PRELIMS 2023 CSAT ANSWER KEY

Directions for the following 5(five) items:

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

Passage - 1

In India, the segregation of municipal waste at source is rare. Recycling is mostly with the informal sector. More than three-fourths of the municipal budget goes into collection and transportation, which leaves very little for processing/resource recovery and disposal. Where does waste-to-energy fit into all this? it fits in the chain after segregation wet waste and the rest), collection, recycling, and before getting to the landfill. Which technology is most appropriate in converting waste to energy depends on what is in the waste (that is biodegradable versus non-biodegradable component) and its calorific value. The biodegradable component of India's municipal solid waste is a little over 50 per cent, and biomethanation offers a major solution for processing this.

1. Based on the above passage, the following assumptions have been made :

1. Collection, processing and segregation of municipal waste should be with government agencies.

2. Resource recovery and recycling require technological inputs that can be best handled by private sector enterprises.

Which of the assumptions given above is/are correct?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: D

2. Which one of the following statements best reflects the crux of the passage?

A) Generation of energy from municipal solid waste is inexpensive.

B) Biomethanation is the most ideal way of generating energy from municipal solid waste.

C) Segregation of municipal solid waste is the first step in ensuring the success of waste-to-energy plants.

D) The biodegradable component of India's municipal solid waste is not adequate to provide energy from waste efficiently/effectively.

Answer: C

Passage-2

There is a claim that organic farming is inherently safer and healthier. The reality is that because the organic farming industry is still young and not well-regulated in India, farmers and consumers, alike, are not only confused about what products are best for them, but sometimes use products in ways that could harm them as well. For example, since organic fertilizers are difficult to obtain on a large scale in India, farmers often use farmyard manure, which may contain toxic chemicals and heavy metals. Certain plant sprays, such as Datura flower and leaf spray, have an element called atropine. If it is not applied in the right dose, it can act on the nervous system of the consumer. Unfortunately, how much and when to use it are not well-researched or regulated issues.

3. Based on the above passage, the following assumptions have been made:

1. Organic farming is inherently unsafe for both farmers and consumers.

2. Farmers and consumers need to be educated about eco-friendly food.

Which of the assumptions given above is/are correct?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: B

4. Which one of the following statements best reflects the most logical, rational and practical message conveyed by the author of the passage ?

A) In India, organic farming should not be promoted as a substitute for conventional farming.

B) There are no safe organic alternatives to chemical fertilizers.

C) In India, farmers need to be guided and helped to make their organic farming sustainable.

D) The aim of organic farming should not be to generate huge profits as there is still no global market for its products.

Answer: C

Passage-3

Food consumption patterns have changed substantially in India over the past few decades. This has resulted in the disappearance of many nutritious foods such as millets. While food grain production has increased over five times since independence, it has not sufficiently addressed the issue of malnutrition. For long, the agriculture sector focussed on increasing food production particularly staples, which led to lower production and consumption of indigenous traditional crops/grains, fruits and vegetables, impacting food and nutrition security other in the process. Further, intensive, monoculture agriculture practices can perpetuate the food and nutrition security problem by degrading the quality of land, water and food derived through them.

5. Based on the above passage, the following assumptions have been made:

1. To implement the Sustainable Development Goals and to achieve zero hunger goal, monoculture agriculture practices are inevitable even if they do not address malnutrition.

2. Dependence on a few crops has negative consequences for human health and the ecosystem.

3. Government policies regarding food planning need to incorporate nutritional security.

4. For the present monoculture agriculture practices, farmers receive subsidies in various ways and government offers remunerative prices for grains and therefore they do not tend to consider crop diversity.

Which of the above assumptions are valid ?

A) 1, 2 and 4 only

B) 2 and 3 only

C) 3 and 4 only

D) 1, 2, 3 and 4

Answer: B

6. A box contains 14 black balls, 20 blue balls, 26 green balls, 28 yellow balls, 38 red balls and 54 white balls. Consider the following statements:

1. The smallest number n such that any n balls drawn from the box randomly must contain one full group of at least one colour is 175.

2. The smallest number m such that any m balls drawn from the box randomly must contain at least one ball of each colour is 167

Which of the above statements is/are correct?

A) 1 only

B) 2 only

C) (c)Both 1 and 2

D) Neither 1 nor 2

Answer: C

7. If 'ZERO' is written as 'CHUR' then how is 'PLAYER' written?

A) SOCAGT

B) SODBGT

C) SODBHT

D) SODBHU

Answer: D

Explanation:

ZERO   =   CHUR

PLAYER = ?

Z   E   R   O   P   L   A   Y   E   R

)2)2)2)2   )+2)+2)+2)+2)+2)+2

C   H   U   R   S   O   D   B   H   U

8. Consider the following statements:

1. A is older than B.

2. C and D are of the same age.

3. E is the youngest.

4. F is younger than D.

5. F is older than A.

How many statements given above are required to determine the oldest person/persons?

A) Only two

B) Only three

C) Only four

D) All five

Answer: D

Explanation:

A > B

C = D

E is youngest

F < D

F > A

All five required

9. Consider the following including the Question and the Statements:

There are 5 members A, B, C, D, E in a family.

Question: What is the relation of E to B?

Statement-1: A and B are a married couple.

Statement-2: D is the father of C.

Statement-3: E is D's son.

Statement-4: A and C are sisters.

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

A) Statements – 1, Statements – 2 and Statements – 3 are sufficient to answer the Question.

B) Statements – 1, Statements – 3 and Statements – 4 are sufficient to answer the Question.

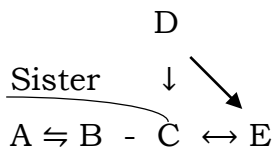C) All four statements together are sufficient to answer the Question.

D) All four statements are **not** sufficient to answer the Question

Answer: C

Explanation:

Opt C

All 4 statements are required

```
            D
Sister    ↓  ↘
A ⇋ B  -  C  ↔ E
```

10. Choose the group which is different from the others:

A) 17, 37, 47, 97

B) 31, 41, 53, 67

C) 71, 73, 79, 83

D) 83, 89, 91, 97

Answer: D

Explanation:

Except D

All others are set of prime numbers

Directions for the following 3 (three) items:

Read the following **three** passages and answer the items that follows the passages. Your answers to these items should be based on the passages only.

Passage-2

To tackle the problem of pollution in cities, makers think that drastic actions like temporary use of odd-even number scheme for policy vehicles, closing schools, factories, construction activities, and banning the use of certain type of vehicles are a way forward. Even then the air is not clean. Vehicles more than 15 years old comprise one percent of the total; and taking them off the road will make any difference. Banning certain fuels and car types arbitrarily is not proper. Diesel engines produce more PM 2-5 and less CO_2, than petrol or CNG engines. On the other hand, both diesel and CNG engines produce more NO_x, than petrol engines. No one has measured the amount of NO_x that CNG engines are emitting. Arbitrary bans on vehicles that have passed mandated fitness tests and periodic pollution tests are unfair. What is needed is the scientific and reliable information about the source of pollutants on a continuing basis and the technologies that will work to reduce pollution from them.

11. Which one of the following statements best reflects the most logical and rational implication conveyed by the passage?
A) Arbitrary curbs on vehicles to reduce pollution are difficult to implement.
B) Knee-jerk reactions cannot solve the problem of pollution but an evidence based approach will be more effective.
C) A heavy penalty should be enforced on those driving without periodic pollution tests.
D) In the absence of laws to deal with the problems of pollution, the administration tends to make arbitrary decisions.
Answer: B

Passage -2

Good corporate governance structures encourage companies to provide accountability and control. A fundamental reason why corporate governance has moved onto the economic and political agenda worldwide has been the rapid growth in international capital markets. Effective corporate enhances access to external financing by firms, leading to greater investment, higher growth and employment. Investors look to place their funds where the standards of disclosure, of timely and accurate financial reporting, and of equal treatment to all stakeholders are met.

12. Which of the following statements best reflects the logical inference from the passage given above?

A) It is an important agenda of the countries around the world to ensure access to good external financing.

B) Good corporate governance improves the credibility of the firms.

C) International capital markets ensure that the firms maintain good corporate governance.

D) Good corporate governance paves the way for robust supply chains.

Answer: D

Passage-3

Elephants are landscape architects, creating clearings in the forest, preventing overgrowth of certain plant species and allowing space for the regeneration of others, which in turn provide sustenance to other herbivorous animals. Elephants eat plants, fruits and seeds, propagating the seeds when they defecate in other places as they travel. Elephant dung provides nourishment to plants and animals and acts as a breeding ground for insects. In times of drought, they access water by digging holes which benefits other wildlife.

13. Which one of the following statements best reflects the most logical and rational inference that can be drawn from the passage?

A) The home range of elephants needs to be a vast area of rich biodiversity.

B) Elephants are the keystone species and they benefit the biodiversity.

C) Rich biodiversity cannot be maintained in the forests without the presence of elephants.

D) Elephants are capable of regenerating forests with species as requirement.

Answer: B

14. If 7 $\oplus$ 9 $\oplus$ 10 = 8, 9 $\oplus$ 11 $\oplus$ 30=5,

11$\oplus$17 $\oplus$ 21 = 13, what is the value of 23 $\oplus$ 4 $\oplus$ 15?

