

1. For how many days will Ashtalakshmi Mahotsav be celebrated in December 2024?

- (a) Three days  
(b) Four days  
(c) One day  
(d) Two days

[a]

व्याख्या -

Ashtalakshmi Mahotsav 2024 was organized from 6 to 8 December 2024. It was a three-day cultural festival celebrated for the first time. It was inaugurated by Prime Minister Narendra Modi at Bharat Mandapam, New Delhi. The festival aimed to showcase the cultural heritage, traditional arts, crafts and cultural practices of Northeast India. It featured artisan exhibitions, rural haats, state-specific pavilions, design conclaves, fashion shows, musical performances and cuisines of Northeast India.

2. Where  $\frac{\cos^2 A}{1 - \sin A} = y$ , and  $\sin A \neq 1$ , then which of the following options is the correct expression for  $y$ ?

- (a) cosecA  
(b) cosA+1  
(c) sinA +1  
(d) secA + tanA

[c]

व्याख्या:-

$$y = \frac{\cos^2 A}{1 - \sin A}$$

Identification:  $\cos^2 A = 1 - \sin^2 A$

$$y = \frac{1 - \sin^2 A}{1 - \sin A}$$

Identification:  $a^2 - b^2 = (a - b)(a + b)$

$$y = \frac{(1 - \sin A)(1 + \sin A)}{1 - \sin A}$$

Has been given:  $\sin A \neq 1 \Rightarrow (1 - \sin A) \neq 0$

$$Y = 1 + \sin A$$

3. The following series of numbers and symbols should be counted from left to right only. Look at the sequence and answer the question given below. Counting Numbers and Symbols (Left) 9 # 1 2 @ 8 \$ 7 & 3 Ω & % 4 6 \* £ 5 (Right) How many such symbols are there in the above series, each of which is immediately preceded by an even number but not immediately followed by an odd number?

- (a) Zero  
(b) Two  
(c) One  
(d) More than two

[b]

व्याख्या:-

9 # 1 2 @ 8 \$ 7 & 3 Ω & % 4 6 \* £ 5

In the above series there are two pairs in which the symbol is not preceded by an even number and followed by an odd number.

4. If 'A' means '÷', 'B' means '×', 'C' means '+', and 'D' means '-', then what will come in place of question mark '?' in the following equation?

$$34 D 54 C 18 A 18 B 324 = ?$$

- (a) 304  
(b) 404  
(c) 204  
(d) 202

[a]

व्याख्या:-

$$34 D 54 C 18 A 18 B 324 = ?$$

according to question

$$34 - 54 + 18 \div 18 \times 324 = ?$$

$$34 - 54 + 1 \times 324 = ?$$

$$34 - 54 + 324 = ?$$

$$358 - 54 = ?$$

$$304 = ?$$

5. The power of a body can be measured both in kilowatts (KW) and watts (W). So what is the value of 1 KW in terms of watts?

- (a) 1000  
(b) 10000  
(c) 100  
(d) 10

[a]

Explanation -

1 kilowatt (kW) is equal to 1000 watts (W).

Kilowatt (kW) is a unit of power, which is equal to 1000 watts (W).

It is a metric prefix, where "kilo-" means 1000.

So, 1 kilowatt = 1000 watts.

The higher the kilowatt of an appliance, the more electrical power is required to run it.

6. How many medals did India win in Paris Olympics 2024?

- (a) Five  
(b) Six  
(c) Four  
(d) Three

[b]

व्याख्या -

India won a total of six medals at the Paris Olympics 2024, including one silver and five bronze.

List of medalists:

1. Manu Bhaker - Bronze in Women's 10m Air Pistol, and Bronze in Mixed Team 10m Air Pistol (with Sarabjot Singh)

2. Swapnil Kusale – Bronze in 50m Rifle 3

Positions

3. Aman Sehrawat – Bronze in Men's 57kg

Freestyle Wrestling

4. Indian Men's Hockey Team – Bronze after beating Spain 2-1

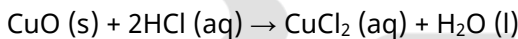
5. Neeraj Chopra – Silver in Men's Javelin Throw

7. Which compound is formed when dilute hydrochloric acid is added to a beaker containing a small amount of copper oxide?

- (a) Copper (IV) chloride  
(b) Copper (II) chloride  
(c) Copper (III) chloride  
(d) Copper (I) chloride [b]

**Explanation -**

When dilute hydrochloric acid (HCl) is added to a beaker containing a small amount of copper oxide (CuO), the following chemical reaction takes place:



In this reaction, copper oxide (which is a metallic oxide and is alkaline in nature) reacts with hydrochloric acid to form a salt and water. This is an example of a neutralization reaction.

The compound formed is copper (II) chloride (CuCl<sub>2</sub>). It gives blue-green colour to the solution. Copper (II) means that the oxidation state of copper is +2.

8. Which of the following options is the correct example of foam in a colloid?

- (a) Jelly  
(b) Pumice  
(c) Mist  
(d) Fog

[b]

**Explanation -**

A colloid is a mixture in which the particles of one substance are evenly dispersed in another substance, but they do not dissolve in the solution and do not settle as a suspension.

Foam is a type of colloid in which a gas (dispersed phase) is dispersed in a liquid or solid (dispersion medium).

Pumice is a volcanic rock in which gas bubbles are trapped when the lava cools and hardens. It is a classic example of a solid foam, where gas (dispersed phase) is trapped in a solid (dispersion medium).

Jelly is a gel, in which a solid (dispersed phase) is dispersed in a liquid (dispersion medium).

Mist is an aerosol, in which liquid droplets (dispersed phase) are suspended in a gas (dispersion medium).

Fog is also an aerosol, like haze, in which tiny liquid droplets or ice crystals (dispersed phase) are suspended in air (dispersion medium).

9. A and B together can complete a work in 5 days. They worked together for 4 days and then B left. A completed the remaining work in another 2 days. In how many days can A alone complete the whole work?

- (a) 10  
(b) 20  
(c) 15  
(d) 5

[a]

**व्याख्या:-**

Let A alone can complete the work in x days.

Let B alone can complete the work in Y days.

$$\text{Efficiency of A in 1 day} = \frac{1}{x}$$

$$\text{Efficiency of B in 1 day} = \frac{1}{y}$$

$$1 \text{ day work of (A + B)} = 1/5$$

$$(4 \text{ days work of A + B}) = 4 \times (1/5) = 4/5$$

$$\text{Remaining work} = 1 - 4/5 = 1/5$$

A completes 1/5 of the work in 2 days.

$$\text{A's work in 1 day} = (1/5)/2 = 1/10$$

Hence A alone can do the whole work in 10 days.

