# Prepp

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# RRB NTPC Exam

**Phase I Previous Paper**

## Simplifying
## Government Exams

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**Que. 1**  Vijay Ghat is the resting place of which of the following personality?

1.  Mahatma gandhi

2.  Lal Bahadur Shastri

3.  Indira Gandhi

4.  Atal Bihari Vajpayee

**Solution** Correct Option **- 2**

The correct answer is option 2 i.e., **Lal Bahadur Shastri.**

- Vijay Ghat is the resting place of Late Shri **Lal Bahadur Shastri**.
- Vijay Ghat is the memorial of India's second Prime Minister Lal Bahadur Shastri.
- Vijay means victory and his memorial was named after the victory he led India to in the 1965 war against Pakistan.
- Lal Bahadur Shastri was elected to the legislature of the United Provinces in 1937 and 1946.

| Resting Place | Person |
|---|---|
| Raj Ghat | Mahatma Gandhi |
| Shakti Sthal | Indira Gandhi |
| Sadaiv Atal | Atal Bihari Vajpayee |

**Que. 2**  HCF of two number is 4 and the sum of those two numbers is 36. Find how many such pair of number is possible.

1.  1

2.  2

3.  3

4.  4

**Solution Given:**     Correct Option **- 3**

HCF of two number is 4 and the sum of those two numbers is 36.

**Concept Used:**

Concept of HCF

HCF is the least common factor among two or more numbers.

**Calculation:**

HCF of two number is 4

Let, those numbers be 4x and 4y where x and y are prime to each other

Accordingly,

$4x + 4y = 36$

$\Rightarrow 4(x + y) = 36$

$\Rightarrow (x + y) = 9$

Now,

$9 = 8 + 1$

$9 = 7 + 2$

$9 = 6 + 3$

$9 = 5 + 4$

In all these cases only (8,1); (7,2); and (5,4) are prime to each other. So, such three pair is possible

∴ **Such three pair of number is possible.**

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**Que. 3** Select the option that has the same relation to the third word as the second word to the first word.

School bag : Books :: Suitcase : ?

1. Food
2. Cloths
3. Gun
4. Laptop

**Solution** Correct Option **- 2**

We carry books in school bag.

Similarly.

we carry cloths in suitcase.

Hence, 'Cloths' is the correct answer.

---

**Que. 4** Which of the following was the author of the book "Glimpses of world history"?

1. Sardar Vallabhbhai Patel
2. Jawaharlal Nehru
3. M K Gandhi
4. Dada Bhai Naoroji

**Solution** Correct Option **- 2**

- **Glimpses of world history** was written by **Jawaharlal Nehru in 1934.**
- This book is a collection of letters, written by **Pandit Nehru** to his daughter **Indira Gandhi.**
- His main objective behind this this book was to introduce Indira Gandhi to the world and its history.
- Other books by Jawaharlal Nehru are-

**1. The Discovery of India**
**2. An Autobiography: Toward Freedom**
**3. Nehru's India: Select Speeches**
**4. Words of Freedom: Ideas of a Nation**
**5. An Anthology**

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**Que. 5** The LCM of two number is 20th multiple of 3. HCF of those two numbers is 6. If one number is 30, what is another number?

1. 16
2. 14
3. 12
4. 10

**Solution Given:** Correct Option **- 3**

The LCM of two number is 20th multiple of 3. HCF of those two numbers is 6. One number is 30.

**Concept Used:**

LCM × HCF = 1st number × 2nd number

**Calculation:**

LCM of those two number is 20th multiple of 3

⇒ LCM of those two number is 3 × 20 = 60

HCF of those two numbers is 6

One number is 30

Let, the other number is p

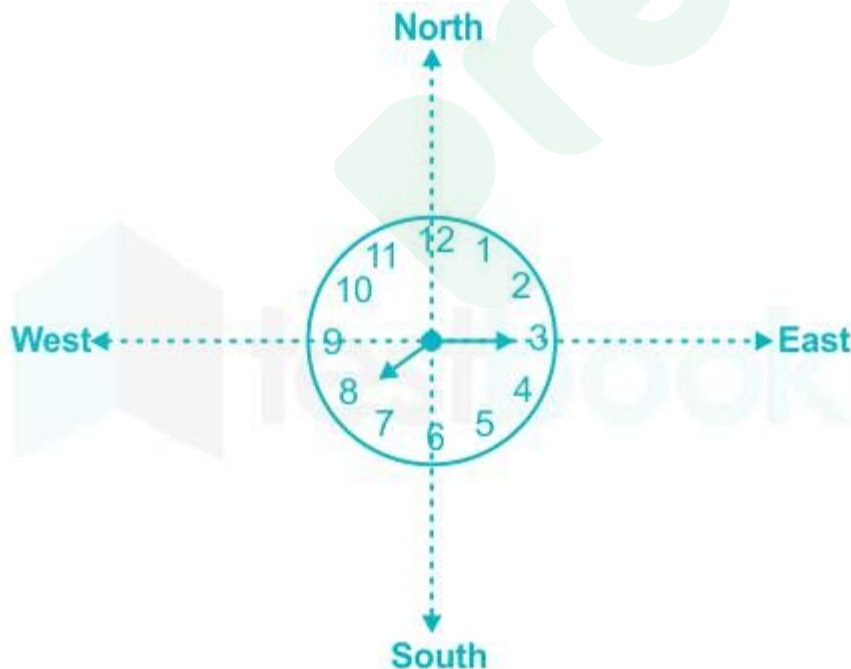Accordingly,

60 × 6 = 30 × p

⇒ 360 = 30p

⇒ p = 12

∴ **The other number is 12.**

---

**Que. 6** In a morning at 8: 15 am the minute hand of the clock is in east direction then find the direction of the hour hand ?

