b) is incorrect:** This option mentions India, which is not discussed in the passage. So, this option is beyond the scope of the passage.

**Option (c) is incorrect**: The given option seems to be correct, but it is not because the passage is not pessimistic about the future based on IoT. The author just lays down the challenges associated with this technology. So, this option is not the best rational inference.

**Option (d) is incorrect:** The given option is about the implementation of IoT being easy. However, the passage is about security challenges in the context of IoT. Whether the implementation of IoT is easy or not is not discussed in the passage. This option statement is very general in nature, while the passage is very much focused on the security aspect of IoTs. Hence, this option is not the most rational inference of the passage.

**Passage**

Colonialism has never been only about the relentless exploitation of resources for economic gain. Enmeshed in the project to rob and dominate through violence and force was the project to transform the knowledge and governability of the territories called "colonies" and allegedly "civilize" their populations. When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently. For, helping vulnerable people (something unobjectionable) becomes itself a site of exploitation. Such harms are an intrinsic part of how these companies operate, a natural consequence of rationality at heart. A colonial rationality now applied within both Global North and Global South that underlies their business model. As such, no ethical guidelines can ensure that social good will truly be realized through such projects of datafication.

**Q.92) Which of the following is most definitively implied by the above passage?**

a) India should be careful to protect its digital sovereignty against the growing big tech companies.
b) In the context of the history of colonization, only the form has changed, not the nature.
c) Big Tech uses big data for data colonization of the global south.
d) Big Tech companies collect data of the people to help them.

**Q.92) Solution (b)**

**Explanation:**

**Option (a) is incorrect:** The passage is not about India and how Big Tech companies are affecting India's digital sovereignty. So, this option is beyond the scope of the passage.

**Option (b) is correct:** The given statement captures the essence of the passage. The passage is about historical colonization and how the present big tech colonizes the world using data as seen in the lines *"Colonialism has never been only about the relentless exploitation of resources for economic gain. … When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently."* These lines show that only the form of colonization has changed from using violence and force to using technology, but the mindset of exploitation is the same. So, this is the best-implied meaning of the passage.

**Option (c) is incorrect**: Big Tech does data colonization as seen in the lines "***When Big Tech** and their social divisions **deploy datafication to do social good**, here, too, economic, and moral ideals feed each other but differently".* However, it is used in Global North as well as South, as seen in the lines - *"A colonial rationality now applied within both **Global North and Global South that underlies their business model**."* Moreover, the option states that big data is being used, but it is not discussed in the passage.

**Option (d) is incorrect:** Consider the lines - "*When Big Tech and their social divisions deploy datafication to do social good, here, too, economic, and moral ideals feed each other but differently. **For, helping vulnerable people (something unobjectionable) becomes itself a site of exploitation.**"* The main idea in the passage is how big tech uses data as a tool for colonization, not as a helping hand towards the people. This mindset is visible in option (b) which is the correct answer.

**Q.93) A person has three cubes of different sizes. The sides of the cubes are of length 6 inch, 8 inch and 1 inch respectively. The person melts the cubes and forms a new cube from it. What shall be the surface area of the new cube?**

a) 486 inch2
b) 496 inch2
c) 586 inch2
d) 658 inch2

**Q.93) Solution (a)**

**Explanation:**

Total volume of the 3 small cubes = $6^3 + 8^3 + 1^3$ = 216 + 512 + 1 = 729 inch$^3$

Volume of the new cube formed = Total volume of the three smaller cubes = 729 inch$^3$ Side of the new large cube = $(729)^{1/3}$ = 9 inch

Total surface area of the cube of side 9 inch = 6 × (side)$^2$ = 6 × 9 × 9 = 486 inch$^2$ Hence, option (a) is the right answer.

**Q.94) Sanjay wrote 7 letters U, P, Q, R, E, F and Mon a board. How many 4 letter words can be formed using these letters, such that at least one letter of the word is a vowel?**

    a) 720
    b) 680
    c) 830
    d) 780

**Q.94) Solution (c)**

**Explanation:**

Let the customers of A and B in 2021 be 100 each.

In 2022, A lost 10% of its customers to B, but gained 20% customers from B.

So, customers of A = 100 + 20 - 10 = 110

And customers of B = 200 – 110 = 90

Over the period from 2021 to 2022, the combined customer base of these two supermarkets increased by 40%.

So, Total customers of A and B in 2022 = 140% of 200 = 1.4 × 200 = 280

So, New customers in 2022 = 280 - 200 = 80

In 2022, the customer base of 'A' constituted 50% of the total customers for the two competitors.

So, out of 280, share of A is 50%, i.e., 50% of 280 = 140

So, new customers that choose A = 140 – 110 = 30

And new customers that choose B = 140 – 90 = 50

Out of the 80 new customers, 50 inclined towards B. Required percentage = (50/80) × 100 = 62.5% Hence, option (c) is the right answer.

**Q.95) In a row of books in a library, Ramcharitmanas's position is ninth from the left and position of Ramayan is 9th from the right. Raj accidently interchanges the positions of these two books, due to which Ramayan becomes 18th from the right. What is the new position of Ramcharitmanas from the left?**

    a) 16th
    b) 17th
    c) 18th
    d) 15th

**Q.95) Solution (c)**

**Explanation:**

Ramayan is moved from 9$^{th}$ to 18$^{th}$ position, i.e. its position increases by nine places (when seen from the right). Hence the place of Ramcharitmanas will also increase by 9 (when seen from the left). New place of Ramcharitmanas from the left = 9 + 9 = 18

Hence, option (c) is the right answer.

**Alternate Method:**

Total books in the row = Position of Ramayan from the right (after interchange) + Position of

Ramcharitmanas from the left (before interchange) - 1 = 18 + 9 - 1 = 26 New position of Ramcharitmanas from the left = 26 - 9 + 1 = 18 Hence, option (c) is the right answer.

## Passage

The Arctic Ocean, a critical component of the Earth's climate system, is witnessing unprecedented change due to the accelerated melting of ice. This dramatic shift profoundly impacts polar bears, iconic symbols of the region, as their primary habitat, sea ice, diminishes. Melting ice forces polar bears to travel longer distances in search of food, increasing their vulnerability. Conservation efforts, sustainable policies, and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations.

**Q.96) Which one of the following is the most logical and rational inference that can be made from the above passage?**

a) In the wake of climate change, polar bears can be shifted to other oceans for their survival.
b) Climate change policies for the Arctic Ocean need to keep polar bears in focus.
c) Reversing climate change is the only way to protect the polar bears from extinction.
d) The polar bear is the keystone species of the Arctic Ocean affected by climate change.

**Q.96) Solution (b)**

**Explanation**

**Option (a) is incorrect:** The context of polar bears being shifted to other oceans is not a part of the passage. The passage is about climate change and its impact on polar bears. So, this option is beyond the scope of the passage.

**Option (b) is correct**: The passage conveys that climate change has impacted polar bears and even threatened their survival. So, any policy for the Arctic Ocean must keep polar bears in

focus. The lines "***Conservation efforts, sustainable policies,*** *and international cooperation are imperative to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and **ensure the survival of polar bears, emblematic creatures of the Arctic facing an uncertain future** in the wake of climate-induced transformations"* also carry the same essence. So, this is the most logical inference from the passage.

**Option (c) is incorrect**: The passage does not mention reversing climate change as the 'only' way to protect polar bears. It only mentions mitigation of climate change for the survival of polar bears in the lines "*Conservation efforts, sustainable policies, and international cooperation are imperative **to mitigate the melting of Arctic ice, safeguard the unique ecosystem, and ensure the survival of polar bears,** emblematic creatures of the Arctic facing an uncertain future in the wake of climate-induced transformations.*" Hence, this option is beyond the scope of the passage.

**Option (d) is incorrect:** The passage is about polar bears and the impact of climate change on them. The passage does not mention that polar bears are keystone species. Therefore, this option is not correct.

## Passage

Democracy, a cornerstone of political systems, thrives when accompanied by political maturity among citizens. A politically mature populace actively engages in informed discourse, values the diversity of opinion, and understands the nuances of governance. However, challenges arise when political maturity falters, leading to conflicts within democratic frameworks. Misinformation, polarization, and intolerance can jeopardize the democratic spirit, fuelling internal strife. Striking a balance between individual rights and collective responsibility becomes paramount for the sustenance of a robust democracy. Political maturity acts as a stabilizing force, fostering constructive dialogue and conflict resolution, ensuring that democratic ideals withstand internal tensions and external pressures, and allowing nations to navigate challenges.

**Q.97) Which one of the following is best implied by the passage?**

a) Political maturity plays a vital role in deciding the strength of a democratic nation.
b) A mature democracy consists of a biologically mature population.
c) Democracy is 'for the people,' so, individual rights are more important than collective responsibility.
d) Democracy is not only about dialogue and diversity, but also about political maturity.

**Q.97) Solution (a)**

**Explanation**

**Option (a) is correct:** The option captures the main theme of the passage, which is the role of political maturity in strengthening democracy. It is visible in the lines "*Democracy, a cornerstone of political systems, thrives when **accompanied by political maturity among citizens … Political maturity acts as a stabilizing force**, fostering constructive dialogue and conflict resolution, **ensuring that democratic ideals withstand** internal tensions and external pressures, and allowing nations to navigate challenges.*" These lines reflect that political maturity plays an important role in strengthening democracy. Hence, this is the correct and best answer.

**Option (b) is incorrect**: The option is not correct because it states that a mature democracy consists of a "biologically mature population" instead of saying a "politically mature population". The central theme of the passage focusses upon the role of political maturity in making democracy stronger. So, this option is not the correct answer.

**Option (c) is incorrect**: Refer to the lines "*Striking a balance between individual rights and collective responsibility becomes paramount for the **sustenance of a robust democracy**.*" The author clearly talks about balancing individual rights and collective responsibility. A democracy might become chaotic if there is no balance between individual rights and collective responsibility. Hence, this option is not the correct answer.