A) 6

B) 8

C) 13

D) 15

Answer: A

Explanation:

7 $\oplus$ 9 $\oplus$ 10 = 8

9 $\oplus$ 11 $\oplus$ 30 = 5

11 $\oplus$ 17 $\oplus$ 21 = 13

What is 23 $\oplus$ 4 $\oplus$ 15 = ?

7 + 9+10 = 26.... 2 + 6 = 8

            ↓

   Sum of digits = 8.

9 + 11 + 30 = 50 .... 5 +10 = 5

11 + 17 + 21 = 49 .... 4 + 9 + 13

Therefore,

23 + 4 + 15 = 42... 4 + 2 = 6

15. Let x be a positive integer such that 7x+96 is divisible by x. How many values of x are possible?

A) 10
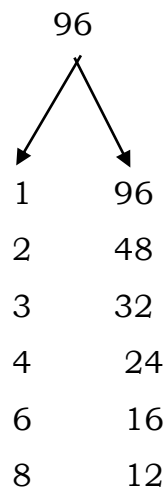
B) 11

C) 12

D) Infinitely many

Answer: C

Explanation:

7x + 96 is divisible by x.

7x is always div by x.

96 should be divisible by x

So that factors of '96' will be the value for x.

Lets count all the factors of '96'

96

1   96

2   48

3   32

4   24

6   16

8   12

1,2,3,4,6,8,96,48,32,24,16,12 are factors of 96

There are 12 factors

16. If p, q, r and s are distinct single digit positive numbers, then what is the greatest value of (p+q)(r+s)?

A) 230

B) 225

C) 224

D) 221

Answer: C

Explanation:

p, q, r, s are distinct single digit nos

(p+q) (r+s) = ?

Case – 1

Lets	p = 9	p + q = 17
Allot largest single	q = 8	r + s = 13
digits values to	r = 7	17 x 13 = 221
p,q,r,s	s = 6	

Case – 2

P = 9	p + q = 16
q = 7	r + s = 14
r = 8	
s = 6	16 x 14 = 224

Case – 3

P = 9	p + q = 15
q = 6	r + s = 15
r = 8	15 x 15 = 225
s = 7	

The largest is 225

17. A number N is formed by writing 9 for 99 times. What is the remainder if N is divided by 13?

A) 11

B) 9

C) 7

D) 1

Answer: A

Explanation:

When 9 ÷ 13 Rem = 9

99 ÷ 13 Rem = 8

999 ÷ 13 Rem = 11

9999 ÷ 13 Rem = 2   This cycle repeats

99999 ÷ 13 Rem = 3

6 times (999999) ÷ 13 Rem = 0

7 times 9999999 ÷ 13 Rem = 9

One time '9' ÷ 13 Rem = 9

two times '99' ÷ 13 Rem = 8

9,8,11,2,3,

This cycle repeats after 0, again 9,8,11,2,3,0......So on

These '6' diff values are only repeats as remainders

99 times ÷ 6

$\frac{99}{6}$ = Rem = 3

So the third value will be the remainder.

3rd value = 11

18. Each digit of a 9-digit number is 1. It is multiplied by itself. What is the sum of the digits of the resulting number?

A) 64

B) 80

C) 81

D) 100

Answer: C

$11^2 = 121$

$111^2 = 12321$

$1111^2 = 1234321$ .... So on.

4 dig no = all digits are 'one' so the result is Ascending order of numbers from 1 to 4

Then descending order after 4 up to 1

One more eg

6 digits no $(111111)^2$ = 1234565432

Req = 9 dig no $(111111111)^2$

    = 12345678987654321

The sum of this no = 81

19. What is the sum of all digits which appear in all the integers from 10 to 100?

A) 855

B) 856

C) 910

D) 911

Answer: B

Explanation:

10 to 100 How many integers digits counting the digits

10 to 19 = 1 = 10 times repeated

        (0 to 9) = 1 time

20 to 29 = 2 = 10 times repeated

        (0 to 9) = 1 time

30 to 39 = 3 = 10 times

        (0 to 9) = 1 time

40 to 49 = 4 = 10 time

         (0 to 9) = 1 time

50 to 59 = 5 = 10 times

        (0 to 9) = 1 time

60 to 69 = 6 = 10 times

        (0 to 9) = 1 time

70 to 79 = 7 = 10 time

        (0 to 9) = 1 time

80 to 89 = '8' = 10 time

            1 to 9 = 1 time

90 to 99 = '9' = 10 time

            1 to 9 = 1 time

Totally =   (0 to 9) = 9 time

            and

[1,2,3....9] = Each 10 times

19 times the values [1 to 9] are presented between 10 to 99.

19 x [1+2+3+4+5+6+7+8+9]

19x [1+2+ ..... 9]

19x45 = 855

Between 10 to 99 = sum of their integers = 855

But including '100' = 1+0+0 = 1

Finally the sun = 855 + 1

                = 856

20. ABCD is a square. One point on each of AB and CD; and two distinct points on each of BC and DA are chosen. How many distinct triangles can be drawn using any three points as vertices out of these six points?
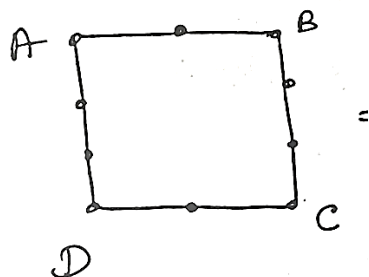
A) 16

B) 18

C) 20

D) 24

Answer: C

Explanation:

Required

= 6 points on a square

How many triangles can be drawn using these 3 points as vertices out of these 6 points

6_{c_3} = choosing any 3 points from the available '6' points

P+0

$$6_{c_3} = \frac{6!}{(6-3)!\,3!}$$

$$= \frac{6!}{3!\,3!}$$

$$= \frac{6 \times 5 \times 4 \times 3 \times 2 \times 1}{3 \times 2 \times 1 \times 3 \times 2 \times 1}$$

$= 2 \times 5 \times 2$

= 4 x 5 = 20 triangles can be draw

= 20 triangle

Directions for the following 3 (three) items: Read the following three passages and answer the items that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

The emissions humans put into the atmosphere now will affect the climate in the middle of the century and onwards. Technological change, meanwhile, could make a future transition away from fossil fuels cheap or it might not, leaving the world with a terrible choice between sharply reducing emissions at huge cost or suffering through the effects of unabated warming. Businesses that do not hedge against the threat of uncertain outcomes fail. The world cannot afford such recklessness on climate change.

21. Which one of the following statements best reflects the crucial message conveyed by the author of the passage?

A) Businesses that cause emissions may need to close down or pay for pollution in future.

B) The only solution is technological development related to the issues of climate change.

C) Waiting to deal with carbon emissions until technology improves is not a wise strategy.

D) Since future technological change is uncertain, new industries should be on renewable energy sources.

Answer: C

Passage-2

Environmental probleme cause health problems. Substantial changes in Hfestyle can reduce environmental or health ekleme, but this idea appears almost impl to adopt. With environmental problems, estvidual efforts can be perceived as having a negligible effect and therefore lead to inertia. With health, on the other hand, individual choices can make the difference between life and death, literally. And yet, barring a few, there seems to be the same collective lethargy towards making their choice.

22. Which one of the following statements best implies the most rational assumption that can be made from the passage?

A) We are likely to spend more money on cure than prevention.

B) It is the job of the government to solve our environmental and public health problems.

C) Health can be protected even if environmental unattended. problems go on

D) Loss of traditional lifestyle and the influence of western values led to some unhealthy ways of living.

Answer: A

Many people are a sating the right food Formply a declalon to tick with food they enjoy but which is not too healthy. This in leading to an increase in non-communicable diseases. This in turn leads to major burden on our health-care systems that have the potential to derail the economic progress which in essential for the pour to improve their lives. For others, it is about limited access to nutritious food or a lack of affordability, leading to monotonous diets that do not provide the daily nutrients for them to develop fully. Part of the reason nutrition is under threat worldwide is that our food systems are not properly responding to nutritional needs Somewhere along that long road from farm to fork, there are serious detours taking place.

23. Which one of the following statements best reflects the crux of the passage?
A) The scheme of Universal Basic Income should be implemented worldwide an a way of poverty alleviation.
B) We must place food-based nutrition at the centre of our policy debate.
C) Nutritional status of food should be improved by creating appropriate genetically modified crops.
D) Using modern food processing technologies, we must fortify food items with required nutrient elements.
Answer: B

24. Three of the five positive integers p,q,r,s,t are even and two of them are odd (not necessarily in order). Consider the following:
1. p+q+r-s-t is definitely even.
2. 2q+q+2r-2s+t is definitely odd.
Which of the above statements is/are correct?
A) 1 only
B) 2 only
C) Both 1 and 2
D) Neither 1 and 2

Answer: A

Explanation:

5 pos. Integers --- p,q,r,s,t.

3 are even

2 are odd.

statement – 1

P+q+r – s – t is dif. Even

Case – 1

P,q,r = even

S,t = odd

Let us take

for even = 2

for odd = 1

p + q + r - s - t

2 + 2 + 2 – 1 – 1 = 6 – 2 = 4

Case- 2

P, q,s = even

r, t = odd

p + q + r – s – t

2 + 2 + ! – 2 – 1 = 5 – 3 = 2

Case – 3

P, q , t = even

r, s = odd

p + q + r - s – t

$\underbrace{2 + 2 + 1}_{5}$ $-\underbrace{1 - 2}_{3}$ = 2

In all the cases result is 'Even no'.