1.  South
2.  West
3.  South- West
4.  North - East

**Solution** Correct Option **- 3**

According to the condition given in the question:



On observing the above figure it is clear that hour hand is in 'South- West' direction.

Hence, 'South - West' is the correct answer.

---

**Que. 7** Which was the first bank established in India?

1.      Bank of Hindustan

2. Awadh Commercial Bank
3. Punjab National bank
4. Bank of Bengal

**Solution** Correct Option **- 1**

The correct answer is **option 1**, i.e., **Bank of Hindustan**

- **Banking services** have been existing in India since **ancient times**. Though it was not in the organized form before the **arrival of Britishers**, various banking activities were performed. After the advent of **Britishers in the 17<sup>th</sup> century,** foreign banking structure started declining. **Mayer's Alexander and Company** set up the **first European bank - The Bank of Hindustan in 1770.**
- **Awadh (Oudh) Commercial Bank** was **the first bank established in 1981** and governed **exclusively by Indians** on the basis of **extending loans**.
- The **East India Company** set up **Bank of Bengal (1809)**, **Bank of Bombay (1840)**, and **Bank of Madras (1843)** as autonomous bodies and called them **Presidency Banks**. These three banks were **merged in 1920** to form **Imperial Bank of India**, a bank of private **European shareholders**.
- **Punjab National Bank** was established in **1894** and its **headquarters were in Lahore**.
- Between **1906** and **1913**, **Bank of India (1906)**, **Central Bank of India (1911)**, **Bank of Baroda (1909)**, **Canara Bank**, **Indian Bank (1907)**, and **Bank of Mysore (1913)** were set up.

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**Que. 8** Find the simplified value of $\dfrac{(-1/8)}{(-1/4)} + \dfrac{(-1/2)^5}{(-1/2)^4} = ?$

1. 1
2. 0
3. 1/2
4. 2

**Solution Given:** Correct Option **- 2**

We have to find the simplified value of $\dfrac{(-1/8)}{(-1/4)} + \dfrac{(-1/2)^5}{(-1/2)^4}$

**Calculation:**

$\dfrac{(-1/8)}{(-1/4)} + \dfrac{(-1/2)^5}{(-1/2)^4}$

$\Rightarrow ( - 1/8) \times ( - 4) + \dfrac{-(1/2)^5}{(1/2)^4}$

$\Rightarrow (1/2) - (1/2)$

$\Rightarrow 0$

∴ **The required simplified value is 0.**

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**Que. 9** Select the Venn diagram that best illustrates the relationship between the following classes.
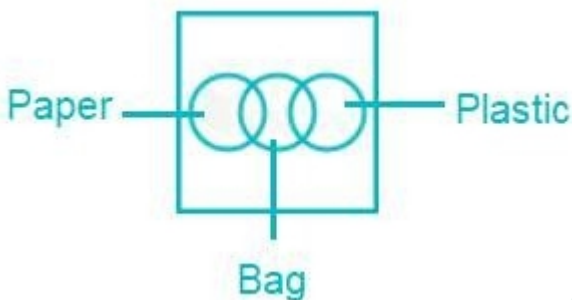
Plastic, Paper, Bag

1.

2. 

3. 

4. 

**Solution** Correct Option **- 3**

The bag is made of either plastic or paper or something else like cotton.

So the diagram which shows the best relationship between the given variable is:



Hence, the figure in option 3 is the correct answer.

---

**Que. 10** The Civil Aviation Ministry has given permission to build four greenfield airports which includes one International Airport at which place?

1. Hyderabad, Telangana
2. Nagpur, Maharashtra
3. Dholera, Gujarat
4. Coimbatore, Tamil Nadu

**Solution** Correct Option **- 3**

The correct answer is **Dholera, Gujarat**.

- The Civil Aviation  Ministry gave clearance for four greenfield airports.
- The three airports will be located in Andhra Pradesh and one international airport at Dholera, Gujarat.
- The Ministry has also given its green signal for development of a greenfield airport in Nellore and Kurnool districts of Andhra Pradesh under a public-private partnership.

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**Que. 11** If $\sqrt{15} = 3.87$ find the value of $\dfrac{\sqrt{3}}{\sqrt{5}}$

1. 0.772
2. 0.774
3. 0.784
4. 0.776

**Solution** Correct Option **- 2 Given:**

$\sqrt{15} = 3.87$. We have to find the value of $\dfrac{\sqrt{3}}{\sqrt{5}}$

**Calculation:**

$\dfrac{\sqrt{3}}{\sqrt{5}} = \dfrac{\sqrt{3}\times\sqrt{5}}{\sqrt{5}\times\sqrt{5}}$

$\Rightarrow \dfrac{\sqrt{15}}{5}$

$\Rightarrow \dfrac{3.87}{5}$

$\Rightarrow 0.774$

$\therefore$ **The required value of** $\dfrac{\sqrt{3}}{\sqrt{5}}$ **is 0.774.**

---

**Que. 12** Select the option that has the same relation to the third word as the second word to the first word.

Shoes : Rack :: Books : ?