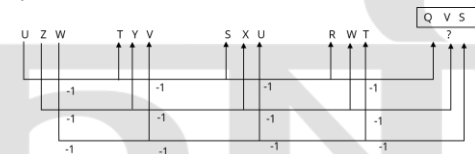
10. Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

UZW, TYV, SXU, RWT, ?

- (a) QSV  
(b) SQV  
(c) SVQ  
(d) QVS

[d]

**व्याख्या:-**



$$? = \text{QVS}$$

11. Choose the correct statement.

A. Testosterone also controls puberty symptoms in boys.

B. Progesterone also controls puberty symptoms in boys.

- (a) Both the statements are false.

- (b) Statement A is true but B is false.  
 (c) Both statements are true.  
 (d) Statement B is true but A is false. [b]

**Explanation -**

Testosterone is a primary male hormone responsible for many of the changes that occur during puberty in boys, such as muscle development, deepening of the voice, growth of facial and body hair, and development of the genitals.

Progesterone is primarily a female hormone that plays an important role in the menstrual cycle, pregnancy, and the development of the female reproductive system. It does not control the signs of puberty in boys. In boys, testosterone is the main hormone that controls these changes.

12. **The Public Examinations (Prevention of Unfair Means) Act, 2024 which aims to prevent unfair means in public examinations and common entrance tests held across the country, came into force in which month of 2024?**

- (a) May  
 (b) June  
 (c) August  
 (d) July

[b]

**व्याख्या -**

The Public Examinations (Prevention of Unfair Means) Act, 2024 came into force on 21 June 2024. The Act aims to prevent unfair means such as paper leaks, fake websites, and cheating in government recruitment and entrance examinations across the country. It prescribes imprisonment of three to five years and a fine of up to Rs 10 lakh for violators. Apart from this, service providers conducting the examination can also be fined up to Rs 1 crore and banned from conducting examinations for up to four years.

13. **The ratio of the present ages of three persons is 4:5:6. Eight years ago, the sum of their ages was 51. Find the present age of the eldest person.**

- (a) 28 years  
 (b) 30 years  
 (c) 36 years  
 (d) 45 years

[b]

**व्याख्या:-**

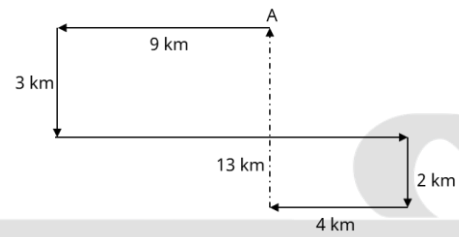
Consider the present age as  $4x, 5x, 6x$ .  
 8 years ago, the sum of the ages  
 $= (4x-8) + (5x-8) + (6x-8) = 51$   
 $15x - 24 = 51$   
 $15x = 75$   
 $x = 5$

Present age of the eldest person =  $6x = 6 \times 5 = 30$  years.

14. **Anthony starts from point A and walks 9 km towards west. He turns left, walks 3 km, again turns left and walks 13 km. Then he turns right and walks 2 km. He takes a last right turn, walks 4 km and stops at point P. How far (shortest distance) and in which direction should he walk to reach the point again? (Unless specified, all turns are 90 degree turns.)**

- (a) 9km towards north  
 (b) 5km towards north  
 (c) 13km towards west  
 (d) 7km towards south

[b]

**व्याख्या:-**

It is clear from the diagram that Anthley will walk 5km in north direction to reach point A.

15. **Look at the following series of numbers and symbols and answer the question given below. Numbers and symbols should be counted from left to right only.**

(left) # 1 \* £ 5 8 \$ 4 2 & % 6 7 & @ 3 Ω 9 (right)  
**How many such symbols are there in the above series, each of which is immediately preceded by a number and immediately followed by a symbol?**

- (a) One  
 (b) Two  
 (c) More than two  
 (d) Zero

[c]

**व्याख्या:-**

# 1 \* £ 5 8 \$ 4 2 & % 6 7 & @ 3 Ω 9

In the above series the pairs of symbols having a number before them and a symbol after them are three i.e. more than two.

16. **Study the following table and answer the question.**

The table shows the number of people visiting hill stations A and B from 2011 to 2013.

वर्ष	A	B
2011	777	566
2012	675	289
2013	470	978

What is the absolute difference between the number of people who visited hill station A in the year 2011 and the number of people who visited hill station B in the same year?

- (a) 102  
(b) 112  
(c) 211  
(d) 312

[c]

17. If, in the quadrilateral JKLM, the measures of the angles J, K, L and M are in the ratio 2 : 3 : 5 : 6, then which of the following is the quadrilateral?

- (a) square  
(b) Kite  
(c) parallelogram  
(d) trapezium

[d]

व्याख्या:-

The sum of the angles of a quadrilateral is  $360^\circ$ .

Sum of ratios =  $2+3+5+6=16$

each part =  $360^\circ/16=22.5^\circ$

$J=2 \times 22.5^\circ=45^\circ$

$K=3 \times 22.5^\circ=67.5^\circ$

$L=5 \times 22.5^\circ=112.5^\circ$

$M=6 \times 22.5^\circ=135^\circ$

$\angle J + \angle M = 45^\circ + 135^\circ = 180^\circ$

$\angle K + \angle L = 67.5^\circ + 112.5^\circ = 180^\circ$

These two sums are  $180^\circ$ , which means side JK is parallel to side ML (the sum of angles on the same base is  $180^\circ$ ).

$\angle J + \angle K = 45^\circ + 67.5^\circ = 112.5^\circ \neq 180^\circ$

$\angle L + \angle M = 112.5^\circ + 135^\circ = 247.5^\circ \neq 180^\circ$

These sums show that the side JM is not parallel to the side KL.

Since the quadrilateral has exactly one pair of parallel sides (JK||ML), it is a Trapezium.

18. What is the smallest natural number which when multiplied by 1083 will become a perfect square:

- (a) 11  
(b) 3  
(c) 4  
(d) 2

[b]

व्याख्या:-

Prime factors:

$1083=3 \times 361$

$361=19^2$

So,  $1083=3^1 \times 19^2$

For the perfect square:

All prime factors must have an even power. Here, the power of 3 in 31 is odd.

Minimum number:

To make the power even, we need to multiply by another 3.

19. When white light is deflected into seven colours by a glass prism, which of the following colours will have the least deviation?

- (a) Blue  
(b) Yellow  
(c) Purple  
(d) Green

[b]

Explanation -

When white light is deflected into seven colours by a glass prism (called dispersion), each colour deviates at different angles. It depends upon the wavelength of the light.