Statement – 2

2p + q + 2r – 2s + t is odd

Case – 1

p, q , r = Even   Even = 2

  st = odd   odd = 1

2p + q + 2r – 2s + t

2 (2) + 2 + 2(2) – 2(1) + 1

4 + 2 + 4 – 2 + 1 = 9

Case – 2

p,q,s = Even

r,t = odd

2p + q + 2r – 2s + t = odd or not

2 (2) + 2 + 2 (1) – 2 (2) + 1

4 + 2 + 2 – 4 + 1

9 – 4 = 5

Case – 3

p,q,t = Even

r,s = odd

2p + q + 2r – 2s + t = ?

2(2) + 2 + 2(1) – 2(1) + 2

4+2+2 – 2+2

$\qquad$ 8 – 0 $\qquad$ = 8

Ans: I only – In third case its not 'odd'

25. Consider the following in respect of prime number p and composite number c.

1. p+c/p-c can be even.

2. 2p+c can be odd.

3. pc can be odd.

Which of the statements given above are correct?

A) 1 and 2 only

B) 2 and 3 only

C) 1 and 3 only

D) 1,2 and 3

Answer: D

Explanation:

Statement – 1

$\frac{p+c}{p-c}$ can be even

$\qquad$ P = prime

C = composite

p = {2,3,5,7,11,13....}

c = {4,6,8,9,.......}

statement – 1

Lets assign

$$\frac{p+c}{p-c} \nearrow \; P = 5 \\ \searrow \; C = 4$$

$= \frac{5+4}{7-6}$ denominater

P = 7

C = 6

$= \frac{9}{1}$ = 9 yes it's a possibility

Statement – 2

2 p+c can be odd.

2p + c = ? 1   lets take

2 (2) + 9 = 13   p = 2

↓   C = 9

yes, it's a possibility

Statement – 3

pc can be odd   lets take

3*9 = 27   p=3

↓   c=9

yes, it's a possibility

Ans: 1,2,3 follows

26. A 3-digit number ABC, on multiplication with D gives 37DD where A,B,C
and D are different non-zero digits. What is the value of A+B+C ?

A) 18

B) 16

C) 15

D) Cannot be determined due to insufficient data

Answer: A

Explanation:

Answer is option A as per trial and error method

27. For any choices of values of X, Y and Z, the 6-digit number of the form XYZXYZ is divisible by:

A) 7 and 11 only

B) 11 and 13 only

C) 7 and 13 only

D) 7,11 and 13

Answer: D

Divisibility rules for 7,11 and 13 says when

Rule: Difference blue the last 3 digits & the balance digits of a number must be Zero.

According to this last digit = XYZ

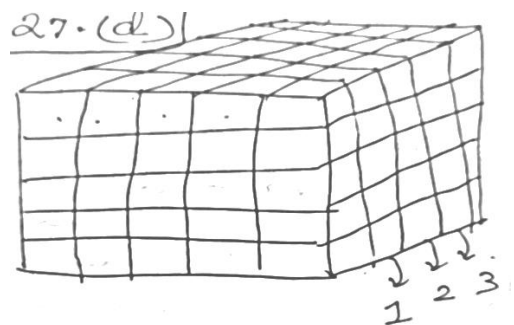   Blance digits   i.e XYZ

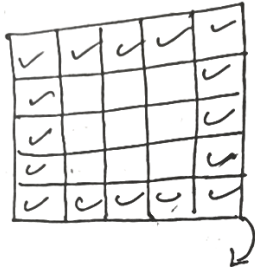   Diff = 000

Ans: 7,11 and 13 are divisors

28. 125 identical cubes are arranged in the form of a cubical block. How many cubes are surrounded by other cubes from each side?
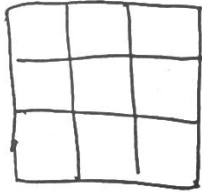
A) 27

B) 25

C) 21

D) 18

Answer: A

Remove outer lines 3 inner lines of cubes

Each inner bars lines remove the outer squares – so balance

= 3 x 3 totally 9 cubes per line.

Totally 3 lines

So 3x9 = 27 such cubes are surrounded by cubes from each side

29. How many distinct 8-digit numbers can be formed by rearranging the digits of the number 11223344 such that odd digits occupy odd positions and even digits occupy even positions?

A) 12

B) 18

C) 36

D) 72

Answer: C

Explanation:

$\underline{\ \ }\ \underline{\ \ }\ \underline{\ \ }\ \underline{\ \ }\ \underline{\ \ }\ \underline{\ \ }\ \underline{\ \ }\ \underline{\ \ }$

O E O E O E O E   - 8 digit

Even = 4 places = Nos allowed = (2244)

Odd   = 4 places = Nos allowed = (3311)

For even position ,

Choosing 4 nos (2 are repeated) for 4 places

$= \dfrac{4!}{2!2!}$

For odd position

Choosing 4 nos (2 are repeated here also)

$$= \frac{4!}{2!2!}$$

Totally $\frac{4!}{2!2!}$ X $\frac{4!}{2!2!}$

$$= \frac{4 \times 3 \times 2 \times 1}{2 \times 2} \quad X \quad \frac{4 \times 3 \times 2 \times 1}{2 \times 2}$$

$= 6 \times 6$

$=$ 36 distinct 8 dig no can be formed

Ans : 36

30. A,B,C working independently can do a piece of work in 8, 16,12 days respectively. A alone works on Monday, B alone works on Tuesday, C alone works on Wednesday; A alone, again works on Thursday and so on. Consider the following statement:

1. The work will be finished on Thursday

2. The work will be finished in 10 days.

Which of the above statement is/are correct?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 and 2

Answer: C

Directions for the following 3 (three) items: Read the following three passages and answer the items that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

We often hear about conflicts among different States in India over river waters. Of the 20 major river systems, 14 are already water-stressed; 75% of the population lives in water-stressed regions, a third of whom live in water-scarce areas. Climate change, the demands of rising population and the need for agriculture to keep pace, and increased rate of urbanization and

industrialization will exacerbate stress. According to the Constitution of India, water water is a State subject and not that of the Union, except for regulation of inter-State rivers. Key to ensuring balance between competing demands of various stakeholders is a basin-based approach to allocate water amongst constituent regions and States. Allocating fair share of water to them requires assessments based on objective criteria, such as specificities of the river basin, size of dependent population, existing water use and demand, efficiency of use, projected future use, etc. while ensuring the environmental needs of the river and aquifers.

31. Which one of the following statements best reflects the most rational, practical and immediate action required to ensure fair and equitable allocation of water to different stakeholders ?

A) A national pragmatic, legal and policy framework for work allocation should be made.

B) All river system of the country should be linked and huge aquifers created.

C) Water channels between regions of deficits should be created.

D) To mitigate water crisis, water demand of sectors such as agriculture and industry should be reduced.

Answer: A/C

Passage-2

More than half of Indian women and almost a quarter of Indian men of working age suffer from anaemia. According to studies, they are anywhere from 5-15% less productive than they could be, as a result thereof. India also has the largest tuberculosis burden in the world, costing 170 million workdays to the country annually. But what is just as important as lost productivity now is lost potential in the future. It is becoming increasingly clear that on many measures of cognitive ability, malnourished Indian children perform two or three times worse than their adequately nourished peers. For an economy that will be more dependent on highly skilled workers,

this poses a significant challenge. And it is one that really should be addressed given India's demographic outlook.

32. Which one of the following statements best reflects what is implied by the passage?
A) Education system must be strengthened in rural areas.
B) Large scale and effective implementation of skill development programme is the need of the hour.
C) For economic development, health and nutrition of only skilled workers needs special attention.
D) For rapid economic growth as envisaged by us, attention should be paid to health and nutrition of the people.
Answer: D

Passage-3

In India, a majority of farmers are marginal and small, less educated and possess low adaptive capabilities to climate change, perhaps because of credit and other constraints. So. one cannot expect autonomous adaptation to climate change. Even if it was possible, it would not be sufficient to offset losses from climate change. To deal with this, adaptation to climate change is paramount, alongside a fast mitigation response. Another solution is to have planned a adaptation, government or policy-driven which would require the to come up with policy recommendations. Perception is a necessary pre-requisite for adaptation. Whether farmers are adapting agricultural practices to climate change depends on whether they perceive it or not. However, this is not always enough for adaptation. It is important how a farmer perceives the risks associated with climate change.

33. Which one of the following statements best reflects the most logical and rational message conveyed by the author of the passage?

A) Adaptation to climate change and mitigation response are basically the responsibilities of the government.

B) Climate change causes a change in government policies regarding land use patterns in the country.

C) Risk perceptions of farmers are important for motivating them for taking adaptation decisions.

D) Since mitigation is governments should not possible, come up with policies for quick response to climate change.

Answer: C

34. Raj has ten pairs of red, nine pairs of white and eight pairs of black shoes in a box. If he randomly picks shoes one by one (without replacement) from the box to get a red pair of shoes to wear, what is the maximum number of attempts he has to make ?