1. Almira
2. Shelf
3. Drawer
4. Table

**Solution** Correct Option **- 2**

The place which is used to keep shoes is called rack.

Similarly,

The place which is used to keep book is called shelf.

Hence, 'Shelf' is the correct answer.

---

**Que. 13** Panchmarhi Biosphere reserve located in:

1. Uttar Pradesh
2. Chhattisgarh
3. Madhya Pradesh
4. None of these

**Solution** Correct Option **- 3**

The correct answer is **Madhya Pradesh**.

Important Point

- **Panchmarhi biosphere reserve:**
    - It is a conservation area in the Satpura ranges of Madhya Pradesh.
    - It was designated as a biosphere reserve by UNSECO in 2009 under the MAB program.
    - It extends in districts of Hoshangabad, Betul, and Chindwara.

---

**Que. 14** Shailendra, Amit and Suraj can complete a work in 6, 12 and 15 days respectively. Find the time taken to complete the work if they are working together.

1. 60/17 days

2.   60/23 days

3.   60/19 days

4.   60/29 days

**Solution** Correct Option **- 3 Given:**

Time taken by Shailendra to complete the work = 6 days

Time taken by Amit alone to complete the work = 12 days

Time taken by Suraj alone to complete the work = 15 days

**Formula used:**

Efficiency = Total work/Time taken

**Calculation:**

LCM of 6, 12 and 15 = 60 = Total work

Efficiency of Shailendra = 60/6 units/day

⇒ 10 units/day

Efficiency of Amit = 60/12 units/day

⇒ 5 units/day

Efficiency of Suraj = 60/15 units/day

⇒ 4 unit/day

Total efficiency of Shailendra, Amit and Suraj = (10 + 5 + 4) units/day

⇒ 19 units/day

Time taken to complete the work together = 60/19 days

⇒ 60/19 days

∴ **The time taken by B alone to complete the work is 60/19 days**
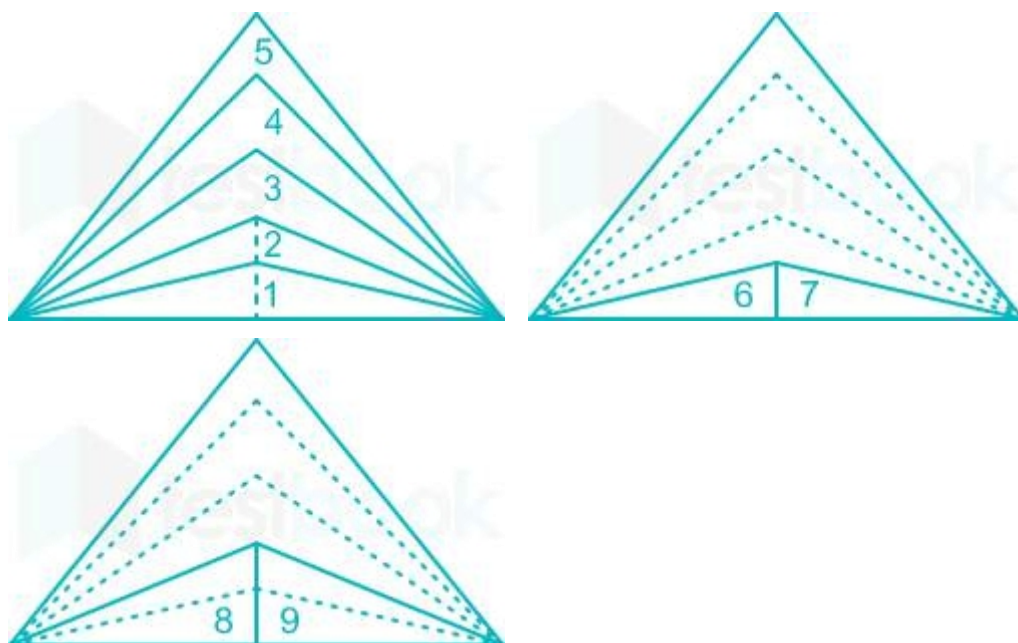
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**Que. 15**   Count the number of triangle in the following figure.



1.   9

2.   11

3.   13

4.   10

**Solution** Correct Option **- 1**
The count of the triangles are given below:

Hence, '9' is the correct answer.

---

**Que. 16** Consider the following statements regarding Right to Equality in the Indian Constitution.

1. Article 14 – All are equal before the law.

2. Article 16 – Equal opportunity in public employment.

3. Article 17 – Untouchability is Prohibited.

4. Article 19 – Abolition of Titles.

Which of the following is **INCORRECT**?

1. 1
2. 2
3. Only 2 and 4
4. Only 4

**Solution** Correct Option **- 4**

| Articles | Statements |
|---|---|
| Article 13 | • Laws are inconsistent with or in derogation of the fundamental right. Declares that all the laws are inconsistent to the fundamental rights shall be void, it also provides doctrine of judicial review. |
| **RIGHT TO EQUALITY** | |
| **Article 14** | • Equality before the law.<br>• The state shall not deny to any person equality before the law or equal protection law within the territory of India. |
| Article15 | • Prohibition of discrimination on the ground of religion, race, caste, sex, or place of birth. |
| Article 16 | Equality of opportunity in public matters of public employment. |
| Article 17 | • Abolition of untouchability. |

| | |
|---|---|
| | - It abolishes untouchability and forbids its practice in any form and the enforcement of untouchability in any form shall be punishable. |
| **Article 18** | - **Abolition of titles.**<br>- **Makes 4 provisions 1) prohibits state for giving titles, 2) prohibits a citizen to take any title, 3) foreigner having the office of profit cannot accept any title, 4) no citizen or foreigner holding office of profit or trust can accept any title or emoluments.** |

**Que. 17**  A and B together can do a work in 30 days and A alone can do it in 40 days. In how many days B alone can do this?