**Option (d) is incorrect:** The central theme of the passage is political maturity and its significance for strengthening democracy. However, the option talks about the elements of democracy, which is neither the main idea of the passage, nor is covered in the passage per se. Hence, this answer option is incorrect.

**Q.98) A carton of biscuit has 50 packets in it. Each biscuit packet has 4 biscuit lines, with each line containing 15 biscuits. It is also known that 5% biscuits are broken in each packet. Find the total number of broken biscuits in the carton.**

  a) 200
  b) 150
  c) 60
  d) 156

**Q.98) Solution (b)**

**Explanation**

Total number of biscuits in a packet = 4 x 15 = 60

Total number of broken biscuits in a packet = 5% of 60 = 3 Total number of broken biscuits in the carton = 3 x 50 = 150 Hence, option (b) is the right answer.

**Q.99) In a party, 72% of the people ate roti (chapati) and 44% ate rice. If each person ate either roti or rice and 80 people ate both, then how many people were there in the party?**

   a) 315
   b) 500
   c) 574
   d) Can't be determined

**Q.99) Solution (b)**

**Explanation**

Let total number of people in the party be x.

Number of people who ate roti = 72x/100

Number of people who ate rice = 44x/100

Number of people who ate both = {72x/100} + {44x/100} – x

= 1.16x – x = 0.16x

According to the question,

0.16x = 80

Or x = 80/0.16

Or x = 500

So, there were 500 people in the party.

Hence, option (b) is the right answer.

**Q.100) Two statements S1 and S2 are given below followed by a question.**

   S1: Number B is 30% less than number C.
   S2: Number A is 37% less than number C.

**Question: Number A is what percent less than number B?**

Which one of the following is correct in respect of the above Statements and the Question?

   a) S1 alone is sufficient to answer the Question
   b) S2 alone is sufficient to answer the Question

c) Either S1 alone or S2 alone is sufficient to answer the Question
d) Both S1 and S2 together are sufficient to answer the Question

Q.100) Solution (d)

**Explanation**

B is 30% less than C, and A is 37% less than C.

So, A : B : C  =    63 : 70 : 100

∴ Required percentage = [(70 – 63)/70] × 100

= (7/70) × 100 = 10%

So, it is clear that both statements are required to answer the given question. Hence, option (d) is the correct answer.

**Passage**

There are thousands of legislative bodies in India, ranging from the panchayat, block panchayat, zila parishad, municipal corporations to State legislatures and Union Parliament at the national level. Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level. Parliament and State legislative secretariats recruit their pool of bureaucrats separately. Ensuring competent and robust legislative institutions demands having qualified and well-trained staff in place. The growth of modern government and expansion of governmental activities require a matching development and laborious legislative exercise. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to Union Parliament.

**Q.101) With reference to the above passage, which of the following is/are the most rational and practical implication/implications?**

1. There is an urgent need for a decentralized system of recruitment and training keeping in mind the local needs and aspirations.
2. There is an urgent need for all the Indian legislative services to fulfill the mandate of maximum governance from local bodies to the Parliamentary level.
3. Indian governance architecture is mired with red-tapism and cumbersome processes which at times creates hindrances to development and growth prospects.
4. Strengthening the legislative institutions by common public recruiting agencies will ensure effective policy making.

**Select the correct answer using the code given below.**

   a) 1 and 3 only
   b) 2 and 4 only
   c) 2 only
   d) 2, 3 and 4 only


**Q.101) Solution (b)**

**Explanation:**

Statement (1) is incorrect. The passage mentions, "Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level". Also "A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So, the passage mentions that it is not a decentralized system of recruitment and training, but a common system of public recruiting and training agency at the national level that is needed for competent and robust legislative institutions and their functioning. Hence, this answer option is incorrect.

Statement (2) is correct. It is given in the passage, "The growth of modern government and expansion of governmental activities require a matching development and laborious legislative exercise. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So it can be implied that there is a need for all-India legislative services that will fulfill the mandate of maximum governance from local bodies to Parliament level. These arguments are aptly captured in this answer option.

Statement (3) is incorrect. The passage is advocating for a common public recruiting and training agency at the national level. It is also mentioned that a qualified and well-trained staff will ensure a competent and robust legislative institution. But there is nothing mentioned about 'red-tapism' and cumbersome processes'. So, this statement is incorrect.

Statement (4) is correct. The passage mentions "Despite these mammoth law-making bodies, they lack their own common public recruiting and training agency at the national level. Ensuring competent and robust legislative institutions demands having qualified and well-trained staff in place. A common service can build a combined and experienced legislative staff cadre, enabling them to serve from across local bodies to the Union Parliament". So, it can be implied that enhancing governmental activities necessitates strengthening the legislative institutions by common public recruiting agencies. And from the phrase "to serve" it can be inferred that they will ensure effective policy making. So, this statement is correct.

**Q.102) A Statement followed by Conclusion-I and Conclusion-II is given below. You have to take the Statement to be true even if it seems to be at variance from the commonly known facts. Read all Conclusions and then decide which of the given Conclusion(s) logically follows/ follow from the Statement, disregarding the commonly known facts.**
**Statement:**
Smart cities are good but it is too expensive to manage them.

**Conclusion I:** Smart cities are less in number, so the expenses go up.
**Conclusion II:** The higher the expenses, the superior a smart city.

**Choose the correct code:**

a) Only Conclusion-I follows
b) Only Conclusion-II follows
c) Both Conclusion-I and Conclusion-II follow
d) None follows

**Q.102) Solution (d)**

**Explanation:**

None of the conclusions follows.  Hence, option (d) is the correct answer.

**Passage**

India's export surplus had become vital for the whole complex mechanism of the United Kingdom's balance of payments by the end of the nineteenth century. With the rise of tariff walls around the other developing capitalist economies in Western Europe and America, Britain was running into major problems of deficits, as she still required heavy imports of agricultural products while her manufactures found markets difficult to obtain in an increasingly protectionist world. India proved vital in two ways. The forcible maintenance in India of what Strachey described as a nearer approach to complete freedom of trade meant in practice the preservation of a captive market for Lancashire textiles. Secondly, India's constant export-surplus with countries other than Britain through massive outflows of agricultural products and raw materials counterbalanced British deficits elsewhere. Apart from military and strategic advantages, these were the solid gains from the Indian Empire for Britain as a whole.

**Q.103) Which one of the following is the most important inference that we can draw from the above passage?**

a) The steady export surplus of India compensated for British deficits abroad.
b) The entire British economy was reliant on Indian exports.
c) India provided strategic advantages to the British.
d) British Balance of Payments abnormalities were caused by protectionist measures, globally.

**Q.103) Solution (a)**

**Explanation:**

Statement (a) is correct.  The entire passage describes how export surplus of India helped the British to overcome protectionist policies elsewhere in the world. The passage mentions that through vast outflows of agricultural products and raw commodities, India's continual export surplus with other countries neutralized British deficits elsewhere. Hence, it is the correct answer.

Statement (b) is incorrect. Though the passage revolves around the argument of how Indian exports helped the British in stability of their Balance of Payments, but it is nowhere mentioned that the entire British economy was depended on Indian exports. Hence, it is not the correct answer.

Statement (c) is incorrect. According to the passage, India provided military and strategic advantages to the British, but that is not the most important point of this passage, because the focus of the passage is on British financial deficit. Hence, it is not the correct answer.

Statement (d) is incorrect. According to the passage, Britain was facing huge budget problems as a result of the building of tariff walls surrounding other emerging capitalist economies in Western Europe and America. The author restricts the domain to Western Europe and America. The word "Global" has not been used. Hence, it is not the correct answer. Moreover, the focus of the passage is on India and not just Britain.

## Passage

'Education for all' is one of the major tasks being carried out by the Indian government but still, we have the lowest female literacy rate in Asia. India is working but the pace is slow as we haven't achieved what we should have been so far. As per a report, India's country-wide female literacy rate is 70.3%, while the male literacy rate is estimated at 84.7. India's average literacy rate stands at 77.7%, according to the NSO. Women's education is critical to the

country's entire development. A well-educated woman is capable of managing her personal and professional life.

**Q.104) Based on the passage given above, the following assumptions have been made:**

1. To provide equal education to females, government should end the policy of affirmative action.
2. Women's education has seen rapid growth in the last few years but still falls behind the male literacy rate.

**Which of the above assumptions is/are valid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.104) Solution (d)**

**Explanation:**

Assumption 1 is incorrect. The given option is about affirmative action, but the passage nowhere discusses any such thing. There is a lag between male and female education as per the line, "As per a report, India's country-wide female literacy rate is 70.3%, while the male literacy rate is estimated at 84.7%". But the reason for the same is not described in the passage. Moreover, this statement seems more to be in the nature of an implication, than an assumption. Hence, this assumption is not valid.

Assumption 2 is incorrect. The passage mentions, "India is working but the pace is slow as we haven't achieved what we should have been so far. As per a report, India's country-wide female literacy rate is 70.3%, while the male literacy rate is estimated at 84.7%". This line does show that women fall behind men. However, there is no discussion with respect to rapid growth in recent years. Rather, the passage is mentioning the slow pace of women's education. So, the assumption in the statement is not valid.

**Q.105) When 876 is added to another 3-digit number 2P3, we get a four digit number 10Q9 & 10Q9 is divisible by 11 then the value of P- Q is**

a) 3
b) 7
c) 10
d) 15

**Q.105) Solution (b)**

**Explanation:**

876 + 2P3 = 10Q9,

It is clear that there is no carry over obtained in the

addition of the unit's digit, while the sum of hundredth

digit of the numbers is same as the hundredths

digit of the sum. It means 7 + P =Q.

10Q9 is divisible by 11, so (9 + 0) − (1 + Q) = 11n,

where n = 0, 1, 2, 3, 4, …..

Q = 8 & P = Q − 7 = 1.