In the spectrum of white light (VIBGYOR - Violet, Indigo, Blue, Green, Yellow, Orange, Red):

Red colour has the highest wavelength.

Violet (purple) colour has the shortest wavelength.

The colour which has the longest wavelength has the least deviation. Conversely, the colour which has the shortest wavelength has the most deviation.

According to this rule:

Red colour will have the least deviation.

Violet (purple) colour will have the most deviation.

Hence, among the given options, yellow (b) colour will have the least deviation as compared to the other options (blue, purple, green).

20. When an object is subjected to gravitational force, which of the following does it experience?

- (a) Acceleration  
(b) No external force is applied  
(c) Deceleration  
(d) Experiences a force on colliding with the surface of the earth [a]

Explanation -

When an object is subjected to gravitational force, it experiences acceleration.

According to Newton's second law of motion, the net force acting on an object is equal to the product of the mass of the object and its acceleration ( $F=ma$ ).

Gravitational force is a type of force. When this force acts on an object, the object accelerates in the direction of that force. In terms of earth, this acceleration is called acceleration due to gravity (g), which is approximately  $9.8\text{m/s}^2$  and is directed towards the centre of the earth.

21. Select the pair that follows the same pattern as followed by the two sets of pairs given below. Both the pairs follow the same pattern.

WGN : ZDQ

IUZ : LRC

- (a) PXH: LCD
- (b) DMV: HHZ
- (c) URL: STI
- (d) CAT: FXW

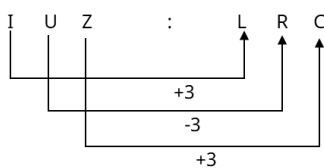
[d]

व्याख्या:-

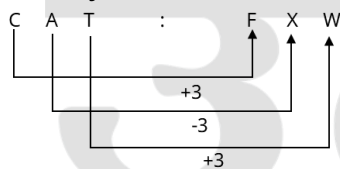
Just as



and



Similarly



22. Particles of matter are in constant motion due to \_\_\_\_\_.

- (a) Kinetic energy
- (b) Potential energy
- (c) Combination of particles
- (d) Size of particles [a]

Explanation -

Particles of matter are in constant motion due to kinetic energy. Kinetic Energy:- The energy inherent in an object due to its motion is called kinetic energy. Particles of matter, whether in solid, liquid or gaseous state, are always in vibration, rotation or translational motion. This constant motion is due to their inherent kinetic energy. This kinetic energy increases as the temperature increases, which also increases the speed of the particles.

23. In a certain code language, 'GLOBE' is written as '84315', 'GRADE' is written as '89265', and 'BAKED' is written as '12756'. How will 'R' be written in the same code language?

- (a) 2
- (b) 6
- (c) 8
- (d) 9

[d]

व्याख्या:-

Just as



Similarly

R = 9

24. The total cost of 3 pencils and 5 pens is ₹ 101, while the total cost of 5 pencils and 3 pens is ₹ 91. Find the total cost of 2 pencils and 2 pens.

- (a) ₹45
- (b) ₹32
- (c) ₹48
- (d) ₹36

[c]

व्याख्या:-

The cost of 3 pencils and 5 pens is ₹ 101:

$$3P+5K=101.....(i)$$

The cost of 5 pencils and 3 pens is ₹91:

$$5P+3K=91.....(ii)$$

We add these two equations:

$$8P+8K=192$$

$$8(P+K)=192$$

$$P+K=192/8$$

$$P+K=24$$

$$2(P+K)=2 \times 24$$

$$2P+2K=48$$

The total cost of 2 pencils and 2 pens is ₹48.

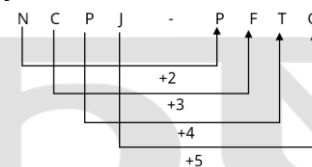
25. NCPJ is related to PFTO in a certain way based on the English alphabetical order. In the same way, QAVB is related to SDZG. Following the same logic, UIND is related to which of the following options?

- (a) WLRI
- (b) VKRJ
- (c) XLSI
- (d) VMRJ

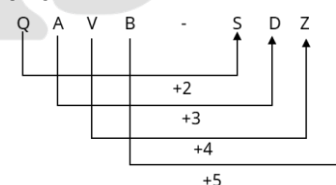
[a]

व्याख्या:-

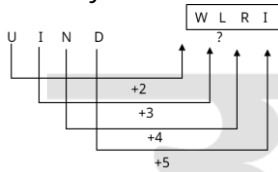
Just as



and



similarly



26. In the female reproductive organ of a flower, the raised part is the \_\_\_\_\_, the long part in the middle is the \_\_\_\_\_ and the top part which is usually sticky is the stigma.

- (a) Ovary, Style
- (b) Bud, Style
- (c) Zygote, Pollen Tube
- (d) Style, Ovary [a]

Explanation -

In the female reproductive organ of a flower, the raised part is the ovary, the long part in the middle is the style and the top part which is usually sticky is the stigma.

The female reproductive organ of a flower is called pistil or carpel.

It has three main parts:

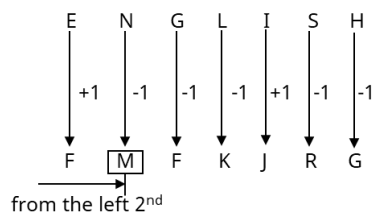
Ovary: It is the female part of the flower.

27. If each vowel of the word ENGLISH is replaced by the letter following it in the English alphabetical order and each consonant is replaced by the letter preceding it in the alphabetical order, then which letter will be second from the left in the new group of letters thus formed?

- (a) J
- (b) M
- (c) F
- (d) R

[b]

व्याख्या:-



The second letter from the left in the new letter group will be M.

28. In the following number-pairs, the second number is obtained by performing certain mathematical operations on the first number. What numbers should come in place of X and Y so that the pattern followed by the two numbers on the left of :: is followed by the same pattern on the right of ::?

(Note: Operations should be performed on whole numbers without breaking the numbers into their constituent digits. Ex. 13-Operations on number 13 like addition/subtraction/multiplying 13 etc. can be performed. Breaking 13 into 1 and 3 and then doing mathematical operations on 1 and 3 is not allowed.)

X : 793 :: 679 : Y

- (a) X = 974 Y = 498
- (b) X = 886 Y = 443
- (c) X = 848 Y = 519
- (d) X = 923 Y = 481

[a]

व्याख्या:-

$$\begin{matrix} X: & 793:: & 679: & Y \\ \downarrow & & \downarrow & \downarrow \\ 974 - 181 = & 793 & 679 - 181 = & 498 \end{matrix}$$

Hence, x = 974 and y = 498.