A) 27

B) 36

C) 44

D) 45

Answer: D

It is shows concept - so left & right shoes are different

Maximum no. of chance for picking 23 pair of red shoes to wear is

Picking all black shoes

$$= 8 \times 2 = 16 \text{ attempts}$$

Picking all white shoes

$$= 9 \times 2 = 18$$

$$= 34$$

Picking all left side only

Right side only

Red shoes

$$= 10 \text{ left} = 10 \text{ attempt}$$

$$= 1 \text{ attempt}$$

= 45 attempt

Right + 1 this is the final attempt

35. In how many ways can a batsman score exactly 25 runs by scoring single runs, fours and sixes only, irrespective of the sequence of scoring shots?

A) 18

B) 19

C) 20

D) 21

Answer: B

Explanation:

Which means

The runs are taken by 1, 4 or 6. No + compulsorily everyone [1,4,6] together present .

Lets start assuming with no of 'sixes'

Given, total Run = 25 runs only

So maximum no. of 'sixes' possible is

4 x '6' = 24 runs; Balance '1' can be taken from 'single run'

So bringing this into equation:

4 sixes

$x + 4y + 4z = 25$

Let $x = 1$

$y = 4$

$z = 6$

$x = 1$ & $y = 0$ only 1 way

Maximum coefficient of Z is = 4

Minimum coefficient of Z is = 0

Lets try with all possible ways:

4 sixes

$x + 4y + 6z = 25$

(24)

3 sixes

$x + 4y + 18 = 25$

$x = 1 ; y = 0 = 1$ way

$x = 3$ $y = 1$

$x = 7$ $y = 0$ = 2 ways

2 sixes
$x + 4y + 12 = 25$

1 sixes
$x + 4y + 6 = 25$

x = 13   y = 0

x = 9   y = 1

x = 5   y = 2

x = 1   y = 3

        4 ways

x = 19   y = 0

x = 15   y = 1

x = 11   y = 2

x = 7   y = 3

x = 3   y = 4

        5 ways

0 sixes
$x + 4y + 0 = 25$

x = 25   y = 0

x = 21   y = 1

x = 17   y = 2

x = 13   y = 3

x = 9   y = 4

x = 5   y = 5

x = 1   y = 6

    7 ways

Total no of ways= 1+2+4+5+7 = 19 ways

36. There are four letters and four encelopes and exactly one letter is to be put in exactly one envelope with the correct address. If the letters are randomly inserted into the envelopes, then consider the following statement:
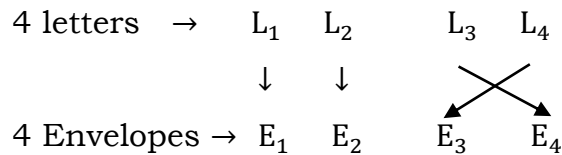
1. It is possible that exactly one letter goes into an incorrect envelope.

2. There are only six ways in which only two letters can go into the correct envelopes.

Which of the statements given above is/are correct?

A) 1 only

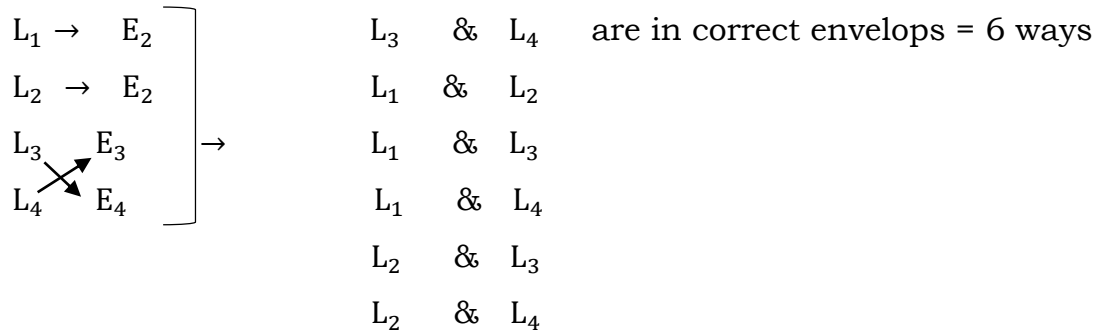B) 2 only

C) Both 1 and 2

D) Neither 1 and 2

Answer: B

Explanation:

4 letters → L_1 L_2 L_3 L_4

                ↓   ↓   ✕

4 Envelopes → E_1 E_2 E_3 E_4

Formula

4_{C_2} = Out of 4 letters only 2 can go in to the correct envelopes

$= \frac{4!}{2!} = \frac{4 \times 3}{2 \times 1}$ = 6 ways

$L_1 \rightarrow E_2$ L_3 & L_4 are in correct envelops = 6 ways

$L_2 \rightarrow E_2$ L_1 & L_2

L_3 ✕ E_3 → L_1 & L_3

L_4 E_4 L_1 & L_4

                        L_2 & L_3

                        L_2 & L_4

37. what is the remainder when

86*87*89*91*95*96 is divided by 100?

A) 0

B) 1

C) 2

D) 4

Answer: A

Explanation:

86*87*89*91*95*96/100

In the question given part of numerator is completely cancelled by the denominator value which means, numerator is a multiple of the denominator value.

In this case, always remainder will be 0

38. What is the unit digit in the expansion of $57242^{9*7*5*3*1}$?

A) 2

B) 4

C) 6

D) 8

Answer: A

Explanation:

Unit digit of

$(5\ 7\ 2\ 4\ 2)^{9x7x5x3x1}$

$\downarrow$

Unit digit of base = 2

= $(2)^{9x7x5x3x1}$

Unit digit of - '2' powers has a cyclicity value of '4'

$2^1 = 2$

$2^2 = 4$

$2^3 = 8$

$2^4 = 16$

$2^5 = 32$ This cycle repeats

So, $(2)^{9x7x5x3x1}$

$\frac{9}{4}$ Rem = 1

$\frac{7}{4}$ Rem = 3

$\frac{5}{4}$ Rem = 1

$\frac{3}{4}$ Rem - 3

$(2)^{1x3x1x3} = 2^{\ 9}$

$\frac{1}{4}$ Rem = 2

$2^9 = \frac{9}{4} = 2^1 = 2^1 = 2$

Ans unit digit = 2

Or

We can multiply all the powers

$(57242)^{9x7x5x3x1}$

$(57242)^{945}$

$4 \div 945 = 1$

$2^1 = 2$

39. If ABC and DEF are both 3-digit numbers such that A,B,C,D,E and F are distinct non-zero digits such that ABC+DEF= 1111, then what is the value of A+B+C+D+E+F?

A) 28

B) 29

C) 30

D) 31

Answer: D

Explanation:

```
A  B  C            A B C D E F
D  E  F            |_____|
1 1 1 1            non Zero single digits
```

```
Ideology          C/F = 2 3 4 5
A  B  C              +
D  E  F           C/ F =  9 8 7 6
   1 → 1 means 11 what 2 single digits add upto  11
```

(2+9) (3+8) (4+7) (6+5) That's all

Ten's place

```
A  B  C
D  E  F
   1   1
   ↓
```

This is carry forwarded from 11

So B+E = 10

B/ E = 1 2 3 4 5

B / E = 9 8 7 6 5

Hundreds place

$$\begin{array}{ccc} A & B & C \\ D & E & F \\ \hline 11 & 1 & 1 \\ \hline \end{array}$$

↓

Carry forward from that 11

So A + D = 10

A + B + C + D + E + F = 10 + 10 + 11 = 31

40. D is a 3-digit number such that the ratio of the number to the sum of its digits is least. What is the difference between the digit at the hundred's plaace and the digit at the unit's place of D?

A) 0

B) 7

C) 8

D) 9

Answer: C

Explanation:

ratio of the number to sum of its digits is least means

$\frac{\text{Number}}{\text{Sum of digits}}$ = must be a least value

Lets assign – 3 digit number = 100

trial - 1

$\frac{\text{Number}}{\text{Sum of digits}} = \frac{100}{1+0+0} = \frac{100}{1} = 100$

trial – 2

$= \frac{123}{1+2+3} = \frac{123}{6} = 21$

trial – 3

to get the least value we need to maximize the denominator and minimize the numerator value

So, the best value is 1 9 9.

The denominators value

$\frac{199}{1+9+9} = \frac{199}{19}$ = This will give us 10.47

Ans: 1 9 9

Diff = 8

Directions for the following 3 (three) items:
Read the following three passages and answer the items that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

In India, while the unemployment rate is a frequently used measure of poor performance of the economy, under conditions of rising school and college enrolment, it paints an inaccurate picture. The reported unemployment rate is dominated by the experience of younger Indians who face higher employment challenges and exhibit greater willingness to wait for the right job than their older peers. The unemployment challenge is greater for people with secondary or higher education, and rising education levels inflate unemployment challenges.