Therefore, P − Q =7

**Q106) How many triangles can be formed from a set of 15 points where, 5 are collinear?**

    a) 120
    b) 445
    c) 455
    d) 121

**Q.106) Solution (b)**

**Explanation:**

Number of triangles = $15C_3 − 5C_3$
= 455 − 10 = 445

**Passage**

Wildfires are predicted to worsen in the coming years and decades, the United Nations Environment Programme (UNEP) has warned in its annual Frontiers report released February 17, 2022. Wildfires are a natural phenomenon, but are becoming more dangerous and affecting larger areas. The UN report has attributed this to climate change and human activities. "The trends towards more dangerous fireweather conditions are likely to increase due to rising concentrations of atmospheric greenhouse gases and the attendant escalation of wildfire risk factors," Inger Andersen, executive director, UNEP, said in her foreword. Such extreme events are disastrous for human health and the environment, the report warned. The document has been released 10 days ahead of the UN Environment Assembly. There has been

a rapid expansion of cities towards forest areas in many regions in recent decades. This wildland-urban interface is the area where wildfire risks are most pronounced, the report said, citing rising fires in California, United States.

**Q.107) Which one of the following statements best implies the crux of the passage?**

a) Wildfires occur due to climate change.
b) The rising concentrations of green-house gases will intensify the wildfires, whose geo-spatial pattern and consequences are worth serious attention, especially at wildland-urban interface.
c) Human health is at risk due to wildfires.
d) Wildfires are highly conspicuous at the wildland-urban interface

**Q.107) Solution (b)**

**Explanation:**

Statement (a) is incorrect. According to the passage, wildfires are a natural phenomenon. They may be caused even without climate change. Human activities and climate change have increased their scale and intensity. Even if the statement is partially correct on its own, it is not the best implied crux of the passage.

Statement (b) is correct. The entire passage is based on the occurrence and the reasons for intensification of the wildfires. The passage mentions that greenhouse gas emission will intensify the occurrence of wildfires. The greenhouse gases emitted by human activity are responsible for climate change, which in turn is responsible for intensification of wildfires. Furthermore, their adverse consequences and relatively high intensity in wildland-urban interface should be carefully studied to minimise the damages. Hence, it is a correct option.

Statement (c) is incorrect. The passage mentions that such events are harmful and disastrous for human health and the environment. It is a correct statement but cannot be the crux of the entire passage.

Statement (d) is incorrect. According to the passage, the place where an intersection of urban areas and wild land occurs, are the areas where risk of wildfire is very noticeable. It is a correct statement but does not reflect the crux of the passage.

**Passage**

Nuclear reactors worldwide have helped avoid the emission of 72 billion tonnes of carbon dioxide since 1970, compared to coal-fired electricity generation. Reduced electricity demand resulting from the novel coronavirus disease (COVID-19) pandemic saw generators curtail output in response.  In 2020, power generation declined in Africa, North America and in West and Central Europe. Generation rose in Asia, although by a much smaller amount than in recent years. Nuclear electricity generation will need to double between 2020 and 2050 if the world is to meet its net-zero ambitions.

**Q.108) Based on the passage given above, the following assumptions have been made:**

1. The dip in demand for electricity in Africa, North America and parts of Europe was offset by the corresponding increase in Asia.
2. Nations should not only invest in ensuring net-zero emission through nuclear power, but also in ensuring the safety of the process.

**Which of the above assumptions is/are invalid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor

**Q.108) Solution (c)**

**Explanation:**

The question is about invalid assumption – not valid ones.
Assumption 1 is an invalid assumption. Refer to the lines, "In 2020, power generation declined in Africa, North America and in West and Central Europe. Generation rose in Asia, although by a much smaller amount than in recent years". The author only says that the rise in electricity generation was less in Asia as compared to recent years. We get no indication from the passage that this rise was able to 'offset' the fall in demand in other parts of the world. So, this statement is an invalid assumption.
Assumption 2 is also invalid. The line, "Nuclear electricity generation will need to double between 2020 and 2050 if the world is to meet its net-zero ambitions", shows that nuclear power can help achieve net-zero ambition of the world, but the given option also includes the aspect of safety which has not been discussed anywhere in the passage. So, to assume that nations should invest in the safety of nuclear power generation is beyond the scope of the passage. Hence, the statement is not a valid assumption.

**Q.109) Sonu planned to renovate his house. He had Rs. 27000 budget, out of which he spent 12% on floor work, 28% on painting, and some percent on construction of boundary around the house. In the last he was left with Rs. 8100 in his hand. How much percent of the budget did he spend on construction of boundary around the house?**

a) 20%
b) 19%
c) 30%
d) 17%

**Q.109) Solution (c)**

**Explanation:**

Let us assume that he spent x percent on constructing the boundary.
Amount spent on floor work = 12×27000/100 (∵ His overall budget is Rs. 27000)
Amount spent on painting work = 28×27000/100
Amount spent on boundary construction = x × 27000/100
Left amount = Rs. 8100
According to the question,
(12×27000/100) + (28×27000/100) + (x × 27000/100) + 8100 = 27000
$\Longrightarrow$ (27000/100) (12+28+x) = 27000 - 8100
$\Longrightarrow$ (27000/100) (40+x) = 18900
$\Longrightarrow$ 40+x = (18900×100)/27000
$\Longrightarrow$ 40+x = 70
$\Longrightarrow$ x = 30, i.e. 30%
Thus, Sonu spent 30% on construction of the boundary around the house.
Hence, option (c) is the correct answer.
**Alternate Method:**
Let's calculate the percent amount left.
Amount left = (8100/27000) × 100 = 30%
Spend on painting = 28%
Spend on floor work = 12%
Let percentage amount spent on construction of boundary around the house be y%.
According to the question,
30+28+12+y = 100
Or y = 30%
Thus, Sonu spent 30% on construction of boundary around the house.
Hence, option (c) is the correct answer.

**Q.110) A competitive exam has 20 questions with four options each. What is the number of ways in which a student can attempt these questions, if he also has an option to leave any question unanswered?**

a) $4^{20}$
b) $5^{20}$
c) $4^{20}$ - 1
d) $5^{20}$ -1

**Q.110) Solution (b)**

**Explanation:**

Each question can be answered in five ways, i.e. each of the four options and option to not attempt the question.

So, Number of ways of attempting each question = 5
And so, total number of ways of attempting 20 questions = $5^{20}$
Hence, option (b) is correct.


**Passage**


While national income provides useful information on the structure and performance of the economy, people mistakenly use it as a proxy for human welfare and sustainability. Economic performance and improved well-being depend on more than growth in income and GDP. Inclusive wealth includes a holistic assessment of produced capital (manufacturing output or GDP), human capital and natural capital within a country. It is a multipurpose indicator capable of measuring not only traditional stocks of wealth but also those less tangible and unseen— such as educational levels, skill sets, health care, as well as environmental assets and the functioning of key ecosystem services that form the backbone of human well-being and ultimately set the parameters for sustainable development.

**Q1111) Which of the following statements best reflects the logical inference from the passage given above?**

   a) GDP represents the quantitative aspect of growth, while the human and natural capital reflects the qualitative aspect.
   b) Governments should not consider GDP as a parameter for growth.
   c) Development is meaningless without improvement in natural capital.
   d) Not only the economic, but human and natural capital should also be the parameters of growth and development.


**Q.111) Solution (d)**

**Statement analysis:**

**Option (a) is incorrect:** Though true, this is not the main inference of the passage. The passage reflects how economic capital and natural and human capital are important for growth, and so all of them should be taken in account to measure and achieve sustainable development.

**Option (b) is incorrect**: The passage does not include the context of the role of government per se. It only mentions that GDP has certain limitations, but that does not mean giving up GDP completely as suggested in the option. So, this option is not the logical inference from the passage.

**Option (c) is incorrect**: Though true, this statement covers only a part of the argument presented in the passage.

**Option (d) is correct:** The following lines in the passage - "*It is a multipurpose indicator capable of measuring **not only traditional stocks of wealth** but also those less tangible and unseen— such as **educational levels, skill sets, health care, as well as environmental assets** and the functioning of key ecosystem services that form the backbone of human well-being and **ultimately set the parameters for sustainable development**"*, show that economic capital,

human capital and natural capital determine sustainable growth/development. So, it is correct to infer that economic, human and natural capital should be the parameters of growth.
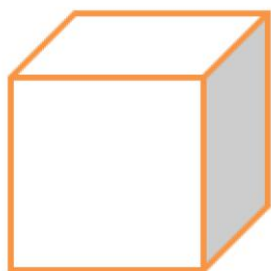
**Q.112) Four cubes each of volume 64 cm3 are joined end to end. What is the surface area of the resulting figure?**

a) 356 cm2
b) 256 cm2
c) 384 cm2
d) 288 cm2

**Q.112) Solution (d)**

**Explanation:**

Volume of the cube = $a^3$ Where, a = side of the cube.



So, $a^3 = 4^3 \Rightarrow a = 4$ cm.
So, side of the original cube = 4 cm.
When the four cubes are joined end to end, the length of the resulting figure (a cuboid) will be the sum of the lengths of all the four cubes, however the width and height will be the same as the original cube.
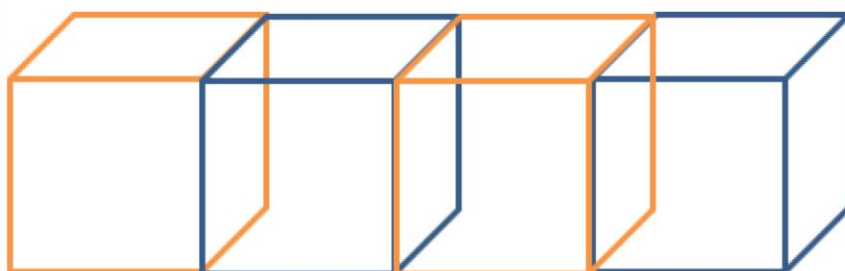


So, the total surface area = 2(lb + bh + hl),
Where l = length = 4+4+4+4 = 16 cm; b = breadth = 4 cm and h = height = 4 cm.
Hence, the total surface area = 2(16×4 + 4×4 + 4×16) = 2×144 = 288 cm$^2$.
Hence, option (d) is the correct answer.