29. \_\_\_\_\_ was awarded the Green Energy Champion Award for 2023-24 at a meeting organised by the Indian Wind Power Association in Coimbatore on 18 August 2024.

- (a) Andhra Pradesh
- (b) Uttar Pradesh
- (c) Kerala
- (d) Gujarat

[a]

व्याख्या -

Andhra Pradesh received the Green Energy Champion Award for 2023-24 presented by the Indian Wind Power Association at a meeting held in Coimbatore on August 18, 2024. The award was given in recognition of the significant progress and contribution of the state in the renewable energy sector.

M. Kamalakar Babu, Managing Director and Chief Executive Officer, A.P. Solar Power Corporation Limited, received the award from Lalit Bohra, Joint Secretary, Union Ministry of New and Renewable Energy. Kamalakar Babu attributed this success to former Chief Minister N. Chandrababu Naidu, under whose leadership renewable energy was given priority during 2014-19, which earned the state this honour.

30. In humans metabolic activities that produce nitrogenous waste products are removed by:

- (a) Circulatory system
- (b) Excretory system
- (c) Respiratory system
- (d) Vascular system

[b]

व्याख्या -

Metabolic activities in the human body that remove nitrogenous waste products are removed by the excretory system.

Excretory System:- It is responsible for removing waste products (especially nitrogenous wastes such as urea and uric acid) from the body. It mainly consists of the kidneys, ureters, urinary bladder and urethra. The kidneys filter the blood and separate the waste products and excrete them from the body in the form of urine.

31. In this question, two statements I and II are given. These statements may be independent causes or may be independent causes or may be effects of a common cause. One statement may be the effect of the other statement. Read both the statements and choose the correct answer.

I. Most of the teachers of school X left this school and joined school Y.

II. The football team of school X won the champion trophy in the inter-city football championship.

- (a) Both I and II are effects of independent causes.  
 (b) Both I and II are independent causes.  
 (c) II is the cause and I is its possible effect.  
 (d) I is the cause and II is its possible effect.

[a]

व्याख्या:-

Both events I and II (most teachers changing schools and the football team becoming champions) do not show any direct cause-effect relationship with each other.

Both of them appear to be independent situations - one event does not appear to be the result of the other.

32. Which of the following statements about the 'nature of carbon compound' is incorrect?

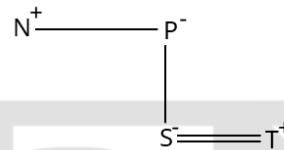
- (a) Carbon has the unique ability to form bonds with other carbon atoms, leading to the formation of larger molecules. This property is called catenation.  
 (b) Compounds of carbon that have double or triple bonds between the carbon atoms are called unsaturated compounds.  
 (c) Compounds of carbon are formed only with oxygen.  
 (d) Compounds of carbon that are linked only by single bonds between carbon atoms are called saturated compounds. [c]

Explanation -

Carbon compounds (organic compounds) are composed primarily of carbon and hydrogen, called hydrocarbons. Apart from this, carbon also forms compounds with many other elements such as oxygen, nitrogen, sulfur, halogens (fluorine, chlorine, bromine, iodine), and phosphorus. It is incorrect to say that they are formed only with oxygen.

33. In a certain code language, 'A # B' means 'A is the mother of B', 'A - B' means 'A is the brother of B', 'A x B' means 'A is the wife of B' and 'A = B' means 'A is the father of B'. If 'N - P # S x T', then how is N related to S?  
 (a) Father's brother  
 (b) Father's father's brother  
 (c) Mother's brother  
 (d) Father's mother [c]

व्याख्या:-



It is clear from the diagram that N is the brother of S's mother.

34. ICICI Bank has partnered with which of the following agencies to offer instant loans on UPI for pre-approved customers in October 2024, offering loans up to ₹2 lakh with a repayment period of 45 days?  
 (a) Google Pay  
 (b) PhonePe  
 (c) Paytm  
 (d) BharatPe [b]

व्याख्या -

ICICI Bank announced a partnership with PhonePe on 8 October 2024. Under this partnership, pre-approved customers of the bank will be provided with the facility to avail instant loans through UPI on the PhonePe app. Customers can activate a short-term credit line of up to ₹2 lakh with a repayment period of 45 days. This facility is suitable for high-value purchases such as electronics, travel, hotel bookings, and bill payments during the festive season. This credit line is interoperable through various payment applications of UPI, allowing customers to transact using any UPI application.

35. If the number 6484a6 is divisible by 8, then find the least value of a.  
 (a) 1

- (b) 3  
(c) 0  
(d) 7

[a]

व्याख्या:-

A number is divisible by 8 if its last three digits are divisible by 8.

Given number = 6484a6

Last three digits of this number = 4a6

If  $a = 0$ , then number = 406 =  $406 \div 8 = 50$  remainder = 6 (not divisible)

If  $a = 1$ , then the number 416 =  $416 \div 8 = 52$  (divisible!)

Minimum value of 'a' = 1

36. If  $48 : x :: x : 75$  and  $x > 0$  then what is the value of  $x$ .

- (a) 60  
(b) 51  
(c) 57  
(d) 62

[a]

व्याख्या:-

$$48 : x :: x : 75$$

$$x^2 = 48 \times 75$$

$$x^2 = 3600$$

$$x = 60$$

37. What is the work done in moving a charge +Q between two points having potential difference K?

- (a) QK/2  
(b) QK/4  
(c) QK  
(d) 2QK [c]

Explanation -

According to the definition of potential difference, the potential difference (V) between two points is equal to the work done (W) per unit charge when that charge is moved from one point to another.

It is expressed as the formula:

$$V = W / Q$$

Where:

V = Potential difference

W = Work done

Q = Charge

Given:

Potential difference is represented by K.

Charge is represented by +Q.

So, by the formula  $K = W / Q$

We have to find the work done (W). Rearranging the formula for W:

$$W = K \times Q \text{ or } W = Q K$$

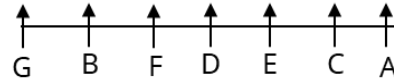
Hence, the work done in moving a +Q charge between two points of potential difference K is QK

38. Seven persons A, B, C, D, E, F and G are sitting in a straight row facing north. Only two persons are sitting to the left of F. F sits second to the right of G. E sits second to the right of F. C sits fourth to the right of B. D sits second to the left of C. A sits immediate right of C. How many people sit between B and G?

- (a) two  
(b) three  
(c) one  
(d) none

[d]

व्याख्या:-



It is clear from the diagram that not a single person is sitting between B and G.