41. Which one of the following statements most likely reflects as to what the author of the passage intends to say?
A) Enrolment in schools and colleges is high but there is no quality education.
B) Unemployment must be seen function of rising education and aspirations of young Indians.
C) There are no labour-intensive industries to accommodate the huge number of unemployed people.
D) The education system should be properly designed so as to enable the educated people to be self-employed.
Answer: B

Passage-2

"Science by itself is not enough, there must be a force and discipline outside the sciences to coordinate them and point to a goal. It is not possible to run a course aright when the goal itself has not been rightly placed. What science needs is philosophy- the analysis of scientific method and the coordination of scientific purposes and results; without this, any science must be superficial. Government suffers, precisely like science, for lack Philosophy bears to of philosophy. science the same relationship which statesmanship bears to politics movement guided by total knowledge and perspective, as against aimless and individual seeking. Just as the pursuit of knowledge becomes scholasticism when divorced from the actual needs of men and life, so the pursuit of politics becomes a destructive bedlam when divorced from science and philosophy".

42. Which one of the following statements best. reflects the most rational, logical and practical message conveyed by the passage 2

A) Modern statesmen need to be well trained in scientific methods und philosophical thinking to enable them to have a better perspective of their roles, responsibilities and goals.

B) It is not desirable to have Governments managed by empirical statesmen unless well mixed with other who are grounded in learning and are reflect wisdom

C) As the statesmen/bureaucrats are the products of a society, it is desirable to have a system of education in a society that focuses on training its citizens in scientific method and philosophical thinking from a very early age.

D) It is desirable that all scientists need to be philosophers as well to make their work goal-oriented and thus purposeful and useful to the society.

Answer: A

"The last end of the state is not to dominate men, nor to restrain them by fear; rather it is so to free each man from fear that he may live and act with full security and without injury to himself or his neighbour. The end of the state, 1 repeat, is not to make rational beings into brute beasts and machines. It is to enable their bodies and their minds to function safely. It is to lead men to live by, and to exercise, a free reason; that they may not waste their strength in hatred, anger and guile, nor act unfairly toward one another."

43. Based on the above passage, which one of the following terms best expresses the ultimate goal of the state?
A) Personal safety
B) Health of body and mind
C) Communal harmony
D) Liberty
Answer: C/D

44. What is the remainder if 2192 is divided by 6 ?
A) 0
B) 1
C) 2
D) 4
Answer: D
Explanation:

$$\frac{2^{192}}{6} = \frac{2^{191} \times 2}{6}$$

$$\frac{2^{192}}{3} \rightarrow \text{Rem} = (-1)^{191} = (-1)^{191}$$

(-1) + 3 = '2' is Rem

Already canelled '2' $\boxed{2 \times 2}$ = 4

45. Consider the sequence

ABC__ ABC_ DABBCD_ ABCD

that follows a certain pattern. Which one of the following completes the sequence?

A) DACB

B) CDAB

C) DCCA

D) DDCA

Answer: D

ABC<u>D</u> <u>D</u>ABC <u>C</u>DAB BCD<u>A</u> ABCD is the sequence

Pattern ABCDD ABCCD ABBCD AABCD

So answer is option d DDCA

46. AB and CD are 2-digit numbers, Multiplying AB with CD results in a 3-digit number DEF Adding DEF to another 3-digit number GHI results in 975, Further A, B, C, D, E, F, G, H, I are distinct digits. If E-0, F-8, then what is A+B+C equal to ?

A) 6

B) 7

C) 8

D) 9

Answer: A

Explanation:

AB x CD
‾‾‾‾‾‾‾‾

  D E F

      +   given E = 0

  G H I   F = 8
‾‾‾‾‾‾‾‾

  9 7 5

D E F   = D 0 8   8 + ? = 5
  ⇓ ⇓   +   8 + 7 = 15
  0 8   G H I   ∴ I = 7
        ‾‾‾‾‾‾‾‾
          9 7 5

| E = 0 |
| F = 8 |
| I = 7 |
| H = 6 |
| D = 4 |
| G = 5 |

```
D 0 8                        O + H + I = 7
G 6 7                        ┌─────────────┐
─────────                    │  ∴ H = 6    │
                             └─────────────┘
9 7 5
```

          D + G = 9

          D = 4 or 5

          G = 4 or 5

But   AB x CD

    ─────────────

    D O '8'   → This 8 denotes 'D' is not 5 & D = 4.

          ┌─────────────┐
          │ ∴ D = 4   │
          │   G = 5   │
          └─────────────┘

    AB x CD = 4
    ───────────
     4 O 8

```
AB x C 4
──────────
  4 O 8
```

```
A 2 x C 4                    B x 4 = 8
──────────                   2 x 4 = 8
  4 O 8                      7 x 4 = 8
                                ↓
                             Already I = 7
                             ┌───────────┐
                             │ ∴ B = 2   │
                             └───────────┘
```

If we put A is 9 & C =1

        ┌─────────────┐
        │ A & C   │ may be 1, 3 or 9
        └─────────────┘

Then 92 x 14

Result = 900 above

─────────────────────────

So '9' is invalid in this case.

So A/C = 1 /3

Lets try this trial

$$\frac{A\ 2 \times C\ 4}{4\ O\ 8}$$

A = 1   12 x 34 = 408

C = 3

∴ A =1   Confirmed

   C = 3

A + B + C = 1 + 2 + 3 = 6

     Ans: 6

47. Consider the following statements in respect of five candidates P, Q, R, S and T. Two statements are true and one statement is false.

True Statement: One of P and Q was selected for the job.

False Statement: At least one of Rand S wa selected for the job.

True Statement: At most two of R, B and were selected for the job.

Which of the following conclusions can be drawn?

1. At least four were selected for the job.

2. S was selected for the job,

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

Answer: D

Explanation:

     Facts from True   Facts from False

1. P✓ or Q✓   R×   S×

2. R×, S , T×

     ↓

     May / may not.

Stmt 1:

     X Because atleast '2' may be selected.

Stmt 2:

     'S' may/may not be selected. So we can't say it definitely.

48. Let P, Q, R, S and T bo five statements such Directions that:

I. If P is true, then both Q and S are true.

II. If R and S are true, then T is false. Which of the following can be concluded?

1 . If T is true, then at least one of P and R must be false.

2. If Q is true, then P is true. 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

Answer: A

Explanation:

I. If P is true $\Rightarrow$ Q✓   and S✓

II. If R & S true $\Rightarrow$ T×

Concept:

If 'P' is true then 'Q' is true does not mean if 'Q' is true then P is also true.

But false start becomes true, Then, One of the object it depends on there (R and S) are Inversed.

Concept:

If T is false, then 'R will be true' or 'S' will be true.

If T is True, then 'R will be false' or 'S' will be false.

This is given in

✓ true | Con-I | If T is true, then at least one of P and R must be False.

× False | Con II | 'Q' depends on 'P' but not P depends on Q.

Ans: 1 only.

49. A cuboid of dimensions 7 cm x 5 cm x 3 cm i painted red, green and blue colour on each pair of opposite faces of dimension 7 cm x 5 cm, 5 cm x 3 cm, 7 cm x 3 c respectively. Then the cuboid is cut a separated into various cubes each of si length 1 cm. Which of the follow statements is/are correct?
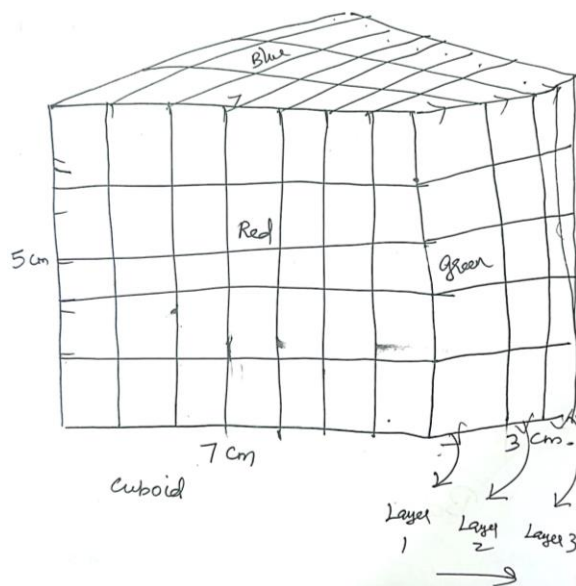
1. There are exactly 15 small cubes with paint on any face.

2. There are exactly 6 small cubes exactly two faces, one painted with and the other with green.

Select the correct answer using the code below:

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: A

Explanation:

Just remove the side layer 1 & 3 we get middle layer – layer – 2.

✓	✓	✓	✓	✓	✓	✓
✓	1	2	3	4	5	✓
✓	10	9	8	7	6	✓
✓	11	12	13	14	15	✓
✓	✓	✓	✓	✓	✓	✓

In this slice remove all the outer parts [they are having atleast one painted face]

Balance = 15 faces are unpainted.

So ⬚ stmt – 1 ✓

Stmt – 2

In this pic there are 6 small cubes each [2 at the corners] – top & bottom on the joining sides of blue faces with green faces.

Top – 1 (Blue & green)

Bottom – 1 (blue & green)

Totally = 2 cubes

| "corner '4' are 3 colours painted Including red |
| So 6 – 4 = 2" |

So ⬚ stmt – 2 ×

50. The letters of the word "INCOMPREHENSIBILITIES are arranged alphabetically in reverse order. How many positions of the letter/letters will remain unchanged?