1. 120 days
2. 110 days
3. 80 days
4. 100 days

**Solution Given:**      Correct Option **- 1**

Time taken by A and B to complete the work = 30 days

Time taken by A alone to complete the work = 40 days

**Formula used:**

Efficiency = Total work/Time taken

**Calculation:**

LCM of 30 and 40 = 120 = Total work

Efficiency of A and B = 120/30 units/day

⇒ 4 units/day

Efficiency of A = 120/40 units/day

⇒ 3 units/day

Efficiency of B = (4 – 3) unit/day

⇒ 1 unit/day

Time taken by B alone = 120/1 days

⇒ 120 days

∴ **The time taken by B alone to complete the work is 120 days**

**Que. 18**  Find the odd one out?

1. Yellow
2. Red
3. Orange
4. Blue

**Solution** Correct Option **- 2**

All the colors are present in the Rainbow but only Red color has the highest wavelength.

Hence, **Red** is the odd one out.

## Additional Information

Red color has the highest wavelength, this is the reason it is used to stop vehicles on the road, indicators, or to give signs of danger.

The highest wavelength makes it visible for long distances than any other color. It can also be easily seen in dense fog.

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**Que. 19** Who is the chief executive officer (CEO) of Amazon?

1. Werner Vogels
2. Jeff Bezos
3. Alain Monié
4. Barnaby Dorfman

**Solution** Correct Option **- 2**
Jeff Bezos is the CEO of Amazon.

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**Que. 20** Pipe A can fill a tank in 20 minutes and Pipe B can empty the same tank in 30 minutes. Find the time taken to fill the empty tank if both pipes are opened together.

1. 40 mins
2. 50 mins
3. 70 mins
4. 60 mins

**Solution** Correct Option **- 4 Given:**

Time taken by Pipe A to fill the tank = 20 mins

Time taken by Pipe B to empty the tank = 30 mins

**Formula used:**

Efficiency = Total work/Time taken

**Calculation:**

LCM of 20 and 30 = 60 units = Total work

Efficiency of pipe A = 60/20 units/min

⇒ 3 units/min

Efficiency of pipe B = 60/30 units/min

⇒ -2 units/min

Total efficiency of pipe A and pipe B = (3 – 2) units/min

⇒ 1 unit/min

Time taken to fill the tank = 60/1 mins

⇒ 60 mins

∴ **Time taken to fill the tank is 60 mins**

---

**Que. 21** Select the option that has the same relation to the third word as the second word to the first word.

Book : Reading :: Poem : ?

1. Listening
2. Singing

3. Rhyming
4. Reading

**Solution** Correct Option **- 3**

Book is used for reading.

Similarly,

Poems are used for rhyming.

Hence, 'Rhyming' is the correct answer.

---

**Que. 22** Who is the Founder of Google?

1. Eric Schmidt
2. Jeff Bezos
3. Eugene Charniak
4. Larry Page

**Solution** Correct Option **- 4**

The correct answer is **Larry Page**.

💡 Important Point

- Google was founded by Larry Page and Sergey Brin on September 4, 1998.
- They originally nicknamed their new search engine "BackRub", because the system checked backlinks to estimate the importance of a site.
- Eventually, they changed the name to Google, originating from a misspelling of the word "googol". Googol is '1' followed by one hundred zeros, which was picked to signify that the search engine was intended to provide large quantities of information.

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**Que. 23** The angles of a triangle are in ratio 4 : 3 : 2, what will be the supplementary of the largest angle of the triangle?

1. 60°
2. 80°
3. 90°
4. 100°

**Solution Given:** Correct Option **- 4**

The ratio of angles of triangle = 4 : 3 : 2

**Formula used:**

Sum of all angles of triangle = 180°

The supplementary angle of x = 180° – x

**Calculation:**

Let the angles be 4x, 3x and 2x

Sum of all angles of triangle = 180°

4x + 3x + 2x = 180°

⇒ 9x = 180°

⇒ x = 20°

Angles of the triangle are $4x = 80°$, $3x = 60°$, and $2x = 40°$

Largest angle of triangle = 80°

Supplementary angle of 80° = 180° – 80°

⇒ Supplementary angle of 80° = 100°

∴ **Supplementary angle of largest angle of the triangle is 100°**

---

**Que. 24** Select the Venn diagram that best illustrates the relationship between the following classes.

Mobile, Internet, webmail

1.



2.



3.



4.



**Solution** Correct Option **- 2**

webmail is the part of the internet while mobile is electronic equipment.

So the diagram which shows the best relation between the given three variables is:



Hence, the figure in option 2 is the correct answer.

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**Que. 25** 'India: The Future is Now' is written by_____.