39. What is the position of apical meristematic tissue in a plant?

- (a) Near nodes  
(b) Near root part only  
(c) In the growing part of stems and roots  
(d) On the lateral part of stems and roots [c]

Explanation -

Meristems are groups of actively dividing cells, which are of three types based on position -

- i. Apical
- ii. Lateral
- iii. Intercalary

The position of apical meristematic tissue in a plant is (c) In the growing part of stems and roots. Apical meristems are found at those places of the plant where active cell division takes place, leading to the growth of the plant in length. They are mainly found at the following places:

Root apex: At the tip of the root, where the root grows downwards.

Shoot apex: At the tip of the stem (also in buds), where the stem grows upwards.

This tissue is responsible for the primary growth of the plant, i.e., increase in the length of the plant.

40. Where was the 5th Global Standards Symposium (GSS-24) held?

- (a) Chennai  
(b) New Delhi  
(c) Bengaluru  
(d) Mumbai

[b]

व्याख्या -

The Fifth Global Standards Symposium (GSS-24) was held in New Delhi on 14 October 2024. The event took place at Bharat Mandapam, Pragati

Maidan and was organized by the Ministry of Telecommunication, Government of India in collaboration with the International Telecommunication Union (ITU).

The symposium was inaugurated by Union Minister Shri Jyotiraditya M. Scindia. It was attended by around 1,500 policy-makers, experts and ministers who discussed the topic "Emerging Technologies, Innovations and International Standards". The event was a key platform for the World Telecommunication Standardization Assembly (WTS-24), which is scheduled to be held in New Delhi from 15 to 24 October 2024.

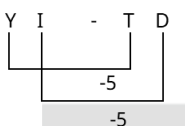
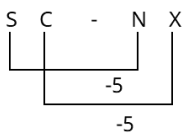
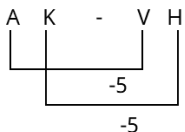
41. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which pair does not belong to that group?

(Note: Inconsistent letter clusters, consonants/vowels in letter clusters. Jano is not based on the number of vowels or their position.)

- (a) LV-GQ  
(b) AK-VH  
(c) SC-NX  
(d) YI-TD

[b]

व्याख्या:-



Hence, 'AK - VH' is different from others.

42. The length of the base of a triangle is equal to the perimeter of a square whose diagonal is  $7\sqrt{2}$  cm and the corresponding height of the triangle is equal to the length of the side of a square whose area is 169 sq cm. What is the area (in sq cm) of the triangle?

- (a) 130  
(b) 152  
(c) 182

(d) 156

[c]

व्याख्या:-

Description of the first category:

If the diagonal is  $7\sqrt{2}$  cm then the side  
 $= \frac{7\sqrt{2}}{\sqrt{2}} = 7$  cm

Perimeter =  $4 \times 7 = 28$  cm

Base of the triangle = 28 cm

Description of the second class:

If the area is 169 sq. cm, then the side =  $\sqrt{169} = 13$  cm

Corresponding height of the triangle = 13 cm

Area of the triangle:

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

$$\text{Area} = \frac{1}{2} \times 28 \times 13$$

$$\text{Area} = 14 \times 13 = 182 \text{ sq. cm}$$

43. There is a long current-carrying solenoid. If Rahul plots magnetic field lines inside this long current-carrying solenoid, it appears to be \_\_\_\_.

- (a) Dense in the middle  
(b) Uniform at all points  
(c) Dense at the ends  
(d) Increasing from one end to the other [b]

**Explanation -**

An important feature of the magnetic field lines inside a long current-carrying solenoid is that they are parallel and equally spaced. This shows that the magnetic field inside the solenoid is uniform at every point. Uniform magnetic field means that the strength and direction of the field is the same everywhere inside the solenoid.

Dense in the middle: This is false. If they were dense in the middle, the field would be stronger in the middle and not uniform.

Dense at the ends: This is also false. The field inside the solenoid is uniform, not dense at the ends. The field pattern outside the ends is more complex.

Increasing from one end to the other: This is false. The field is uniform, not increasing.

Therefore, the magnetic field lines drawn by Rahul will appear uniform at all points inside the solenoid.

44.  $\pi = \frac{22}{7}$  Using equations, find the total surface area of a closed cylinder whose base radius is 70 m and height is 110 m.  
(a) 82,400 m<sup>2</sup>

(b) 82,500 m<sup>2</sup>(c) 79,200 m<sup>2</sup>(d) 78,500 m<sup>2</sup>

[c]

व्याख्या:-

Total Surface Area (TSA) =  $2\pi r(r + h)$ 

Where:

 $\pi = \frac{22}{7}$  (as given in the question)

r = base radius = 70m

h = height = 110 m

Now we'll plug these values into the formula:

$$TSA = 2 \times \frac{22}{7} \times 70 \times (70 + 110)$$

$$TSA = 2 \times \frac{22}{7} \times 70 \times (180)$$

First, solve for  $\frac{70}{7}$ , which is 10:

$$TSA = 2 \times 22 \times 10 \times 180$$

Now multiply:

$$TSA = 44 \times 10 \times 180$$

$$TSA = 440 \times 180$$

Calculate  $440 \times 180$ :

$$44 \times 18 = 792$$

$$\text{So } 440 \times 180 = 79200$$

So the total surface area of the closed cylinder is 79200m<sup>2</sup>.

45. Which of the following teams was the winner of the second edition of the Women's Premier League?

(a) Mumbai Indians

(b) UP Warriors

(c) Delhi Capitals

(d) Royal Challengers Bangalore (Bengaluru)

[d]

व्याख्या -

The final of the second edition of the Women's Premier League (WPL) 2024 took place on 17 March 2024 at the Arun Jaitley Stadium in New Delhi. Royal Challengers Bangalore (RCB) defeated Delhi Capitals (DC) by 8 wickets to win the WPL title for the first time. RCB captain Smriti Mandhana led the team.

Key events of the final match:

Batting first, Delhi Capitals were all out for 113 runs in 18.3 overs.

RCB achieved the target of 114 runs by losing 2 wickets in 19.3 overs.

Sophie Molineau was named 'Player of the Match' for her brilliant bowling.

Ellyse Perry won the 'Orange Cap' by scoring 347 runs in 9 matches, while Shreyanka Patil won the 'Purple Cap' by taking 13 wickets.

This was RCB's first title, which they won for the first time in both the men's and women's leagues

46. Read the statements and conclusions given below carefully. You have to assume that the given statements are true even if they seem to be at variance from commonly known facts and decide which of the conclusions logically follows from the given statement(s).

Statements:

All kites are monkeys.

All monkeys are ants.

Conclusions:

(I) Some ants are kites.