A) None

B) One

C) Two

D) Three

Answer: C

Directions for the following 4 (four) items:

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

Passage-1

The paradox of choice is illustrated by the story of Buridan's ass. Jean Buridan, the 14th century philosopher, wrote about free will and the inability to choose due to numerous choices and uncertainties. In the story, a donkey stands between two equally appealing stacks of hay. Unable to decide which to eat, it starves to death. Changes in technology and innovations such as

smart phones and tablets only exacerbate our glut of choices. Constant connectivity and overconsumption of real-time data and social media can leave little room for self-reflection and rest, making decisions more difficult. Life is about choices. Many people are overwhelmed with attractive life choices, yet find themselves unhappy and anxious.

51. Which one of the following statements best reflects the most logical message implied by the above passage?

A) Modern technology enfeebles societa structure and makes life difficult.

B) Modern life is full of uncertainties and endless difficult choices.

C) We are influenced by the opinion of others and have no courage to follow our own convictions.

D) In our lives, having too few choices ma not be a good thing, but having man can be equally as difficult.

Answer: D

Passage-2

Household finance in India is unique. We have a tendency to invest heavily in physical assets such as gold and property. Steps to encourage the financialization of savings are critical. A populace accustomed to traditional processes will not simply jump into Hurdles to change include onerous bureaucracy, a scepticism of organized financial institutions, a lack of basic information about which of the myriad services and providers is best for each family, and how (and even if one can make the transition between them if necessary.

52. Regarding the financialization of household savings, which of the following statements best reflect the solutions that are implied by the passage?

1. A flexible environment is needed to develop solutions.

2. Households need customised solutions.

3. Innovations in financial technology are required.

Select the correct answer using the code given below:

A) 1 and 2 only

B) 2 and 3 only

C) 1 and 3 only

D) 1, 2 and 3

Answer: A/D

Passage – 3

Pharmaceutical patents grant protection to the patentee for the duration of the patent term. The patentees enjoy the liberty to determine the prices of medicines, which is time-limited to the period of monopoly, but could be unaffordable to the public. Such patent protection offered to the patentees is believed to benefit the public over the longer term through innovations and research and development (R&D), although it comes at a cost, in the nature of higher prices for the patented medicine. The patent regime and price protection - through a legally validated high price for the medicine during the currency of the patent provide the patentee with a legitimate mechanism to get returns on the costs incurred in innovation and research.

53. Based the above passage, the following assumptions have been made:

1.Patent protection given to patentees puts a huge burden on public's purchasin power in accessing patented medicines.

2. Dependence other countries f on pharmaceutical products is a hu burden for developing and poor countrie

3. Providing medicines to the public affordable prices is a key goal during public health policy design in many countries.

4. Governments need to find an appropriate balance between the rights of patentees and the requirements of the patients.

Which of the above assumptions are valid?

A) 1 and 2

B) 1 and 4

C) 3 and 4

D) 2 and 3

Answer: C

Passage-4

India should ensure the growth of the digital economy while keeping personal data of citizens secure and protected. No one will innovate in a surveillance-oriented environment or in a place where an individual's personal information is compromised. The ultimate control of data must reside with the individuals who generate it; they should be enabled to use, restrict or monetise it as they wish. Therefore, data protection laws should enable the right kind of innovation - one that is user-centric and privacy protecting.

54. Based on the above passage, the following assumptions have been made:

1. Protection of privacy is not just a right, but it has value to the economy.

2. There is a fundamental link between privacy and innovation.

Which of the above assumptions is/are valid?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: C

55. In an examination, the maximum marks for each of the four papers namely P, Q, R and S are 100. Marks scored by the students are in integers. A student can score 99% in n different ways. What is the value of n?
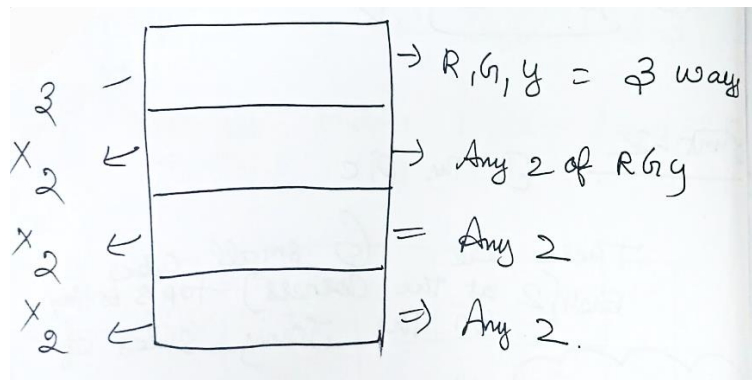
A) 16

B) 17

C) 23

D) 35

Answer: D

56. A flag has to be designed with 4 horizontal stripes using some or all of the colours red, green and yellow. What is the number of different ways in which this can be done so that no two adjacent stripes have the same colour?

A) 12

B) 18

C) 24

D) 36

Answer: C

Explanation:

3 x 2 x 2 x 2 ways ⇒ 6 x 4 = 24 ways.

Ans: C

57. A rectangular floor measures 4 m in length and 2-2 m in breadth. Tiles of size 140 cm by 60 cm have to be laid such that the tiles do not overlap. A tile can be placed in any orientation so long as its edges are parallel to the edges of the floor. What is the maximum number of tiles that can be accommodated on the floor?

A) 6

B) 7

C) 8

D) 9

Answer: C

Explanation:

totally 8 tiles can be placed in any orientation. The shaded denoting Empty space tiles are not placed there. As there is no condition, are to be fully placed in given area.

Ans: C

58. There are five persons P, Q, R, S and T each one of whom has to be assigned one task. Neither P nor Q can be assigned Task-1. Task-2 must be assigned to either R or S. In how many ways can the assignment be done?

A) 6

B) 12

C) 18

D) 24

Answer: D

Explanation:
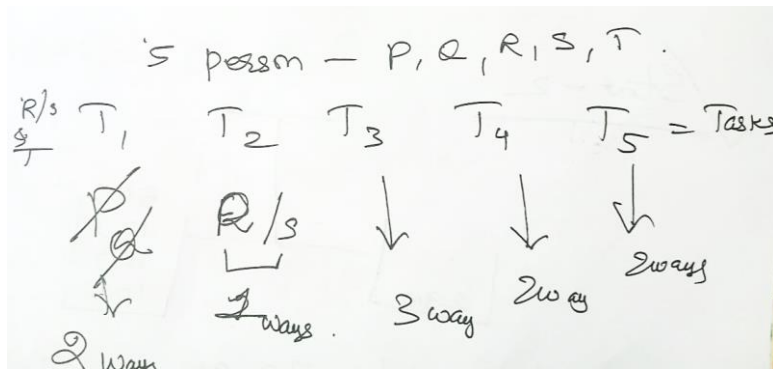
Total = 2 x 1 x 3 x 2 x 2

= 24 ways.

Ans: 24

59. There are large number of silver coins Dire weighing 2 gm, 5 gm, 10 gm, 25 gm, 50 gm Read each. Consider the following statements:

1. To buy 78 gm of coins one must buy at least 7 coins.

2. To weigh 78 gm using these coins one can use less than 7 coins.

Which of the statements given above is/are correct?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: C

Explanation:

Stunt-1   To buy 78 gm of coins.

50g x 1 = 50

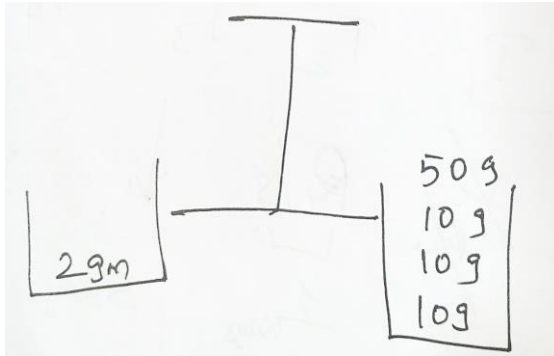$$10g \times 2 = 20$$
$$\underline{2g \times 4 = \quad 8}$$
$$\underline{7 \text{ coins}} \quad \underline{78 \text{ gms}}$$

<u>Stmt – 1</u> True 'min 7 coins' required.

<u>Stmt – 2</u>

Yes to weigh 78gm, we can use just 5 coins.

Ans: C

60. Consider the following:

I. A+B means A is neither smaller nor equal to B.

II. A-B means A is not greater than B.

III. AxB means A is not smaller than B.

IV. A÷B means A is neither greater nor equal to B.

V. A±B means A is neither smaller nor greater than B.

Statement: PXQ, P-T, T÷R, R±S

Conclusion-1: Q+T

Conclusion-2: S+Q

Which one of the following is correct in respect of the above Statement and the Conclusions?

A) Only Conclusion-1 follows from the statement.

B) Only Conclusion-2 follows from the Statement.

C) Both Conclusion-1 and Conclusion-2 follow from the Statement.

D) Neither Conclusion-1 nor Conclusion-2 follows the Statement.

Answer: B

Explanation:

Give decoding

P ≥ Q,

P ≤ T,

T < R,

R = S

Q ≤ P ≤ T < R = S

<u>Con – I</u>   Q = T x

<u>Con – II</u>   S > Q ✓

Ans: only 2 follows.

Directions for the following 3 (three) items:

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

Passage - 1

Sourcing food from non-agricultural lands (uncultivated systems such as forests, wetlands, pastures, etc) in addition to agricultural lands enables a systemic approach to food consumption. It allows rural and tribal communities to sustain themselves for the whole year and steer clear of natural disasters and season-induced shortfalls of agricultural food. Since the productivity of trees is often more resilient to adverse weather conditions than annual crops, forest foods often provide a safety net during periods of food shortages caused by crop failure; forest foods also make important contributions during seasonal crop production gaps.