**Q.113) Five friends received different percentages of marks in an examination. Anika scored more than Alka but less than Anjali, who scored 70% marks. Anamika scored fewer marks**

**than only Anshika. The one who scored the minimum marks secured 65%, and the one who scored the highest achieved 87%. Who scored the secondlowest marks?**

a) Alka
b) Anshika
c) Anamika
d) Anika

**Q.113) Solution (d)**

**Explanation:**

As per the question, Anjali (70%) > Anika > Alka
Now, Anamika scored fewer marks than only
Anshika.
So, Anshika > Anamika > Anjali (70%) > Anika > Alka
The one who scored the minimum marks secured 65%, and the one who scored the highest achieved 87%. Anshika (87%) > Anamika > Anjali (70%) > Anika > Alka (65%) Hence, option (d) is correct.

**Q.114) There is polygon of 12 sides. How many triangles can be drawn using the vertices of that polygon?**

a) 440
b) 220
c) 1220
d) 720

**Q.114) Solution (b)**

**Explanation:**

We know that there would be 12 vertices in a polygon having 12 sides. And, to form a triangle we need just 3 vertices of the polygon.
Then, required number of triangles would be equal to the number of ways in which 3 vertices can be chosen out of 12 vertices.
∴ Required number of ways- = 12C3
= (12!)/{3! × 9!} = 220 ways
Hence, the required number of triangles is 220.

**Q.115) A cuboid is taken and divided into two equal parts such that each part is a cube. Which of these will be definitely TRUE?**

a) The cuboid is a cube itself

b) The ratio of a pair of sides of cuboid is 1: 2
c) No two edges of cuboid are of equal length
d) A cuboid can never be divided into two identical cubes

**Q.115) Solution (b)**

**Explanation:**

Given:
The cuboid is a cube itself, and the ratio of a pair of sides of cuboid is 1 : 2.
No two edges of the cuboid are of equal length. A cuboid can never be divided into two identical cubes.
Concept to be used:
Dimensions of a cuboid and cube - a cuboid has three dimensions (length, width, height) while a cube has all three dimensions equal. If a cuboid is divided into two equal parts, each being a cube, then effectively one dimension of the cuboid must be twice the dimension of the cubes, while the remaining two dimensions are equal to the cube's dimension.
Calculation:
Statement 1 is False. A cuboid does not have to be a cube itself. It can have distinct length, breadth, and height.
Statement 2 is True. One side of the cuboid (the one that's divided) is twice the length of a side of the cube, while the other two sides are the same length as the sides of the cube.
Statement 3 is False. Two sides should be of the same length as the sides of the cube.
Statement 4 is False. If one of the dimensions of the cuboid is exactly twice the other two (which are equal), then the cuboid can be divided into two identical cubes.
∴ Only Statement 2 - "The ratio of a pair of sides of cuboid is 1 : 2" - is definitely true when a cuboid is divided into two equal parts, each part being a cube.

**Passage**

One of the big things that we usually try to encourage in relationship therapy, is empathy. Most people agree that they want people to feel empathy for them, their struggles, and their feelings. But is this focus on empathy as a ground zero for ethical and close relationships misguided? In a new book, The Other Side of Empathy, author Jade E. Davis argues that we should be sceptical of the recent cultural focus on empathy and its accompanying strategies and methods. One of her main arguments is that empathy often presumes that we can truly know another person, particularly the specifics of their suffering. This can "flatten" suffering by presuming how the other is truly feeling. In worst cases, this can become patronising, paternalistic, and even dismissive as it turns the other's pain into something of your own (the listener). It can make it more about you, the listener, than those who are listened to, by relating their experience to something that has happened to you.

**Q.116) Which of the following statements best reflects the crux of the passage?**

a) Properly understanding empathy is fundamental to solving the issues of the sufferer.
b) We as a society should be open to different interpretations of empathy and morality.

c) The understanding of empathy is not limited to only one interpretation.
d) The value of empathy is not clearly understood in the psychological world and probably will never be.

**Q.116) Solution (c)**

**Explanation**

**Option (a) is incorrect:** The passage is about the evolving interpretations of empathy. However, this option focuses on solving the issues of the sufferer based on the understanding of empathy which is not the main theme of the passage. This context of solving issues of the sufferer is not covered in the passage. So, this does not best reflect the crux of the passage.

**Option (b) is incorrect**: The given option focuses that society must accept different interpretations of empathy which is not the core theme of the passage. The passage is about the evolving interpretations of empathy. It is nowhere indicated that society is not open to different interpretations of empathy. Also, the concept of morality has not been discussed in the passage. Hence, this is not the crux of the passage.

**Option (c) is correct**: The given option captures the essence of the passage which is the evolving interpretation of the term empathy. The following lines show that interpretations have evolved and are varied: "*In a new book, **The Other Side of Empathy,** author **Jade E. Davis argues that we should be sceptical of the recent cultural focus on empathy** and its accompanying strategies and methods.*" These lines show that author Jade presents empathy from different perspective. So, its interpretations are not limited to only one view.

**Option (d) is incorrect:** The passage is on the evolving interpretations of empathy. To state that the concept is not understood would not be correct. The passage describes how the author has given a new interpretation of empathy. Also, to say that the value of empathy will never be understood is rather an extreme statement. So, this is not the best crux of the passage.

**Passage**

The present economic system is destroying our natural resources and thereby eroding the prosperity of future generations. Large-scale logging, depletion of the oceans' fish stocks and the loss of arable soil are prime examples of this development. The follow-up costs of climate change and loss of biodiversity alone could run up to one-quarter of the global gross national product by 2050. "Business as usual" in the industrialised countries' resource-intensive economies and the developing and emerging countries following suit is not a feasible course. Environmental protection and economic development are not a contradiction of terms but depend on each other. Increasing energy and material efficiency is set to become the decisive factor for international competitiveness in the 21st century. This is why a transformation to a Green Economy is necessary which operates within the so-called ecological guard rails and preserves natural resources.

**Q.117) Which of the following statements best reflects the crux of the passage?**

a) To ensure sustainability, the present concept of economic development needs to change.
b) Countries focusing on energy and material resources would lead the world in the 21st century.
c) The global race for green future markets has picked up considerable momentum in recent years.
d) None of the above

**Q.117) Solution (a)**

**Explanation**

**Option (a) is correct:** The passage is about how the current economic growth model is impacting the environment, which is not sustainable in the long term. This is visible in the lines "***The present economic system is destroying our natural resources and thereby eroding the prosperity of future generations.***" These lines show that if the current exploitation of resources is continued then it will impact the future generations, and hence there is a need to change the current model of economic development. These arguments are comprehensively captured in this answer option.

**Option (b) is incorrect**: The given option only focuses on one aspect of the passage which is the energy and material resources; environmental aspects are not discussed. Therefore, it cannot be the crux of the passage.

**Option (c) is incorrect**: The stated claim that the race for green future markets has picked up momentum is not correct because the passage does not state any such momentum. The passage only mentions that a green economy is the need of the hour. Whether or not it has picked up momentum is not covered in the passage. So, this is not the best crux of the passage.

**Q.118) A cuboidal water tank is of length 5 meter and breadth 2 meter. (7/10) part of water tank is filled with water. When we throw a stone of size 3×3×1 m3 in it, the water tank gets completely full. Determine the height of the cuboidal water tank.**

a) 2 m
b) 3 m
c) 4 m
d) 5 m

**Q.118) Solution (b)**

**Explanation**

(7/10) part of the water tank is filled with water. It means that (3/10) part of water tank is empty and when we throw a stone of size 3x3x1 $m^3$ (which is 9$m^3$) in the water tank, it gets completely full.

So, (3/10)$^{th}$ part of tank is equal to 9 $m^3$.

∴ Capacity or total volume of tank = (9x10)/3 = 30 m$^3$
Volume of cuboidal water tank = L x B x H
Or 30 = 5 x 2 x H
Or H = 30/(5x2)
Or H = 3 m
Thus, the height of the cuboidal water tank is 3 m. Hence, option (b) is the right answer.

**Q.119) In an exam 12% students scored less than 30 marks, 6% students scored more than 200 marks, 22% students scored more than 100 marks, and 990 students scored between 30 and 100 marks. How many students scored between 100 and 200 marks?**

    a)  250
    b)  240
    c)  230
    d)  225

**Q.119) Solution (b)**

**Explanation**

According to the question:
Students who scored more than 100 marks = 22%
And students who scored more than 200 = 6%
Hence, students who scored between 100 and 200 = 22 – 6 = 16%
Now, students who scored less than 30 = 12%
Students who scored between 30 and 100 = 100 – (22 + 12) = 66% = 990
So, Total number of students = 990 × (100/66) = 1500
Students who scored between 100 and 200 = 16% = (16/100) × 1500 = 240 Hence, option (b) is the right answer.

**Q.120) Price of petrol is increased by 30% by an oil company, but then due to pressure from the ruling party, it is reduced by 20%. What is the net effect on the price overall?**

    a)  Does not change
    b)  (b) Increased by 4%
    c)  Decreased by 4%
    d)  None of these

**Q.120) Solution (b)**

**Explanation**

Let the original price of petrol be Rs. x.

According to the question,

Increased price of Petrol = 130% of x = (130/100) ×(x) = 13x/10

Decreased price of Petrol = 80% of (13x/10) = (80/100) × (13x/10) = 104x/100

Increase in price of petrol = (104x/100) – x = (4x/100) Increase% = (4x/100) × (100/x) = 4%

Hence, option (b) is the right answer.