(II) Some monkeys are not kites.

(a) Neither conclusion (I) nor (II) follows.

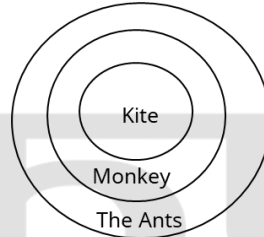
(b) Both conclusions (I) and (II) follow.

(c) Only conclusion (II) follows.

(d) Only conclusion (I) follows.

[d]

व्याख्या:-



It is clear from the Venn diagram that only conclusion - I follows.

47. When an iron nail is lowered into a solution of copper sulphate, which substance gets displaced?

(a) Sulphate

(b) Copper sulphate

(c) Copper

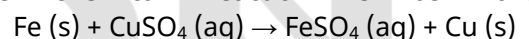
(d) Iron [c]

Explanation -

When an iron nail (Fe) is lowered into a solution of copper sulphate (CuSO<sub>4</sub>), a displacement reaction takes place.

Iron is a more reactive metal than copper. In the reactivity series, iron comes above copper. Hence, iron will displace copper from the copper sulphate solution.

The chemical reaction is as follows:



In this reaction:

- The iron nail gets covered with brownish-red coloured copper.

- The blue colour of the copper sulphate solution gradually changes to light green (due to the formation of ferrous sulphate).

Hence, the substance that is displaced is copper.

48. In a certain code language, 'CODE' is written as '5739' and 'LEGS' is written as '4256'. How will 'E' be written in that code language?

- (a) 2  
(b) 5  
(c) 6  
(d) 9

[b]

व्याख्या:-

Just as

C O D [E] - [5] 7 3 9

L [E] G S - 4 2 [5] 6

similarly

E = 5

49. When an object is in uniform motion, its path is like:

- (a) An ellipse  
(b) A circle  
(c) A parabola  
(d) A straight line [d]

Explanation -

When an object is in uniform motion, its path is a straight line.

Uniform motion means that the object is moving in a straight line with constant velocity. It means that neither its speed is changing nor its direction. If the direction of the object changes (even if the speed remains constant, as in circular motion), it will not be in uniform velocity because velocity is a vector quantity and includes direction. Change in direction means acceleration, which is contrary to the definition of uniform motion.

50. Which of the following is a prime number?

- (a) 161  
(b) 373  
(c) 221  
(d) 437

[b]

व्याख्या:-

(a)  $161 = 7 \times 23$ . It is not prime.

(b) 373 = It is not divisible by any smaller prime number (such as 2, 3, 5, 7, 11, 13, 17, 19). It is a prime number.

(c)  $221 = 13 \times 17$ . It is not prime.

(d)  $437 = 19 \times 23$ . It is not prime.

Hence, 373 is a prime number.

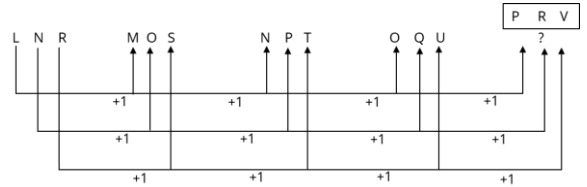
51. Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

LNR, MOS, NPT, OQU, ?

- (a) VPR  
(b) VRP  
(c) PVR  
(d) PRV

[d]

व्याख्या:-



? = PRV

52. Identify the incorrect sentence/s.

- a. Some organisms use simple food materials obtained from inorganic sources in the form of carbon dioxide and water.  
b. Other organisms use complex substances which are broken down into simpler substances before being used for the maintenance and growth of the body.  
c. Heterotrophic organisms include plants

- (a) Only b and c  
(b) Only a and b  
(c) Only a  
(d) Only c [d]

Explanation -

a. Some organisms use simple food materials obtained from inorganic sources in the form of carbon dioxide and water.

This statement is true. A. Autotrophic organisms, such as green plants, algae and some bacteria, make their own food using inorganic substances such as carbon dioxide and water through photosynthesis or chemosynthesis.

B. Other organisms use complex substances that are broken down into simpler substances before being used for body maintenance and growth.

This statement is true. Heterotrophic organisms, such as animals, fungi and most bacteria, depend on other organisms for food. They consume complex organic substances and break them down into simpler substances by the process of digestion so that they can be used for the body's energy requirements, repair and growth.

C. Heterotrophic organisms include plants

This statement is false. Plants are autotrophs because they make their own food by photosynthesis. Heterotrophic organisms are

those that depend on others for their food (for example, animals and fungi).

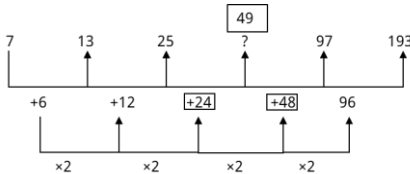
53. Which of the following options should come in place of the question mark (?) in the given series?

7 13 25 ? 97 193

- (a) 49
- (b) 39
- (c) 32
- (d) 35

[a]

व्याख्या:-



? = 49

54. Which of the following numbers represents the atomic mass of calcium?

- (a) 16u
- (b) 40u
- (c) 14u
- (d) 32u [b]

Explanation -

Calcium (Ca) has an atomic mass of about 40u (atomic mass unit).

With atomic number 20, calcium is an alkaline earth metal, and its atomic mass is usually represented as 40.078 u, often rounded off to the nearest integer 40u.

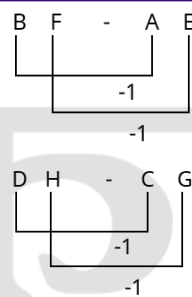
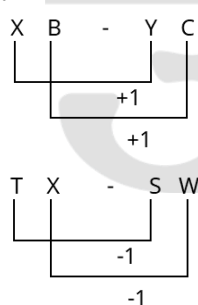
55. Three of the following four letter-cluster pairs are alike in a certain way based on the English alphabetical order and thus form a group. Which pair does not belong to that group?

(Note: Anomalous letter cluster is not based on the number of consonants/vowels or their position in that letter cluster.)

- (a) XB-YC
- (b) TX-SW
- (c) BF-AE
- (d) DH-CG

[a]

व्याख्या:-



Hence, "XB - YC" is different from others.

56. An object is placed between the focus and pole of a concave mirror, what will be the image formed?

- (a) Virtual, erect and small
- (b) Real, inverted and enlarged
- (c) Virtual, erect and enlarged
- (d) Real, inverted and reduced [c]

Explanation -

When an object is placed between the focus (F) and pole (P) of a concave mirror, the following are the characteristics of the image formed:

Virtual: The image is formed behind the mirror, which means that the light rays do not actually meet there but appear to meet. This cannot be obtained on a screen.