1. Arundhati Roy
2. Amish Tripathi
3. Natwar Singh
4. Shashi Tharoor

**Solution** Correct Option **- 4**

- 'India: The Future is Now' is written by **Shashi Tharoor.**

- Shashi Tharoor is an author and an MP from **Thiruvananthapuram constituency.**
- **An Era of Darkness: The British Empire in India** was also written by Shashi Tharoor.
- **Arundhati Roy** won the Man Booker Prize for Fiction in 1997 for her novel **The God of Small Things.**

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**Que. 26** If the height of the class as follows(in cm):

152, 148, 150, 153, 147

What is the difference between mean and median?

1. 5
2. 7
3. 0
4. 2

**Solution Given:** Correct Option **- 3**

Numbers = 152, 148, 150, 153, 147

**Formula used:**

Mean = Sum of numbers / Number of observations

**Concept used:**

Median is the middle number of all the observations when the numbers are arranged in ascending order.

If the number of observations is even, then the median is average of two middle terms.

**Calculations:**

Mean = Sum of numbers / Number of observations

Mean = (152 + 148 + 150 + 153 + 147)/5

$\Rightarrow$ Mean = 750/5

$\Rightarrow$ Mean = 150

Arranging the numbers in ascending order,

147, 148, 150, 152, 153

$\Rightarrow$ Median = 150

Difference = 150 - 150

$\Rightarrow$ 0

$\therefore$ **The difference between mean and median is 0.**

---

**Que. 27** In the question, a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument.

**Statement:** Plastics are one of the most pollutant things in the environment.

**Argument :**

I. Plastics should be recycled to minimize pollution.

II. Plastics should be ban to eliminate plastic pollution.

1. Both follows.
2. Only I follows
3. Only II follows
4. None follows

**Solution** Correct Option **- 1**

Given:

**Statement:** Plastics are one of the most pollutant things in the environment.

**Argument** :

I. Plastics should be recycled to minimize pollution. (**Follow**: as recycling makes plastic reusable and minimize the pollutant in environment.)

II. Plastics should be ban to eliminate plastic pollution. (**Follow**: by banning plastic and replacing it with reusable degradable item will help in curbing plastic pollution.)

Hence, **both argument follows.**

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**Que. 28** Which of the following is an example of Primary Cache memory?
1. Registers
2. PROM
3. HDD
4. Pen drive

**Solution** Correct Option **- 1**

- **Primary Cache memory – Registers**
- Primary Main memory – PROM (Programmable Read only Memory)
- Secondary memory – HDD (Hard Disk Drive) [Magnetic Disk]
- Secondary memory – Pen drive [Flash memory]

---

**Que. 29** The age of people as follows:

18, 12, 10, 16, 19, 15, 13, 10.

Find the median of the given data.
1. 14.5
2. 16
3. 14
4. 15

**Solution Given:** Correct Option **- 3**

Age of people = 18, 12, 10, 16, 19, 15, 13, 10.

**Concept used:**

Median is the middle number of all the observations when the numbers are arranged in ascending order.

If the number of observations is even, then the median is average of two middle terms.

If n is odd then, Median = $\{(n/2) + 1\}^{th}$ term

If n is even then, Median = $[(n/2)^{th}$ term + $\{(n/2) + 1\}^{th}$ term]/2

**Calculations:**

Arranging the ages in ascending order,

10, 10, 12, 13, 15, 16, 18, 19

∵ Number of terms = 8 i.e. even.

So, Median = $[(n/2)^{th}$ term + $\{(n/2) + 1\}^{th}$ term]/2

$(n/2)^{th}$ term = 8/2

$\Rightarrow$ 4<sup>th</sup> term

$\Rightarrow$ 13

$\{(n/2) + 1\}^{th}$ term $= \{(8/2) + 1\}^{th}$ term

$\Rightarrow$ 5<sup>th</sup> term

$\Rightarrow$ 15

Median $= (13 + 15)/2$

$\Rightarrow$ 28/2

$\Rightarrow$ 14

∴ **The median of the given data is 14.**

---

**Que. 30** | In a certain code language, BOX is written as OBK, then how will be the word UNIVERSITY written in that code language?

1. EVHIREFGLV
2. EVHIRYFGLV
3. HAVIREFVGL
4. HAVIREEVGL

**Solution** Correct Option - 3
According to the English Alphabet series and its positional value:

| Alphabets | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positional value | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Positional value | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
| Alphabets | Z | Y | X | W | V | U | T | S | R | Q | P | O | N |

The pattern follow is:

**B** = 2; 2 + 13 = 15; 15 = **O**

**O** = 15; 15 + 13 = 28(26 + 2); 2 = **B**

**X** = 24; 24 + 13 = 37(26 + 11); 11 = **K**

Similarly,

**U** + 21; 21 + 13 = 34(26 + 8); 8 = **H**

**N** + 14; 14 + 13 = 27(26 + 1); 1 = **A**

**I** + 9; 9 + 13 = 22; 22 = **V**

**V** + 22; 22 + 13 = 35(26 + 9); 9 = **I**

**E** + 5; 5 + 13 = 18; 18 = **R**

**R** + 18; 18 + 13 = 31(26 + 5); 5 = **E**

**S** + 19; 19 + 13 = 32(26 + 6); 6 = **F**

**I** + 9; 9 + 13 = 22; 22 = **V**

**T** + 20; 20 + 13 = 33(26 + 7); 7 = **G**

**Y** + 25; 25 + 13 = 38(26 + 12); 12 = **L**

Hence, UNIVERSITY is coded as **HAVIREFVGL**

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**Que. 31** | When were the first Lok Sabha elections held in India?