## Passage

Pointing out that tax evasion is enabling billionaires to enjoy effective tax rates equivalent to 0% to 0.5% of their wealth, the European Union Tax Observatory in its 'Global Tax Evasion Report 2024' has called for a global minimum tax on billionaires equal to 2% of their wealth. This would both address evasion and "generate nearly $250 billion from less than 3,000 individuals," the report stated. The report justified the proposal by noting that while the number of taxpayers affected by it would be miniscule, the tax rate for them (2%) "Would still be very modest" given that the wealth of billionaires has grown at 7% a year annually on average since 1995 (net of inflation). Assessing the impact of international efforts made so far to curb tax evasion, the report highlighted the success of one measure — the automatic exchange of bank information — in reducing offshore tax evasion by a factor of three over the past 10 years. The report observed that before this measure came into effect, "households owned the equivalent of 10% of world GDP in financial wealth in tax havens globally, the bulk of which was undeclared to tax authorities and belonged to high-net-worth individuals.

**Q.121) Which of the following statements best reflects the most logical and rational implication conveyed by the above passage?**

a) A minimal tax on billionaires might raise a substantial amount of money and aid in the fight against tax evasion.
b) Billionaires have enjoyed lower wealth taxes due to inadequate policy implementation and corrupt bureaucracy.
c) Tax heavens need to be scrutinized by authorities to check for tax evasion.
d) Undeclared money of billionaires is the reason why tax heavens thrive.

**Q.121) Solution (a)**

**Statement Analysis:**

**Option (a) is correct:** The passage mentions the Global Tax Evasion Report 2024 which calls for taxing billionaires globally. This would help in checking tax evasion. The passage says that ***"This would both address evasion and "generate nearly $250 billion from less than 3,000 individuals".*** This implies that the amount raised by taxing billionaires would be substantial. **Hence, option (a) is correct.**

**Option (b) is not correct:** The passage mentions tax evasion as the reason why billionaires enjoy lower tax. However, there is no mention of inadequate policy implementation or corrupt bureaucracy as a reason for lower tax rates for billionaires. **Hence, option (b) is not correct.**

**Option (c) is not correct:** The central theme of the passage is to check tax evasion by billionaires by offering lower tax rates. This would help in the collection of $250 billion from billionaires. The tax havens are mentioned in the context of the places having stored undeclared income. Scrutinizing them to check tax evasion can be one of the logical suggestions, however, the same is not mentioned in the passage. **Hence, option (c) is not correct.**

**Option (d) is not correct:** The passage mentions the need for taxing the wealth of rich individuals and that their undeclared money is stashed in tax havens. There is no direct connection established between tax havens thriving due to the undeclared money of billionaires being stored there. Moreover, tax havens are not the main focus of the passage. **Hence, option (d) is not correct.**

## Passage

Microalgae, which form the base of the food chain in the ocean and capture carbon dioxide from the atmosphere, appear to rely on a unique strategy to cope with global warming, according to a new study. The findings are published in the journal Nature Microbiology. As climate change reduces the availability of nutrients in the sea, marine microalgae or eukaryotic phytoplankton fire up a protein called rhodopsin. It is related to the protein in the human eye responsible for vision in dim light. This light-responsive protein is helping the microalgae flourish with the help of sunlight in place of traditional chlorophyll. Microbial rhodopsins, per the study, are proposed to be major light capturers in the ocean. Estimates suggested they may absorb as much light as chlorophyll-based photosynthesis in the sea, which also captures light to generate energy and food. However, their biological role in these organisms was unclear before the study. "Global warming is increasing drought on land and the same thing happens in the ocean: The warmer the surface water gets, the lower are the nutrients in these surface water layers," Thomas Mock, professor of marine microbiology in University of East Anglia's School of Environmental Sciences and the study's author, said in a statement.

**Q.122) Which one of the following statements best reflects the crux of the passage?**

a) Owing to adaptation, a phenomenon that occurs on land can also occur in water.
b) It is possible to mitigate global warming using biochemical found in nature.
c) Adaptability is the key in managing a changing environment.
d) Adaptability to a changing environment reduces productivity.

**Q.122) Solution (c)**

**Statement Analysis:**

**Option (a) is not correct:** According to the passage, the protein rhodopsin is responsible for vision in humans and microalgae use it in place of chlorophyll to survive in the oceans. The same phenomenon is not taking place in both ecosystems, even though the same biochemical is used. It can be assumed that the biochemical rhodopsin is being utilised by humans and microalgae differently and hence as far as the information in the passage is concerned, it is not the 'same' phenomenon that is occurring on land and water. Even if it was, we could not have generalized it based on just one example. **Hence, option (a) is not correct.**

**Option (b) is not correct:** The passage mentions the adaptation of the microalgae to the changing environment and how it has adapted to the effects of global warming. The passage does not talk about climate mitigation, or whether biochemical like rhodopsin may prove helpful in such a cause.

**Option (c) is correct:** Consider the line, *"As climate change reduces the availability of nutrients in the sea, marine microalgae or eukaryotic phytoplankton fire up a protein called rhodopsin".* This implies that microalgae are adopting to changing external environment. It is further mentioned in the passage, *"Estimates suggested they may absorb as much light as chlorophyll-based photosynthesis in the sea, which also captures light to generate energy and food".* These lines imply that rhodopsin replaces chlorophyll in microalgae to facilitate food production. This way, the passage revolves around the theme of adaptability to changing external conditions. **Hence, option (c) is correct.**

**Option (d) is not correct:** The passage revolves around the theme of adaptability by taking the case of microalgae and discussing the process of their survival in the absence of chlorophyll. The passage does not mention the effects of adaptability on productivity. The passage only narrates how adaptability can help in survival in a changing environment. **Hence, option (d) is not correct.**

**Q.123) In Anil's store, there are 20 flashlights, two fifths of which are defective. For a marriage party decoration, his servant Ram randomly chose three flashlights to place them in the hall. What is the probability that the hall will be lighted?**

a) 126/285
b) 217/285
c) 216/285
d) 271/285

**Q.123) Solution (d)**

**Explanation:**

Total number of flashlights = 20

Number of defective flashlight = 20 × (2/5) = 8

Number of working flashlights = 20 – 8 = 12

Three flashlights can be selected from 20 flashlights in $^{20}C_3$ ways.

Number of ways of drawing 3 flashlights from 8 defective flashlights is $^8C_3$.

So, the probability that all the three flashlights are defective = $^8C_3/^{20}C_3$ = [8!/{3!(8 – 3)!}] / [20!/{3!(20 – 3)!}] = 14/285

The probability that at least one flash light is good = 1 – Probability that no flashlight is good = 1– (14/285) = 271/285

Hence, option (d) is the right answer.


**Q.124) Anuja has some toys with her. She has 8 times as many one-rupee toys as three-rupee toys. She also has some five-rupee toys too. The total amount invested by her in these toys together is Rs.200. If the number of three-rupee toys is more than 10, then which of the following can be concluded?**

   a) Total number of toys is less than 140.
   b) Total number o ftoys is 132.
   c) Total number of toys is 142.
   d) Total number of toys is more than 150.


**Q.124) Solution (c)**

**Explanation:**

Let o, t, f denote the number of toys of one rupee, three rupees and five rupees respectively. Then according to the question,

o + 3t + 5f= 200        (i)

o =St    (ii)

From equations (i) and (ii), we get:

(8t + 3t) + 5f= 200

Or 11 t + 5f= 200

Clearly, t must be a multiple of 5.

Number of three-rupee toys is more than 10. So, t > 10.

Thus, values oft can be 15, 20, .....

But t= 20 is not possible as 11 x (20) = 220 >200

Thus t= 15, o=8t=8x15= 120

f = (200 - 11t)/5 = (200 - 11 x 15)/5 = 7

Thus, there are 15 + 7 + 120 = 142 toys in all.

Hence, option (c) is the right answer.


**Q.125) The average of six numbers is a. The average of the numbers occurring at even places and odd places are b and c respectively. Which of the following statements is true?**

a) a = b + c
b) 2a = b + c
c) a = 2b + 2c
d) None of the above


**Q.125) Solution (b)**

**Explanation:**

Average of 6 numbers = a

Thus, the sum of six numbers = 6a..................(i)

Now, out of 6 numbers there are 3 numbers at even positions and 3 at odd positions.

Average of numbers occurring at even places = b.

So, sum of numbers at even positions = 3b............(ii)

Similarly, average of numbers occurring at odd places = c So, sum of numbers at odd positions = 3c. .............(iii)

From (i), (ii) and (iii), we get:

6a = 3b + 3c

Thus, 2a = (b + c)

Hence, option (b) is the right answer.

**Passage**

In an era dominated by technology, the pursuit of a simple life is both elusive and challenging. While technology promises convenience, it simultaneously introduces complexities into our daily existence. The relentless influx of information, the rapid pace of innovation, and the demand for constant connectivity contribute to a more intricate and demanding lifestyle. Striking a balance between embracing technological advancements and seeking simplicity requires conscious choices. Simplicity in the digital age involves mindful tech use, fostering genuine human connections, and prioritizing well-being over the constant pursuit of more features. Navigating this delicate equilibrium allows individuals to harness the benefits of technology without succumbing to the overwhelming complexities it can introduce in the quest for a simpler life.

**Q.126) Based on the above passage, the following assumptions have been made:**

1. Because of technology, it is not possible to live a simple life anymore.
2. Overuse of technology can make human life complex.

**Which of the above assumptions is/are invalid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.126) Solution (a)**

**Explanation:**

*Note: The question is about invalid assumptions.*

**Assumption 1 is incorrect:** The given statement is not correct because it is an extreme one. The passage does not imply that it is not possible to live a simple life. The line "*In an era dominated by technology, the **pursuit of a simple life is both elusive and challenging (but not impossible)**"*. So, this is an incorrect assumption.

**Assumption 2 is correct:** The given assumption is based on the lines "***Simplicity** in the digital age involves mindful tech use, **fostering genuine human connections**, … **benefits of technology without succumbing to the overwhelming complexities** it can introduce in the quest for a simpler life."* Hence, this assumption is correct.