Erect: The image is formed erect relative to the object.

Magnified: The image is formed larger than the size of the object.

This situation is used in shaving mirrors and by dentists to see a larger image of teeth.

57. Which of the following is obtained on subtracting  $x^2 - y^2$  from  $y^2 - x^2$ ?

- (a)  $-2(x^2 + y^2)$
- (b)  $2(x^2 + y^2)$
- (c)  $2(x^2 - y^2)$
- (d)  $-2(x^2 - y^2)$

[d]

व्याख्या:-

$$\begin{aligned} & (y^2 - x^2) - (x^2 - y^2) \\ &= y^2 - x^2 - x^2 + y^2 \\ &= 2y^2 - 2x^2 \\ &= -2(x^2 - y^2) \end{aligned}$$

58. In a country 55% of the population is women. 80% of the male population is literate. If the total literacy rate is 58% then what percentage of women are literate?

- (a) 45%
- (b) 40%
- (c) 20%

(d) 55%

[b]

**व्याख्या:-**

Suppose the total population is 100.

Women = 55% = 55

Male = 100 - 55 = 45

Literate males = 80% of 45 =  $45 \times \frac{80}{100} = 36$ 

Literate Women = 58 - 36 = 22

Literacy rate among women =  $\frac{22}{55} \times 100 = 40\%$ 

59. On identical items with the same marked price, a scheme like 'Buy 5, Get 6' offers a discount of \_\_\_\_\_.

(a)  $11\frac{1}{9}\%$ 

(b) 20%

(c) 17.5%

(d)  $16\frac{2}{3}\%$ 

[d]

**व्याख्या:-**

You are getting 6 items at the price of 5 items.

You get an extra item for free.

Total items you get = 6

Freebies = 1

Discount Percentage =  $\frac{\text{Free objects}}{\text{Total Items}} \times 100$ Discount Percentage =  $\frac{1}{6} \times 100$ =  $16\frac{2}{3}\%$ 

60. In 2024, who became the first woman fighter pilot to join the elite 18 'Flying Bullets' squadron?

(a) Avani Chaturvedi

(b) Shivangi Singh

(c) Mohana Singh

(d) Bhavana Kanth

[c]

**व्याख्या -**

Squadron Leader Mohana Singh is the first woman pilot of the Indian Air Force to fly the LCA Tejas fighter aircraft and joined the 18 'Flying Bullets' squadron. The squadron is based at Nal Airbase, Gujarat and operates India's indigenous Tejas aircraft. Mohana Singh was commissioned into the Indian Air Force in 2016 and is one of the three women pilots in the first batch to receive training to fly fighter aircraft.

Recently, Mohana Singh participated in the multinational air exercise 'Tarang Shakti' held in Jodhpur, in which she gave the experience of flying the Tejas aircraft to the Vice Chiefs of the Indian Army and Navy. This event is an important

milestone in the direction of women empowerment and inclusion in the Indian Air Force.

61. Find the simple interest on a sum of ₹3,000 borrowed at 4% annual interest for 5 years.

(a) ₹300

(b) ₹800

(c) ₹400

(d) ₹600

[d]

**व्याख्या:-**

Has been given:

Principal = ₹3000

Rate = 4% प्रति वर्ष

Time = 5 वर्ष

The formula for simple interest (SI) is

$$SI = \frac{P \times R \times T}{100}$$

Putting the values in the formula:

$$SI = \frac{3000 \times 4 \times 5}{100}$$

$$SI = \frac{3000 \times 20}{100}$$

$$SI = \frac{60000}{100}$$

$$SI = 600$$

62. Two students appeared in an examination. One of them scored 9 marks more than the other and his marks were 56% of the sum of their marks. What were the marks obtained by them?

(a) 43 and 34

(b) 41 and 32

(c) 39 and 30

(d) 42 and 33

[d]

**व्याख्या:-**

Let the marks of a student be 'x'.

The marks of the second student will be 'x + 9'.

Total Marks =  $x + (x + 9) = 2x + 9$  $x + 9 = 0.56 \times (2x + 9)$  $100(x + 9) = 56(2x + 9)$  $100x + 900 = 112x + 504$  $900 - 504 = 112x - 100x$  $396 = 12x$  $x = 33$ 

Marks of a student = 33

Marks of second student =  $33 + 9 = 42$ 

The marks obtained by them were 42 and 33.

63. All the 36 people are standing in a row facing north. Aman is 11th from the left end while Pratha is 12th from the right end. How many people are there between Aman and Pratha?

(a) 13

- (b) 10  
(c) 15  
(d) 18

[a]

व्याख्या:-

Persons between Aman and Prabha = Total persons [Place of Aman + Place of Prabha] - 1  
 $= 36 - (11 + 12)$   
 $= 36 - 23$   
 $= 13$

64. I walk at a speed of 10 km/h and reach my destination on time in 2 hours. If I increase my speed by 5 km/h, how soon will I reach my destination?  
 (a) 40 minutes  
 (b) 50 minutes  
 (c) 20 minutes  
 (d) 30 minutes

[a]

व्याख्या:-

Speed = 10 km/hr, Time = 2 hrs  
 Distance =  $10 \times 2 = 20$  km  
 New speed =  $10 + 5 = 15$  km/hr  
 Time taken with new speed =  $20/15 = 4/3 = 1$  hour 20 minutes  
 Previous time = 2 hours (120 minutes)  
 New time = 1 hour 20 minutes (80 minutes)  
 Difference =  $120 - 80 = 40$  minutes  
 You will reach 40 minutes early.

65. Identify the simplest compound formed by carbon which is widely used as a fuel.  
 (a) Ethane  
 (b) Methyl  
 (c) Propane  
 (d) Methane [d]

Explanation -

Methane ( $\text{CH}_4$ ) is the simplest hydrocarbon, with one carbon atom bonded to four hydrogen atoms. It is the main component of natural gas and is widely used as a fuel, such as for cooking in homes, for power generation and in vehicles.  
 Ethane ( $\text{C}_2\text{H}_6$ ): This is slightly more complex than methane, which has two carbon atoms. It is also a fuel, but methane is the simplest.

Methyl: Methyl ( $\text{CH}_3$ ) is an alkyl group, not a stable compound that can be used as a fuel. It is usually found as part of other molecules.

Propane ( $\text{C}_3\text{H}_8$ ): This is also a hydrocarbon with three carbon atoms. It is a major component of LPG and is used as a fuel, but methane is the simplest.