1. 25 October 1951 to 21 February 1952
2. 25 October 1947 to 21 February 1948
3. 25 October 1948 to 21 February 1949
4. 25 October 1950 to 21 February 1951

**Solution** Correct Option **- 1**

- The first General Elections were held from 25 October 1951 to 21 February 1952.
- Till 2014, India has witnessed sixteen Lok Sabha elections.

**Que. 32** Find the mean of the following data:

22, 29, 31, 35, 28, 29

1. 28.5
2. 29
3. 26
4. 27

**Solution Given:** Correct Option **- 2**

Numbers = 22, 29, 31, 35, 28, 29

**Formula used:**

Mean = Sum of observations/Number of observations

**Calculations:**

Mean = Sum of observations/Number of observations

$\Rightarrow$ Mean = (22 + 29 + 31 + 35 + 28 + 29)/6

$\Rightarrow$ Mean = 174/6

$\Rightarrow$ Mean = 29

∴ **The mean of the following data is 29.**

**Que. 33** If M = 14, CAT = 57 then GLASS = ?

1. 73
2. 51
3. 56
4. 77

**Solution** Correct Option **- 4**

According to the English Alphabet series and its positional value:

| Alphabets | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positional value | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Positional value | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
| Alphabets | Z | Y | X | W | V | U | T | S | R | Q | P | O | N |

Pattern followed here is: **the letter is coded as opposite positional value**

M = 13, Opposite positional value = 14

Similarly,

CAT = 24 + 26 + 7 = 57

And,

GLASS = 20 + 15 + 26 + 8 + 8 = 77

Hence, **77** is the coded form of GLASS.

---

**Que. 34** | Who is known as the "father of green revolution" in India?

1. Vikram Sarabhai
2. MS Swaminathan
3. Somnath Desai
4. S. Radhakrishnan

**Solution** Correct Option **- 2**

The correct answer is **option 2**, i.e, <u>**MS Swaminathan**</u>.

The father of Green Revolution is **MS Swaminathan**.

- He is an Indian **geneticist** and administrator, known for his role in India's Green Revolution.
- He has been called as father of green revolution for his role introducing HYV of wheat in India.
- He is the founder of the **MS Swaminathan Research Foundation**.
- His stated vision is to make the world free from hunger and poverty.
- He was director general of Indian Council of Agricultural Research from **1972 to 1979**,.

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**Que. 35** | A person travels a certain distance in 10 hours, if he covers the first half at a speed of 30 km/hr and second half with the speed of 20 km/hr, then what will be the total distance covered by him?

1. 120 km
2. 160 km
3. 100 km
4. 240 km

**Solution Given:** Correct Option **- 4**

Total time taken = 10 hours

Speed in first half = 30 km/hr

Speed in second half = 20 km/hr

**Formula used:**

Time = Distance/Speed

**Calculation:**

Let the total distance covered be 2x km

As, he covered the first half (i.e. x km) with 30 km/hr

Time taken to cover first-half = Distance/Speed = x/30 hours

He covered the second half (i.e. x km) with 20 km/hr

Time taken to cover second half = x/20 hours

Total time taken = 10 hours

$\Rightarrow$ x/30 + x/20 = 10

$\Rightarrow$ 5x/60 = 10

$\Rightarrow x = 120$

Total distance covered by him = 2x = 2 × 120 = 240 km

∴ **Total distance covered by him is 240 km**

---

**Que. 36** In the following question, select the related number from the given alternatives.

28 : 66 :: 31 : ?

1. 76
2. 72
3. 74
4. 70

**Solution** Correct Option **- 2**

The pattern followed here is:

$28 \times 2 + 10$;

$56 + 10 = 66$

Similarly,

$31 \times 2 + 10$;

$62 + 10 = 72$

Hence, **72** is the correct answer.

---

**Que. 37** When was the symbol of Indian rupee came into vague?

1. 15 July, 2010
2. 22 September, 2011
3. 21 March, 2012
4. 23 August, 2009

**Solution** Correct Option **- 1**

The correct answer is **1** i.e. **15 July 2010.**

**Points to know about the Indian rupee:**

- The symbol of the Indian rupee came into vague on **15th July 2010.**
- The new symbol is an amalgamation of **Devanagri 'Ra' and the Roman 'R'** without the stem.
- The new symbol designed by **D Udaya Kumar, a post-graduate of IIT Bombay** was finally selected by the Union Cabinet on 15th July 2010.
- Though the symbol will not be printed or embossed on currency notes or coins, it would be included in the **'Unicode standard'.**
- The major scripts of the world to ensure that it is easily displaced and printed in the **electronic and print media**.
- The most commonly used symbols for the rupee were **Rs and Re,** before its adoption.
- The sign was approved by the **Ministry of Finance and the Department of Economic Affairs** of the Government of India.

---

**Que. 38** Find the equation of the tangent to the circle $x^2 + y^2 = 9$, which passes through the point on the circle where x = 2 and y is positive.