## Passage

The election moral code of conduct in India is designed to ensure fair, transparent, and ethical conduct during elections, covering various aspects such as campaigning, speeches, and general behaviour. The commitment of political parties and candidates to adhere to ethical standards plays a pivotal role. Instances of violations, including hate speech, misinformation, and divisive rhetoric, challenge the code's efficacy. The sheer scale and complexity of Indian elections further pose challenges to enforcement. The Election Commission, tasked with overseeing elections, plays a crucial role in enforcing the code, but its effectiveness depends on the strength of its regulatory mechanisms, the timely adjudication of complaints, and the impartiality of its actions. Technological advancements and the changing landscape of communication also necessitate regular updates to the code.

**Q.127) Which of the following is/are the most rational and logical inference/inferences that can be made from the passage?**

1. The moral code of conduct should be made legally enforceable to increase its effectiveness.
2. Regular violations of the moral code of conduct reflect the declining trend of the rule of law in political parties.

**Select the correct answer from the code given below:**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.127) Solution (d)**

**Explanation:**

**Inference 1 is incorrect:** The passage nowhere mentions that issues or violations of the moral code are happening because of the lack of legal sanctity. The passage is about enforcement and its effectiveness. Also, whether effectiveness will increase by making it legal has not been discussed in the passage. Hence, this inference is not correct.

**Inference 2 is incorrect:** The passage does not state that moral code is regularly violated, or that this situation is worsening day by day. Moreover, the passage talks about political ethics in the parties and not the rule of law. Rule of law is different from moral code. So, this inference is not correct.

**Q.128) Study the following information carefully and answer the question that follows. The following table shows the percentage of students that attended 5 classes of different subjects in January 2024, and the ratio of boys and girls among them.**

| Classes | Total Students = 800 | Boy : Girl |
|---------|---------------------|------------|
| **Hindi** | 22% | 1 : 3 |
| **English** | 14% | 3 : 4 |
| **Bengali** | 16% | 9 : 7 |
| **Biology** | 25% | 3 : 7 |
| **Geography** | 23% | 3 : 5 |

**Find the difference between the total number of girls who attended classes of Bengali and Geography to that of the total number of boys who attended classes of Hindi and Biology?**

a) 63
b) 72
c) 71
d) 67

**Q.128) Solution (d)**

**Explanation:**

The total number of girls who attended Bengali and Geography = {800 × (16/100) × (7/16)} + {800 × (23/100) × (5/8)} = 56 + 115 = 171

The total number of boys who attended Hindi and Biology = {800 × (22/100) × (1/4)} + {800 × (25/100) × (3/10)} = 44 + 60 = 104

Required difference = 171 – 104 = 67

Hence, option (d) is the correct answer.

**Q.129) In an office of 340 employees, 85 are graduate. Find the probability of selecting an employee who is not a graduate.**

a) 0.75
b) 0.80
c) 0.78
d) 0.68

**Q.129) Solution (a)**

**Explanation:**

Total employees (i.e. Sample space), n(S) = 340

Total graduate employees = 85

Now, total employees who are not graduate, n(E) = 340 – 85 = 255

So, probability of selecting an employee who is not a graduate, P(not graduate) = n(E)/n(S) = 255/340 =

0.75

Hence, option (a) is the right answer.

**Passage**

A new World Bank study finds that the impact of unsafe food costs low and middle-income economies about US$ 110 billion in lost productivity and medical expenses each year. Yet a large proportion of these costs could be avoided by adopting preventative measures that improve how food is handled from farm to fork. Better managing the safety of food would also significantly contribute to achieving multiple Sustainable Development Goals, especially those relating to poverty, hunger, and well-being. Foodborne diseases caused an estimated 600 million illnesses and 420,000 premature deaths in 2010 according to World Health Organization. This global burden of foodborne disease is unequally distributed. Relative to their population, low- and middle-income countries in South Asia, Southeast Asia, and sub-Saharan Africa bear a proportionately high burden. They account for 41 per cent of the global population yet 53 per cent of all foodborne illnesses and 75 per cent of related deaths. Unsafe food threatens young children the most: although children under 5 make up only 9 per cent of the world's population, they account for almost 40 per cent of foodborne diseases and 30 per cent of related deaths.

**Q.130) Based on the above passage, the following assumptions have been made:**

1. This global burden of foodborne disease is unequally distributed across countries, but evenly distributed across age groups.
2. Agencies working on foodborne illnesses should primarily focus on young **children** from low and middle-income countries.

**Which of the above assumptions is/are valid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.130) Solution (b)**

**Explanation:**

**Assumption 1 is invalid.** As per the passage, children under 5 make up only 9 per cent of the world's population, but they account for almost 40 per cent of foodborne diseases and 30 per cent of related deaths. So, it would not be correct to say that burden of foodborne disease is evenly distributed across age groups.

**Assumption 2 is valid.** The given assumption is correct because it validates the information given in lines "*This global burden of foodborne disease is unequally distributed. Relative to their population, **low- and middle-income countries in South Asia**, Southeast Asia, and sub-Saharan Africa bear a proportionately high burden*" and "*Unsafe food **threatens young children the most**.*" So, the agencies must focus on children from low and middle-income countries because those are the most vulnerable. Hence, this assumption is correct as per the passage.

**Passage**

The Arctic is more impacted by global warming than any other place in the world. For the people and animals that live in the Arctic's unique environment, climate change is not a debate; it's a daily reality. And with the world growing warmer, Arctic ice is melting even faster, threatening their safety and way of life. Already in the past 30 years, we've seen areas of Arctic sea ice melt that are larger than Norway, Sweden and Denmark combined.

**Q.131) Which one of the following is/are the most logical and rational inference/inferences that can be made from the above passage?**

1. The effect of climate change poses a threat to the survival of arctic animals.
2. The melting of ice in areas of the Arctic sea is speeding up climate change and making the world warmer as a result.

**Select the correct answer using the code given below.**

a) 1 only
b) 2 only

c) Both 1 and 2
d) Neither 1 nor 2

**Q.131) Solution (a)**

**Explanation:**

Statement (1) is correct. The passage mentions "For the people and animals that live in the Arctic's unique environment climate change is not a debate; it's a daily reality. And with the world growing warmer, Arctic ice is melting even faster, threatening their safety and way of life". It is clearly given that climate change threatens the safety and way of life of animals (polar bears, walrus, beluga, etc.) that live in the Arctic's unique environment. So, this statement is correct.
Statement (2) is incorrect. It is given in the passage, "with the world growing warmer, Arctic ice is melting even faster, threatening their safety and way of life". These are the effects of climate change – we cannot infer from the passage if it can or cannot speed up "climate change" as such. It is rather just indicating the accelerated rate of climate change. So this statement is incorrect.

**Passage**

Telecom in India, much more than elsewhere, is not a business for the faint-hearted. The stakes are huge, running into billions of dollars and perennial litigation has been a drain on resources, used as much if not more for strategic maneuvering as for seeking justice. Most stakeholders including the government has sought the courts' intervention at some point or the other and not always to correct a perceived wrong.

**Q.132) Which one of the following statements best reflects the rational, plausible and practical inference(s) that can be made from the passage given above?**

1. Every telecom company in India is facing litigation in court.
2. If everything goes well, then the telecom sector is a lucrative business with profit soaring to billions of dollars.

**Select the correct answer using the code given below:**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.132) Solution (d)**

**Explanation:**

Statement 1 is incorrect. The passage mentions, "Most stakeholder including the government has sought the courts' intervention at some point or the other and not always to correct a perceived wrong." Here the passage implies that all the stakeholders move the court to settle their disputes. But the passage nowhere mentions that all the telecom companies are facing litigation at a given point in time. It would be an exaggeration to generalise it to every telecom company. So, this is an incorrect statement.

Statement 2 is incorrect. The passage mentions, "The stakes are huge, running into billions of dollars." Here the passage implies the telecom sector is worth billions of dollars, but does not mention profit. Here this amount is indicating the value of this business - we cannot assume the profits arising from it. Also, the author sounds very pessimistic about the telecom business in India. It is evident from the usage of „not for the faint-hearted" in the very first line of the passage. It won't be logical to make inferences about the profit aspects of telecom business in India.

**Q.133) Two Statements are given below followed by a Question.**

**S1:** The LCM of x and 18 is 36.
**S2:** The HCF of x and 18 is 2.

**Question: What is the value of x? Which one of the following is correct in respect of the above Statements and the Question?**

a) S1 alone is sufficient to answer the Question
b) S2 alone is sufficient to answer the Question
c) S1 and S2 together are sufficient to answer the Question, but neither S1 alone nor S2 alone is sufficient to answer the Question
d) S1 and S2 together are not sufficient to answer the Question

**Q.133) Solution (c)**

**Explanation:**

x can be obtained by using the information provided in both S1 and S2.
Using S1, we get x= 4, or 12.
Using S2, we get that x is a multiple of 2.
Using both S1 and S2, LCM × HCF = 1st number × 2nd number
36 × 2 = x × 18
or, x = 4.
Hence, S1 and S2 together are sufficient to answer the question.

**Q.134) In a queue, Amit is 17th from the front and Sumit is 18th from the rear end, while Ramya is exactly in between Amit and Sumit. Amit is ahead of Sumit and there are 50 persons in the queue. How many persons are there between Amit and Ramya?**

   a)  9
   b)  8
   c)  7
   d)  12

**Q.34) Solution (c)**

**Explanation:**

The arrangements can be drawn as:
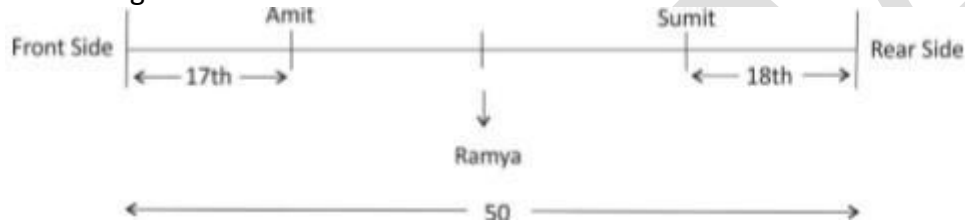


Position of Amit from front end = $17^{th}$
Position of Sumit from rear end = $18^{th}$
Position of Sumit from front end = 50 – 18 + 1 = $33^{rd}$
Position of Ramya = (17 + 33)/2 = 50/2 = $25^{th}$.
Thus, there are 7 persons in between Amit ($17^{th}$) and Ramya ($25^{th}$). Hence, option (c) is the correct answer.