61. Which one of the following statements best reflects the most logical and rational message conveyed by the author of the passage?

A) Food yielding trees should replace other trees in rural and tribal areas and community owned lands..

B) Food security cannot be ensured in India with the present practice of conventional agriculture.

C) Wastelands and degraded areas in India should be converted into agroforestry systems to help the poor.

D) Agroecosystems should be developed in addition to or along with conventional agriculture.

Answer: D

Passage-2

While awareness on use/misuse and abuse of antibiotics is common knowledge, as is the impact of dosing poultry with antibiotics, the environmental impact of antibiotics-manufacturing companies not treating their waste has scarcely been discussed at any length or seriousness thus far. Pollution from antibiotics factories is felling the rise of drug-resistant infections. The occurrence of drug-resistant bacteria surrounding the pharma manufacturing plants is well known.

62. Which one of the following statements best reflects the most logical and practical message conveyed by the passage?

A) It is necessary to put proper effluent treatment protocols in place.

B) It is necessary to promote environmental awareness among people.

C) Spread of drug-resistant bacteria cannot be done away with, as it is inherent in modern medical care.

D) Pharma-manufacturing should be set up in remote rural areas, away from crowded towns and cities.

Answer: A

Passage-3

Benefits of good quality school education accrue only when students complete and leave school after having acquired the gateway skills. Like one learns to walk before running, similarly one picks up advanced skills only after picking the basic foundational skills. The advent of the knowledge economy poses new challenges, and one of the severe consequences of having an uneducated workforce will be our inability to keep pace with the global economy. Without

a strong learning foundation at the primary level, there can be no improvement in higher education or skill development.

63. Which one of the following statements best reflects the crux of the passage?
A) To become a global power, India needs to invest in universal quality education.
B) India is unable to become a global power because it is not focussing or promoting knowledge economy.
C) Our education system should focus more on imparting skills during higher education.
D) Parents of many school children are illiterate and are unaware of the benefits of quality education.
Answer: A

64. 40 children are standing in a circle and one of them (say child-1) has a ring. The ring is passed clockwise. Child-1 passes on to child-2, child-2 passes on to child-4, child-4 passes on to child-7 and so on. After how many such changes (including child-1) will the ring be in the hands of child-1 again?
A) 14
B) 15
C) 16
D) 17
Answer: B

Explanation:
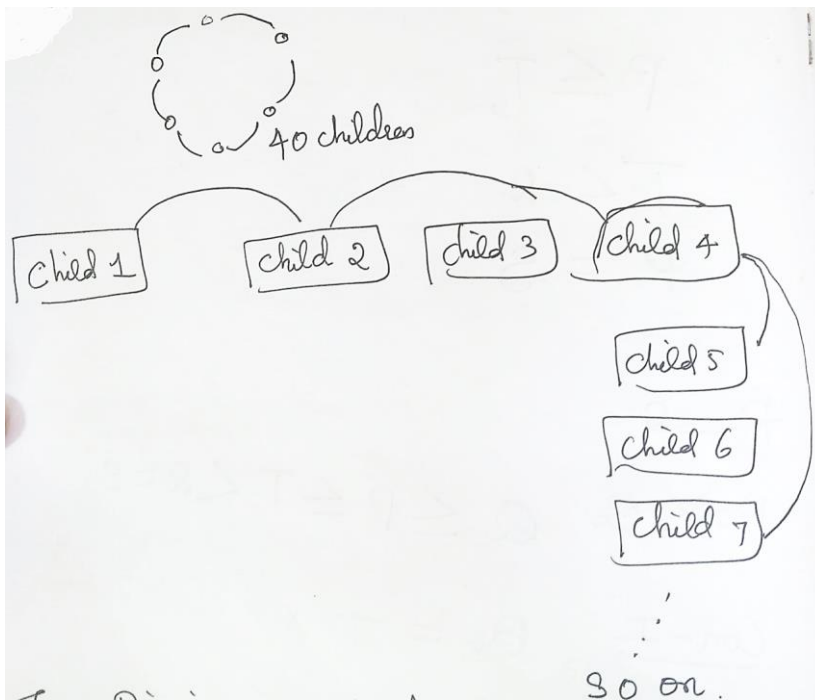
The ring is passed blue the gap as follows.

1, 2, 3 ....

Concept used

1 + 2 + 3 ......> consecutive natural no's.

Formula used

Sum of con-natural nos = multiple of '40'

$$\frac{n(n+1)}{2} = \text{multiple of 40.}$$

For 'n' let take value from 'option'.

Therefore $\boxed{n = 15}$

65. What is the middle term of the sequence

Z, Z, Y, Y, Y, X, X, X, X, W, W, w, w, w,..., A?

A) H

B) I

C) J

D) M

Answer: B

Explanation:

1. It's an alphabet series started from Z to A.

2. Total alphabets = 26

3. Starting with 2 times, 3times, 4times, …. So on.

i.e,

      Z = 2times

      Y = 3 times

      X = 4 times

      W = 5 times

      .

      .

      .

      .

      A = 27 times [Alphabets 1 to 26 here start with '2' so 2 to 27]

So farming 'A.p' series

      2, 3, 4, 5 ,……., 27

            ↓

Finding sum of this series = No of total terms in the alphabet series.

Finding Sum of A.P

$$= \left[\frac{\text{last term} + \text{first term}}{2} \right] \times \text{No. of terms}$$

$$= \left[\frac{27 + 2}{2} \right] \times 26$$

$$= \frac{29 \times 26}{2} = 29 \times 13$$

$$\Rightarrow 377$$

∴ 377 terms in total

finding The middle term's = '377' is odd no.
Sum

So $\frac{377 + 1}{2}$

$$= \frac{378}{2} = 189$$

189 is The Sum of the terms Up to The middle term.

finding the middle term — up to which
the sum of the terms was 189.

formula: for finding 'n' — $\boxed{n = \text{required term}}$

$$\frac{n}{2}\left[2a + (n-1)d\right] = 189$$

$$\frac{n}{2}\left[2(2) + (n-1)1\right] = 189$$

$$\frac{n}{2}\left[4 + n - 1\right] = 189$$

$$n\left[n + 3\right] = 378.$$

$18^2 = 324$

Lets try $n = 18$,
$n + 3 = 21$ $\therefore$ $18 \times 21 = 378.$

$$\boxed{\therefore \ n = 18}$$

What is the 18 Th Letter from the
Alphabet Starting from 'Z'.

tot = 26 letters
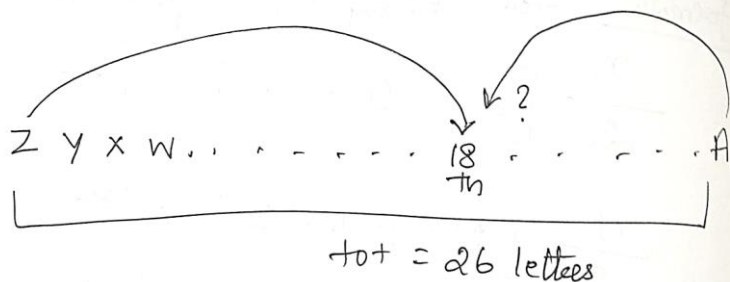
total − left pos + 1 = Right pos.
$26 - 18 + 1 \Rightarrow 9$

$\therefore$ from A, 9th letter is the answer

i.e., I

Ans: I

66. Question: Is p greater than q?

Statement-1: pxq is greater than zero.

Statement-2: p^2 is greater than q^2.

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

A) The Question can be answered by using one of the Statements alone, but cannot be answered using the other Statement alone.

B) The Question can be answered by using either Statement alone.

C) The Question can be answered by using both the Statements together, but cannot be answered using either Statement alone.

D) The Question cannot be answered even by using both the Statements together.

Answer: D

1st condition P*Q is greater than 0 let p=1, q= 2 or 1

2nd condition $P^2>q^2$ lets take p=-3, q = 2(p<q)

$P^2>q^2$ =9>4

Hence both statement are not sufficient to determine p greater than q

67. Question: Is (p+q-r) greater than (p-q+r), where p, q and r are integers?

Statement-1: (p-q) is positive.

Statement-2: (p-r) is negative.

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

A) The Question can be answered by using one of the Statements alone, but cannot be answered using the other Statement alone.

B) The Question can be answered by using either Statement alone.

C) The Question can be answered by using both the Statements together, but cannot be answered using either Statement alone.

D) The Question cannot be answered even by using both the Statements together.

Answer: C

Explanation:

St – 1   P > q

St – 2   r > p

R > P > Q

As we found r > p > q & all are Integers we can assign small values for them such as

    R = 3

    P = 2

    Q = 1

Now we can answer the question so, St -1 & St -2 together required to answer.

Ans: C

68. In a party, 75 persons took tea, 60 persons took coffee and 15 persons took both ten and coffee. No one taking milk takes ten. Each person takes at least one drink.

Question: How many persons attended the party?

Statement-1: 50 persons took milk.

Statement-2: Number of persons who attended the party is five times the number of persons who took milk only.