1. $\sqrt{5}y = 2x - 9$
2. $\sqrt{5}y = -2x + 9$

3. $2y = -\sqrt{5}x + 4\sqrt{5}$

4. $2y = -\sqrt{5}x - 4\sqrt{5}$

**Solution** Correct Option - 2 Given:

Equation of circle is $x^2 + y^2 = 9$

Tangent passes through the point on the circle where $x = 2$

**Concept used:**

Slope $= (y_2 - y_1)/(x_2 - x_1)$

If two lines are perpendicular then the product of their slope $= -1$

Equation of line can be written as $y = mx + c$, here m is the slope of the line and c is the y-intercept
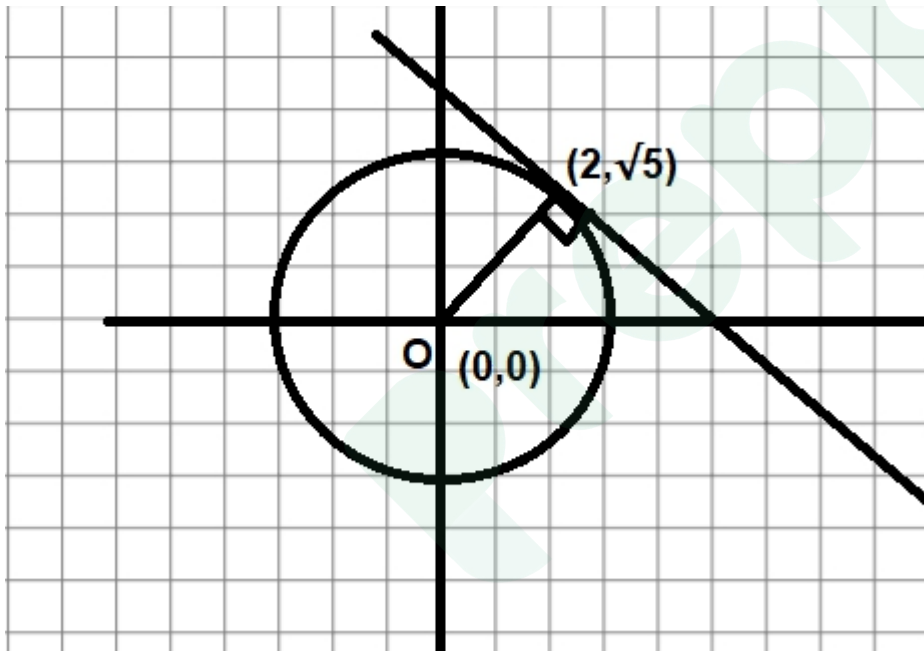
**Calculation:**

As tangent passes through $(2, y)$, as this point lie on the circle

Then it will satisfy the equation of the circle $x^2 + y^2 = 9$

$\Rightarrow 2^2 + y^2 = 9$

$\Rightarrow y^2 = 9 - 4 = 5$

$\Rightarrow y = \sqrt{5}$ (as, y is positive)



Slope of radius $= (y_2 - y_1)/(x_2 - x_1) = (\sqrt{5} - 0)/(2 - 0) = \sqrt{5}/2$

Slope of tangent × Slope of radius $= -1$

$\Rightarrow$ Slope of tangent $(m) = -1/(\sqrt{5}/2) = -2/\sqrt{5}$

Equation of tangent will be $y = mx + c$

$\Rightarrow y = (-2/\sqrt{5}) \times x + c$

As this passes through $(2, \sqrt{5})$

$c = y + (2/\sqrt{5}) \times x = \sqrt{5} + (2/\sqrt{5}) \times 2$

$\Rightarrow c = 9/\sqrt{5}$

Equation of tangent will be: $y = (-2/\sqrt{5})x + 9/\sqrt{5}$

$\Rightarrow \sqrt{5}y = -2x + 9$

∴ **Equation of tangent will be $\sqrt{5}y = -2x + 9$**

| Que. 39 | In an alphabet series: A interchanges its position with C, B interchanges its position with D, and so on till P. Which of the following letter will come at the 13<sup>th</sup> place from left end? |

1. M
2. N
3. O
4. P

**Solution** Correct Option **- 3**

According to the given information:

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Interchanges Position | | | | | | | | | | | | | | | |
| C | D | A | B | G | H | E | F | K | L | I | J | O | P | M | N |

M is at 13<sup>th</sup> place from left and will be replaced by O

Hence, **O** will come at 13<sup>th</sup> place in coded form

| Que. 40 | Zojila Tunnel, recently in news is located in which state/Union Territory? |