**Q.135) What was the day on $2^{nd}$ Jan 1901?**

   a)  Tuesday
   b)  Wednesday
   c)  Monday
   d)  Thursday

**Q.135) Solution (b)**

**Explanation:**

$2^{nd}$ Jan 1901 means
(1900 years and 2 day)
Now, 1600 years have 0 odd day
300 years have 1 odd day
2 days has 2 odd day
Total no. of odd days = 0 + 1 + 2 = 3 days

Hence, the day on 2nd Jan 1901 was Wednesday.

**Passage**

The two-day visit to Moscow by Pakistan's Prime Minister Imran Khan beginning on Wednesday (February 23) comes at a time when President Vladimir Putin is the bad boy of the world for his actions against Ukraine. Imran will become the first foreign leader to visit Russia after Putin recognized two breakaway regions of Ukraine as independent republics, and the first Prime Minister of Pakistan to travel to that country since the landmark visit by Nawaz Sharif in 1999. Imran is visiting Russia on the Kremlin's invitation, and Pakistani officials have said the visit was scheduled well ahead of current developments.

**Q.136) Which of the following is/are the most logical inference/inferences that can be made from the passage?**

1. Nawaz Sharif was the first Pakistani Prime Minister to visit Russia.
2. Imran Khan was invited to discuss the ongoing Russia-Ukraine crisis.

**Select the correct answer using the code given below.**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.136) Solution (d)**

**Explanation:**

Statement 1 is incorrect. According to the passage, the Pakistani Prime Minister Imran Khan is the first leader to visit Russia since Russia recognised the two border regions of Ukraine as that since Nawaz Sharif's 1999 visit, Imran Khan is the first PM to visit Russia. Nowhere is it mentioned in the passage that who was the first ever Pakistani Prime Minister to visit Russia. Statement 2 is incorrect. The passage mentions that the meeting was scheduled before the current ongoing crisis. The agenda of the meeting is not mentioned anywhere in the passage. Therefore, just because the meeting happened during Russia-Ukraine conflict, it would be incorrect to infer that Imran Khan was invited to discuss the ongoing Russia-Ukraine crisis.

**Passage**

This has produced a unique community. There is no parallel to India of a nation whose middle class is trained to think and approach life in a foreign language, one they have not mastered. India's elite occupy a limited space; it is emotionally Hindi and intellectually English. The knowledge of English has come to them through stock phrases because the quality of teaching

is poor. Even half literate Americans speak better, cleaner and more precise English than educated Indians. And on the mother tongue side, the loss of language has resulted in the erosion of India's high culture, its classical inheritance.

**Q.137) On the basis of the above passage, which of the following is the most logical and rational message conveyed by the author?**

a) Indians are unable to speak well both in their mother tongue and in foreign languages.
b) The knowledge of English that Indians have is lower than that of any illiterate section of society.
c) Affiliation to and knowledge of one's mother tongue is linked with an appreciation of one's culture.
d) Indian middle-class is learning English, and consequently forgetting local dialects

**Q.137) Solution (c)**

**Explanation:**

Option (a) is incorrect. The central message of the passage is related to the erosion of the Indian culture. Refer to the line: "India's elite occupy a limited space; it is emotionally Hindi and intellectually English." It talks about only the elite sections of Indian society, and their dual-language traits. This answer option on the other hand talks about Indians in general. It also talks about foreign languages in general, and not just English, which is kind of an extrapolation. Moreover, the author quotes these instances to lend support to the core idea of the passage – loss of language and erosion of culture. Based on the above analysis, this answer option is incorrect.
Option (b) is incorrect. This answer option is incorrect as it establishes a comparison with ANY illiterate section of society. The passage only makes a reference to the half-literate Americans.
Option (c) is correct. The line "…affiliation and knowledge of one's mother tongue is linked with an appreciation of one culture…" provides the reason as to why the loss of language has also resulted in the erosion of the Indian culture. The author quotes the examples of Americans, Indian middle class, Indian elites etc. to lend credence to the core idea – loss of language and erosion of culture. This answer option best captures the essence of this passage.
Option (d) is incorrect. Refer to the first line of the passage: "There is no parallel to India of a nation whose middle class is trained to think and approach life in a foreign language, one they have not mastered." The author only intends to say that Indian middle class has not mastered foreign language, yet it thinks and approaches life in a foreign language. It does not mean that they are forgetting local dialects. Language and dialects are different things. Dialect is a specific kind of language spoken by a defined group or region. So, you see that language is a broader term, and dialect comes under its shade. Language plays the role of a parent, and different dialects are stemming from it.

Directions for the following **1 (one)** item:

**Table given below gives information about percentage of marks scored by six different students in six different subjects.**

| Student | Subjects | | | | | |
|---------|----|----|----|----|----|----|
| | **A** | **B** | **C** | **D** | **E** | **F** |
| P | 80 | 65 | 58 | 68 | 75 | 87 |
| Q | 55 | 70 | 67 | 74 | 88 | 78 |
| R | 74 | 54 | 72 | 84 | 62 | 76 |
| S | 68 | 76 | 82 | 56 | 72 | 64 |
| T | 75 | 68 | 64 | 72 | 80 | 72 |
| U | 82 | 78 | 75 | 67 | 68 | 82 |

**Q.138) If maximum marks in subject C is 90, then what is the approximate average of marks obtained by all the students in subject C?**

a) 66
b) 68
c) 63
d) 61

**Q.138) Solution (c)**
**Explanation:**
Average of the marks scored by all students in subject C = {(58 + 67 + 72 + 82 + 64 + 75)/6}% of 90 = (418/6) × (90/100) = 62.7 = 63 (approx)

**Passage**

Mountains are a conservative force, often protecting within their defiles indigenous cultures against the fierce modernizing ideologies that have too often plagued the flatlands, even as they have provided refuge for Marxist guerrillas and drug cartels in our own era. The Yale anthropologist James C. Scott writes that "hill peoples are best understood as runaway, fugitive, maroon communities who have, over the course of two millennia, been fleeing the oppressions of state-making projects in the valleys". For it was on the plain where the Stalinist regime of Nicolae Ceausescu really sank its teeth into the population. Ascending the Carpathians several times in the 1980s, I saw few signs of collectivization. These mountains that declare Central Europe's rear door were defined more by wood and natural stone dwellings than by concrete and scrap iron, favorite material elements of Romanian

communism. The Carpathians that girdle Romania are no less a border than the mountains of Kurdistan.

**Q.139) Which of the following is/are the most logical and rational inference/inferences that can be made from the passage above?**

1. Mountains protect native cultures.
2. The culture of a region manifests only in abstract and non-tangible aspects of life.

**Select the correct answer using the codes given below**.

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

**Q.139) Solution (a)**

**Explanation:**

Statement 1 is correct. Refer to the first line of the passage: "Mountains are a conservative force, often protecting within their defiles indigenous cultures against the fierce modernizing ideologies that have too often plagued the flatlands." The author quotes the example of Stalinist regime to explain that new cultural currents influence the plain areas. Mountains act as a shield from the influence of these cultural currents. Thus, they help in protecting native cultures.

Statement 2 is incorrect. Refer to the lines: "I saw few signs of collectivization. These mountains that declare Central Europe's rear door were defined more by wood and natural stone dwellings than by concrete and scrap iron, favorite material elements of Romanian communism." The author intends to say that those regions that were affected by waves of cultural currents also witnessed a change in the way houses were constructed. On the other hand, the mountainous regions that maintained their native culture continued to use the locally available construction materials like wood and stone. Thus, we see that the culture of a region is manifesting in tangible aspects of life like construction of houses. Therefore, it would be incorrect to say that the culture of a region manifests only in abstract and non-tangible aspects of life.

**Q.140) A competitive exam has 20 questions with four options each. What is the number of ways in which a student can attempt these questions, if he also has an option to leave any question unanswered?**

a) $4^{20}$
b) $5^{20}$
c) $4^{20} - 1$
d) $5^{20} - 1$

**Q.140) Solution (b)**

**Explanation:**

Each question can be answered in five ways, i.e. each of the four options and option to not attempt the question.
So, Number of ways of attempting each question = 5
And so, total number of ways of attempting 20 questions = $5^{20}$
Hence, option (b) is correct.


**Passage**

The all-too-familiar triad of historical periodisation — ancient, medieval, modern — now universal, has rather specific provincial and temporal origins. All societies evolved their modes of dividing their history into periods: dynastic and regnal was the one prevalent in India, Iran, the Turko-Mongol regions, besides Europe. The triad took birth in Europe around the 16th and 17th centuries, first in the history of theology and steadily in society's history, finding its largely evolved form in 1688 at the hands of Cellarius, a German. This was the era when over the past few centuries, Europe had been creating its new self-image of rationality, science and progress, in short, modernity; to reinforce it, the inverse image of its immediate past, the medieval, was also created as one of irrationality, regression, and superstition which were constituted as the synonym of religion/religiosity — in short, the "Dark Age" from which Europe was progressing into Enlightenment.


**Q.141) Which of the following is/are the most rational and logical inference/ inferences that can be made from the passage?**

1. Every society has a religious history filled with irrationality, regression and superstition.
2. Europe gave birth to the triad of ancient, medieval, modern.