Which one of the following is correct in respect of the above Question and the Statements?
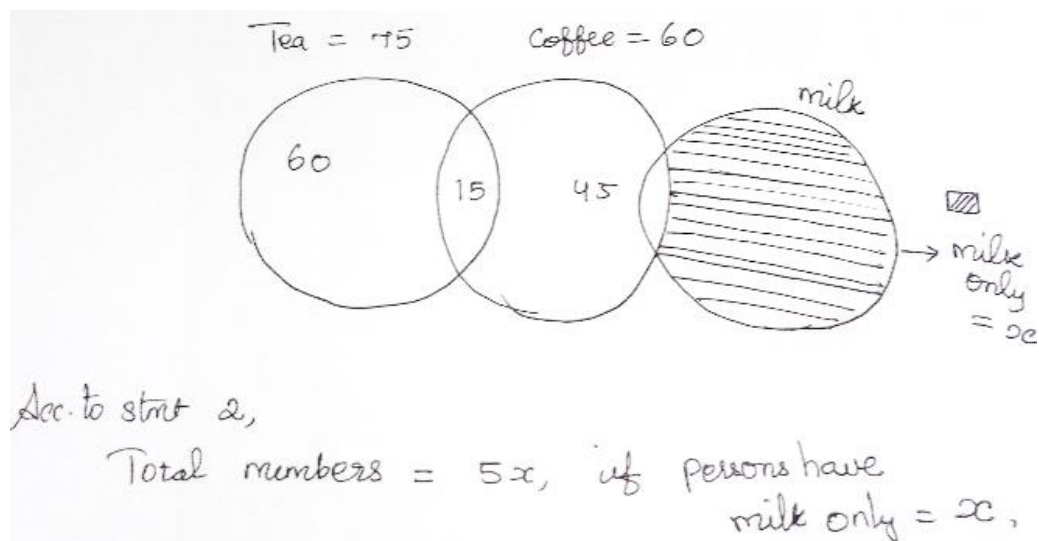
A) The Question can be answered by using one of the Statements alone, but cannot be answered using the other Statement alone.

B) The Question can be answered by using either Statement alone.

C) The Question can be answered by using both the Statements together, but cannot be answered using either Statement alone.

D) The Question cannot be answered even by using both the Statements together.

Answer: A

Explanation:

Statement – 1 (No sufficient date)

Statement – 2

Tea = 75   Coffee = 60

60   15   45   milk

milk only = x

Acc. to stmt 2,

Total numbers = $5x$, if persons have milk only = x,

$\therefore$ $60 + 15 + 45 + x = 5x$.

$120 + x = 5x$

$120 = 4x$

$\boxed{x = 30}$ $\rightarrow$ total No. of persons $= 5x = \underline{150}$

69. Consider a 3-digit number.

Question: What is the number?

Statement-1: The sum of the digits of the number is equal to the product of the digits.

Statement-2: The number is divisible by the sum of the digits of the number.

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

A) The Question can be answered by using one of the Statements alone, but cannot be answered using the other Statement alone.

B) The Question can be answered by using either Statement alone.

C) The Question can be answered by using both the Statements together, but cannot be answered using either Statement alone.

D) The Question cannot be answered even by using both the Statements together

Answer: D

Explanation:

Statement – 1

               1 2 3 - is one such number

               1 + 2+ 3 = 1 x 2 x 3

   Sum equals product   6   =   6

Using statement – 2, we can find few more numbers

1	2	3
3	2	1
1	3	2
3	1	2
2	1	3
2	3	1

Totally we have 6 different nos ,

Statement – 2

The number is divisible by its sum of digits

Let us take the previous list

      (1 3 2)   &   (3 1 2)

$\frac{1 \ 3 \ 2}{1+3+2}$ = $\frac{132}{6}$ yes div by 6

$\frac{3 \ 1 \ 2}{6}$ yes div by 6

There also we get , we get 2 diff nos.

We can't finalise that particular number with these 2 statements

70. For five children with ages a <b<c<d<e; any two successive ages differ by 2 years.

Question: What is the age of the youngest child?

Statement-1: The age of the eldest is 3 times the youngest.

Statement-2: The average age of the children is 8 years.

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

A) The Question can be answered by using one of the Statements alone, but cannot be answered using the other Statement alone.

B) The Question can be answered by using either Statement alone.

C) The Question can be answered by using both the Statements together, but cannot be answered using either Statement alone.

D) The Question cannot be answered even by using both the Statements together.

Answer: B

Explanation

5 children

A < b < c < d < e

Differ by 2 years

x   x+2   x+4   x+6   x+8

a   b   c   d   e

statement – 1

eldest – youngest   diff

3   :   1   :   2

8 yrs

X4

4 yrs   2uts = 8yrs

1ut = 4 yrs

Youngest = 4 yrs

Directions for the following 3 (three) items:

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

Passage-1

Scientists studied the vernal window transition period from winter to the growing season. They found that warmer winters with less snow resulted in a longer lag time between spring events and a more protracted vernal window. This change in the spring timetable has ecological, social and economic consequences for agriculture, fisheries and tourism. As the ice melts earlier, the birds don't return, causing a delay, or lengthening in springtime ecological events.

71. With reference to the above passage, the following assumptions have been made :

1. Global warming is causing spring to come early and for longer durations.
2. Early spring and longer period of spring is not good for bird populations.

Which of the above assumptions is/are correct?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: A/C

Passage-2

A global analysis of nitrogen use efficiency a measure of the amount of nitrogen a plant takes in to grow versus what is left behind as pollution says that using too much fertilizers will lead to increased pollution of waterways and the air. Currently, the global average for nitrogen use efficiency is approximately 0-4, meaning 40 per cent of the total nitrogen added to cropland goes into the harvested crop while 60 per cent is lost to the environment, says a study. More than half of the world's population is nourished by food grown with fertilizers containing synthetic nitrogen, which

is needed to produce high crop yields. Plants take the nitrogen they need to grow, and the excess is left in the ground, water and air. This results in significant emissions of nitrous oxide, a potent greenhouse and ozone depleting gas, and other forms of nitrogen pollution, including eutrophication of lakes and rivers and contamination of river water.

72. Which one of the following statements best reflects the most logical, rational and crucial message implied by the passage?
A) An enhanced efficiency of use of nitrogen is imperative for both food production and environment.
B) Production of synthetic nitrogen fertilizers cannot be stopped as it will adversely affect global food security.
C) Alternatives to crops that require excess of nitrogen should be identified and cultivated.
D) Conventional agriculture using synthetic fertilizers should be replaced with agroforestry, agroecosystems and organic farming.
Answer: A

Passage - 3

Along with sustainable lifestyles, climate justice is regarded as a significant principle in environmental parlance. Both the principles have bearings on political and economic choices of the nation. So far, in our climate change summits or compacts, both the principles have eluded consensus among nations. Justice, in the judicial sense, is well defined. However, in the context of climate change, it has scientific as well as socio-political connotations. The crucial question in the next few years will be how resources, technologies and regulations are used to support the victims of climate change. Justice in climate is not confined to actions relating to mitigation, but includes the wider notion of support for adaptation to climate change and compensation for loss and damage.

73. Which one of the following statements best reflects the most logical, rational and crucial message conveyed by the passage?

A) Climate justice should be ingrained in detail in the rules of all the new climate compacts/agreements.

B) Environmental resources are unevenly distributed and exploited across the globe.

C) There is an impending issue of dealing with a huge number of climate change victims/climate refugees.

D) Climate change in all its connotations is mostly due to developed countries and their share of burden should be more.

Answer: A

74. A principal P becomes Q in 1 year when compounded half-yearly with R% annual rate of interest. If the same principal P becomes Q in 1 year when compounded annually with S% annual rate of interest, then which one of the following is correct?

A) R=S

B) R>S

C) R<S

D) R≤S

Answer: C

75. How many natural numbers are there which give a remainder of 31 when 1186 is divided by these natural numbers?

A) 6

B) 7

C) 8

D) 9

Answer: D

76. Let pp, qq and rr be 2-digit numbers where p<q<r. If pp + qq + rr = tt0, where tto is a 3-digit number ending with zero, consider the following statements:

1. The number of possible values of p is 5.

2. The number of possible values of q is 6.

Which of the above statements is/are correct?

A) 1 only

B) 2 only

C) Both 1 and 2

D) Neither 1 nor 2

Answer: C

77. What is the sum of all 4-digit numbers less than 2000 formed by the digits 1, 2, 3 and 4, where none of the digits is repeated?

A) 7998

B) 8028

C) 8878

D) 9238

Answer: A

78. What is the number of selections of 10 consecutive things out of 12 things in a circle taken in the clockwise direction?

A) 3

B) 11

C) 12

D) 66

Answer: C

79. If today is Sunday, then which day is it exactly on 10^{10}th day?

A) Wednesday

B) Thursday

C) Friday

D) Saturday

Answer: B

80. There are three traffic signals. Each signal changes colour from green to red and then from red to green. The first signal takes 25 seconds, the second signal takes 39 seconds and the third signal takes 60 seconds to change the colour from green to red. The durations for green and red colours are same. At 2:00 p.m, they together turn green. At what time will they change to green next, simultaneously?

A) 4:00 pm

B) 4:10 pm

C) 4:20 pm

D) 4:30 pm

Answer: B