66. Seven persons A, B, C, D, E, F and G are sitting in a straight row facing north. Only two

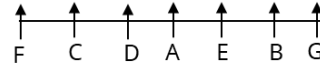
persons are sitting to the left of D. F is seated second to the left of D. G is seated second to the right of E. E is seated second to the right of D. A is seated second to the left of B. A is not the immediate neighbour of F.

Who is sitting at the right end of the row?

- (a) B  
 (b) A  
 (c) C  
 (d) G

[d]

व्याख्या:-



It is clear from the diagram that G is at the right end of the row.

67. What are the basic building blocks of living organisms?  
 (a) Bones  
 (b) Cells  
 (c) Fibres  
 (d) Tissues [b]

Explanation -

In biology, the cell is defined as the basic structural, functional and biological unit of life. All known organisms are composed of cells.

Cells: These are the smallest units of life that can function independently. Unicellular organisms (such as bacteria) are composed of just one cell, while multicellular organisms (such as plants and animals) are composed of billions of cells that are specialized to perform different functions.

68. If A means +, B means -, C means  $\times$ , and D means  $\div$  then what will come in place of question mark (?) in the following equation?  
 $91 \text{ D } 13 \text{ B } 4 \text{ A } 3 \text{ C } 2 = ?$

- (a) 8  
 (b) 9  
 (c) 7  
 (d) 10

[b]

व्याख्या:-

$91 \text{ D } 13 \text{ B } 4 \text{ A } 3 \text{ C } 2 = ?$   
 according to question  
 $91 \div 13 - 4 + 3 \times 2 = ?$   
 $7 - 4 + 6 = ?$   
 $13 - 4 = ?$   
 $9 = ?$

69. According to Women, Business and the Law 2024 (WBL2024), India's score is \_\_\_\_\_ out of 100.0.  
 (a) 75.4  
 (b) 74.4

(c) 70.4

(d) 71.4

[b]

व्याख्या -

According to the Women, Business and the Law 2024 report, India's score is 74.4 out of 100. The report evaluates the legal frameworks of 190 countries that affect women's economic participation. India's score is higher than the global average of 64.2%, but above the average of 45.9% in the South Asia region.

Key Points:

Difference in legal rights: Women in India enjoy 60% of the legal rights as compared to men.

Pay equality: India scores low for laws that impact women's pay.

Supportive Framework: India scored 54.2% in Supportive Framework, which is higher than the global average of 39.5%.

70. A vendor sold 10 toffees for one rupee, thereby earning a profit of 20%. How many toffees did he buy for one rupee?

(a) 6

(b) 12

(c) 8

(d) 10

[b]

व्याख्या:-

Selling price (SP) of 10 toffees = ₹ 1 (at 20% profit)

So buy it for ₹ 1 =  $10 \times \left(1 \times \frac{100}{120}\right) = 12$  Toffees

71. What is the average of prime numbers between 11 and 30 (excluding both)?

(a) 20.2

(b) 20.3

(c) 19.5

(d) 19.6

[a]

व्याख्या:-

The prime numbers between 11 and 30 (excluding both) are

13, 17, 19, 23, 29

The sum of these =  $13+17+19+23+29=101$

Total numbers = 5

average =  $\frac{101}{5} = 20.2$

72. What is the name of the project launched by the Ministry of Culture in 2024 to showcase India's artistic heritage through public art installations?

(a) Project PARI

(b) Project SANSKRITI

(c) Project KALA

(d) Project BHARATI

[a]

व्याख्या -

The Ministry of Culture, Government of India launched 'Project PARI' (Public Art of India) in 2024. It aims to showcase India's rich artistic heritage through public art installations. The project is being implemented by the Lalit Kala Akademi and the National Gallery of Modern Art.

Key Facts:

Launch Date: 21 July 2024, when the 46th World Heritage Committee meeting was held in New Delhi.

Number of Artists: More than 150 visual artists adorned public spaces through wall paintings, murals, sculptures and architecture.

Source of Inspiration: Inspired by traditional art forms of India such as Phad, Thanka, Gond, Tanjore, Kalamkari, Alpana, Kerala mural painting, Pichwai, Patachitra, Warli, Pithora, Aipan, Lanjia Saur, Patachitra, Bani Thani, etc.

Theme: Based on natural beauty, Natyashastra, Mahatma Gandhi, Indian toys, ancient wisdom, Naad (ancient sound), harmony of life, Kalpataru (divine tree) and world heritage sites like Bhimbetka and other natural heritage sites.

Women Participation: Significant participation of women artists, which symbolizes Nari Shakti.

73. The average of any 70 values is 40. If each value is multiplied by 20, what is the new average?

(a) 800

(b) 1400

(c) 90

(d) 60

[a]

व्याख्या:-

Original average = 40

The number by which each value is multiplied = 20

New average = Original average  $\times$  20

New average =  $40 \times 20 = 800$

Therefore, the new average is 800.

74. Read the statements and conclusions given below carefully. You have to assume that the given statements are true even if they seem to be at variance with commonly known facts and decide which of the conclusions logically follows from the given statement/statements.

Statements:

Some parrots are monkeys.

Some bears are monkeys.

Conclusions:

(I) All bears are parrots.

(II) Some monkeys are not bears.

(a) Only conclusion (I) follows.

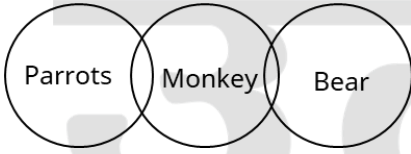
(b) Both conclusions (I) and (II) follow.

(c) Neither conclusion (I) nor (II) follows.

(d) Only conclusion (II) follows.

[c]

व्याख्या:-



It is clear from the Venn diagram that neither conclusion I nor conclusion II follows.

75. In the following number-pairs, the second number is obtained by performing certain mathematical operations on the first number. What numbers should come in place of X and Y so that the pattern followed by the two numbers on the left of :: is the same as that followed by the two numbers on the right of ::? (Note: Operations should be performed on whole numbers without breaking the numbers into their constituent digits. Ex. 13- Operations on number 13 like addition/subtraction/multiplying 13 etc. can be performed. Breaking 13 into 1 and 3 and then doing mathematical operations on 1 and 3 is not allowed.)

X : 826 :: 723 : Y

(a) X = 542, Y = 1007

(b) X = 593, Y = 941

(c) X = 604, Y = 1018

(d) X = 518, Y = 984

[a]

व्याख्या:-

$$\begin{array}{cccc}
 X: & 826 :: & 723: & Y \\
 \downarrow & & \downarrow & \downarrow \\
 542 + 284 = & 826 & 723 + 284 = & 1007 \\
 \text{Hence } x = 542 \text{ and } Y = 1007.
 \end{array}$$