**Select the correct answer from the code given below.**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2


**Q.141) Solution (b)**

**Explanation:**

**Inference 1 is incorrect:** The given inference seems to be based on the lines "***All societies*** *evolved their **modes of dividing their history** into periods: dynastic and regnal was the one prevalent in India, Iran, the Turko-Mongol regions, besides Europe.*" These lines show that all societies divide history in different ways, but it does not mean that every society has a

religious history. In the context of this passage, the religious history is specific to European society. So, this inference is not correct.

**Inference 2 is correct:** It can be inferred from the lines – "*The all-too-familiar **triad of historical periodization — ancient, medieval, modern** — now universal, has rather specific provincial and temporal origins. … **The triad took birth in Europe** around the 16th and 17th centuries, first in the history of theology and steadily in society's history, finding its largely evolved form in 1688 at the hands of Cellarius, a German.*"


## Passage

Socialization impacts both men and women. It starts very early with the pink or blue blankets we're often wrapped in at birth, to what our parents, teachers, coaches, and friends teach us, to what we absorb from the cartoons, books, magazines, and movies we watch. In many cultures, women are expected to be responsible for things that men are not. It's generally expected that older siblings should take care of younger siblings. However, many Asian, Indian, Hispanic, and Latino cultures believe that girls (even if the youngest) should take care of the males in the family. It's often acceptable for boys to bend the rules whereas girls are expected to follow the rules. This double standard in how we treat boys and girls can restrict girls from speaking their minds, trying new things and fighting for what they want. In addition, an inability to disappoint parents can cause girls to become people-pleasers and followers.

**Q.142) Which of the following statements best reflects the crux of the passage?**

a) Culture and women mould each other in every society.
b) Values of equality and respect towards girls should be promoted among boys.
c) Culture has a deep impact on women as well as men.
d) None of the above


**Q.142) Solution (c)**

**Explanation:**

**Option (a) is incorrect:** The passage states the impact of culture on women, but how women affect the culture is not discussed in the passage. So, the context that culture and women molding each other is not a part of the passage. Hence, this option is not the best crux of the passage.

**Option (b) is incorrect**: The passage does talk about the discrimination faced by girls, but the main theme of the passage is how culture impacts men and women. Inculcating the values of equality and respect for girls could be a peripheral argument. It is not the best crux of the passage. Therefore, this answer option is incorrect.

**Option (c) is correct**:  The passage is about the impact of culture on men and women. This is visible in the lines "*However, many **Asian, Indian, Hispanic, and Latino cultures believe that girls** (even if the youngest) **should take care of the males in the family**. It's often acceptable for **boys to bend the rules whereas girls are expected to follow the rules.**"* These lines show that it is the culture which shapes the values of boys and girls, and hence, we can state that

culture has a deep impact on men and women in society. So, this is the best crux of the passage.

**Q.143) What is the probability of getting a sum 9 from two throws of a dice?**

a) 1/6
b) 1/8
c) 1/9
d) 1/12

**Q.143) Solution (c)**

**Explanation:**

In two throws of dice, n(S) = (6 × 6) = 36
Let E = event of getting a sum 9 = [(3, 6), (4, 5), (5, 4), (6, 3)]
Therefore P(E) = n(E)/n(S)
=> 4/36 = 1/9

**Q.144) Consider the following table.**

|  | None | 1 to 4 | 5 or more | Total |
|---|---|---|---|---|
| Group X | 15 | 28 | 57 | 100 |
| Group Y | 21 | 11 | 68 | 100 |
| Total | 36 | 39 | 125 | 200 |

The data in the table above were produced by a sleep researcher, studying the number of dreams people can recall. Group X consisted of 100 people with early bedtimes, while Group Y consisted of 100 people with later bedtimes. If a person is chosen at random, what is the probability that the person belonged to Group Y who recalled at least 1 dream?

a) 67/100
b) 79/100
c) 163/200
d) 79/200

**Q.144) Solution (d)**

**Explanation:**

The number of people who remembered at least one dream in Group Y =
11 + 68 = 79 Required probability = 79/200 Hence, option (d) is correct.

**Q.145) A school has 378 girl students and 675 boy students. The school is divided into strictly boys or strictly girls sections. All sections in the school have the same number of students. Given this information, what are the minimum number of sections in the school?**

   a) 39
   b) 49
   c) 25
   d) 18

**Q.145) Solution (a)**

**Explanation:**

The answer will be given by the HCF of 378 and 675.
378 = 2 x 33 x 7
675 = 33 x 52
Hence, HCF of the two is 33 = 27.
Hence, the number of sections is given by: ((378/27) + (675/27) = 14 + 25 = 39 sections

**Passage**

There are few things in this world that fill me with such wonder as the fact that a man can kill a whale. The scenes in a whaleman's life are varied and very stirring. Sometimes he is floating on the calm ocean, idling about the deck and whistling for a breeze, when all of a sudden the loud cry is heard, "There she blows!" and in a moment the boats are in the water, and he is engaged in all the toils of an exciting chase. Then comes battle with the great whale of the deep, with all its risks and dangers. Sometimes he is unfortunate, the decks are clean, he has nothing to do. At other times he is lucky, "cutting in" and "trying out" engage all his energies and attention. Frequently storms toss him on the angry sea, and show him, if he will but learn the lesson, how helpless creature he is, and how thoroughly dependent at all times for life, safety, and success, upon the arm of God.

**Q.146) On the basis of the above passage, the following assumptions has been made.**

   1. Whales are seen only in calm seas.
   2. A whaleman survives and earns only by luck.

**Which of the above assumptions is/are valid?**

   a) 1 only
   b) 2 only
   c) Both 1 and 2
   d) Neither 1 nor 2

**Q.146) Solution (b)**

**Explanation**

Statement 1 is incorrect: As mentioned in the passage, attractive social security schemes are one reason why the labor force readily quit their job. Therefore, this is not the only reason for the labor force to quit their jobs.

Statement 2 is correct: As the passage suggests in the initial lines, the aging population and the longevity of the individuals is putting a great amount of pressure on the financial viability of the social security schemes.

**Passage**

Key parameters that determine the magnitude and effectiveness of the protection offered by mangroves against coastal disasters include forest width, tree density, age, tree diameter, and tree height and species composition. These parameters can be manipulated through forest management to produce the required level of mitigation against potential disasters; they are, however, co-dependent, interlinked and influenced by other physical and geographical features, such as ground elevation, nutrient and freshwater input, exposure to the sea, and undersea topography.   Ideally, mangrove belts should be hundreds or thousands of meters wide to reduce the impact of winds and high waves during storms and tsunamis. The reduction of coastal flooding by mangrove belts can minimize saltwater intrusion to freshwater and potentially maintain freshwater resources for drinking and/or agriculture. Existing mangrove forests should be maintained by enabling local communities to use them sustainably, thereby incentivizing responsible mangrove management. Mangrove-friendly aquaculture and community-based forest and fisheries management can be effective in minimizing the degradation and conversion of mangroves.

**Q.147) On the basis of the above passage, the following assumptions have been made:**

1. Mangroves provide many essential ecosystem services to human communities living in and around them.
2. Mangrove trees, with their aboveground root structures, can significantly reduce the velocity of water moving through them.

**Which of the above assumptions is/are valid?**

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 or 2

**Q.147) Solution (b)**

**Explanation**

Statement 1 is incorrect: Even though the author lists the negatives that have crept on account of sluggish progress in the education system, it cannot be explicitly assumed on the basis of the paragraph that Indian education system is not successful on a qualitative front. That would rather be an extreme assumption.
Statement 2 is correct: On the basis of the sentence" There is an urgent... for education". One can assume that an innovative approach is required for Indian education system.

**Q.148) Tea of two types – A and B, costing Rs. 24/kg & 34/kg respectively, are to be mixed. The quantity of the two types of tea to be mixed, A and B, is 6 kg and x kg respectively. If on selling the tea at Rs. 33/kg the profit earned is 10%, find the value of x.**

    a)  7 kg
    b)  9 kg
    c)  6 kg
    d)  12 kg

**Q.148) Solution (d)**

**Explanation**

Let's take the L.C.M. of 5, 3 and 7.
L.C.M. of 5, 3, 7 = 105
According to the question, every time 2 saplings were left.
Thus, Aniket had 107 saplings at least.
Hence, option (d) is the right answer.
 **Alternate method:** Let's see the options.
We see that 107 is the only one, which if divided by 5, 3, 7, leaves a remainder of 2.
Hence, option (d) is the right answer.

**Q.149) How many 4-digit numbers are there such that the product of the digits is less than 5?**

    a)  13
    b)  15
    c)  19
    d)  30

**Q.149) Solution (b)**

**Explanation**

Let principal = x
It becomes 3x in 4 years.
It becomes 9x in next 4 years, i.e. in 8 years.
It becomes 27x in next 4 years, i.e. in 12 years.
It becomes 81x in next 4 years, i.e. in 16 years.
From S1:
From above we know that after 12 years it would become 27 times the original amount. So, S1 is not correct.
From S2:
After 16 years it would be ₹405000.
Principal = ₹5000
A/P = 405000/5000 = 81
Thus, after 16 years, amount will be 81 times the original amount.
So, S2 is correct. Hence, option (b) is the correct answer.

**Q.150) Six family members are Ashish, Krisiv, Ketan, Deepesh, Ekta and Manoj. Ketan is the sister of Manoj. Krisiv is the brother of Ekta's husband Ashish. Deepesh is the father of Ashish and grandfather of Manoj. There are two fathers, three brothers and a mother in the group. Who is the mother?**

    a) Ekta
    b) Ashish
    c) Krisiv
    d) Ketan

**Q.150) Solution (c)**

**Explanation**

Total number of pens in the bag = 12
Three pens can be drawn from 12 pens in $^{12}C_3$ ways.
We can draw a blue pen out of 3 blue pens in $^{3}C_1$ ways.
Similarly, a green pen can be drawn in $^{4}C_1$ ways.