1. Himachal Pradesh
2. Jammu and Kashmir
3. Arunachal Pradesh
4. Uttarakhand

**Solution** Correct Option **- 2**

The correct answer is **Jammu and Kashmir.**

**In News -**

- **Union Road Transport and Highways Minister will initiate simultaneous blasting for Zojila Tunnel in Jammu and Kashmir and Ladakh. Hence option 2 is correct.**
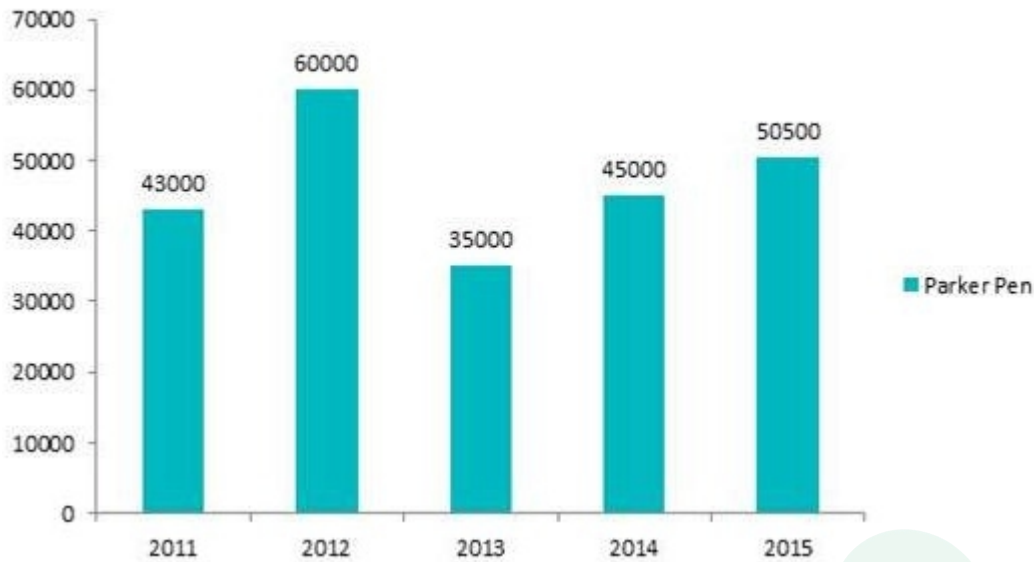
Important Point

- The tunnel will **provide all-weather connectivity between Srinagar valley and Leh on NH-1** and will bring about an all-round economic and socio-cultural integration of Jammu and Kashmir.
- It involves the construction of a **14.15-kilometre long tunnel at an altitude of about three thousand metres under Zojila pass on NH-1** connecting Srinagar and Leh through Dras and Kargil.
- **Megha Engineering & Infrastructure Limited (MEIL)** has been awarded the contract of construction of ZojiLa Tunnel between Baltal and Minamarg within six years and nearly 19-KM approach roads on both sides in two and half years.

**Source -**

http://newsonair.com/News?title=Nitin-Gadkari-to-initiate-simultaneous-blasting-for-Zojila-Tunnel-in-J%26K%2c-Ladakh&id=402208

| Que. 41 | **Directions:** The following questions are based on the bar graph given below which represents the sales of Parker Pen sold in different years 2011, 2012, 2013, 2014,2015. |

## Parker Pen



Find the difference of pens sold in 2011 and 2012 to the pens sold in 2013, 2014, and 2015.

1. 27500
2. 27000
3. 30000
4. 25000

**Solution Given:**    Correct Option **- 1**

Sales of pens in 2011 = 43000

Sales of pens in 2012 = 60000

Sales of pens in 2013 = 35000

Sales of pens in 2014 = 45000

Sales of pens in 2015 = 50500

**Calculation:**

Total sales in 2011 and 2012

$\Rightarrow$ 43000 + 60000

$\Rightarrow$ 103000

Total sales in 2013, 2014, and 2015

$\Rightarrow$ 35000 + 45000 + 50500

$\Rightarrow$ 130500

Difference of sales

$\Rightarrow$ 130500 - 103000

$\Rightarrow$ 27500

∴ **The difference in sales is 27500.**

---

**Que. 42**  Find the missing number from the options given below.

| 4 | 7 | ? | 4 | 7 |
|---|---|----|---|---|
| 5 | 7 | 36 | 5 | 7 |
| 6 | 9 | 56 | 6 | 9 |

1.  30
2.  29
3.  34
4.  33

**Solution** Correct Option **- 1**

The pattern followed here is:

5 × 7 + (7 - 5) - 1

35 + 2 - 1 = **36**

Similarly,

6 × 9 + (9 - 6 ) - 1

54 + 3 - 1 = **56**

And,

4 × 7 + (7 - 4) - 1

28 + 3 - 1 = **30**

Hence, **30** is the correct answer.

---

**Que. 43**  Raghuram Rajan is the author of which of these books?

1.      Kadve Pravachan
2.   Matoshree
3.   I Do What I Do
4.   Playing With Fire

**Solution** Correct Option **- 3**

**Raghuram Rajan**, an Indian economist and 23rd Governor of the RBI is the author of the book '**I Do What I Do**'.

| Kadve Pravachan | Tarun Sagar Maharaj |
|---|---|
| Matoshree | Sumitra Mahajan |
| I Do What I Do | **Raghuram Rajan** |
| Playing With Fire | Tess Gerritsen |

---

**Que. 44**  The sales of pens in 2012 is how much percent to the sales of pens in 2013, 2014.

1.      60%
2.   75%
3.   70%
4.   80%

**Solution** Correct Option **- 2**

**Given:**

Sales of pens in 2012 = 60000

Sales of pens in 2013 = 35000

Sales of pens in 2014 = 45000

**Formula used:**

Percentage = (Part value/Original value) × 100

**Calculation:**

Total sales in 2013 and 2014

⇒ 35000 + 45000

⇒ 80000

Sales in 2012 = 60000

Percent to the sales of pens

⇒ (60000/80000) × 100

⇒ 75%

∴ **Percent of the sales of pens is 75%.**

---

**Que. 45** Ram and Shyam go together outside on date 5 of any month. Ram go outside every 4$^{th}$ day while Shayam go outside on every 5$^{th}$ day. On which date they both will go together after 5?

1. 20$^{th}$
2. 22$^{nd}$
3. 25$^{th}$
4. 27$^{th}$

**Solution** Correct Option **- 3**

Given:

They both go together on date 5 of any month.

Ram go outside every 4$^{th}$ day while Shayam go outside on every 5$^{th}$ day

Ram will go next time on 9, 13, 17, 21, **25**

Shyam will go next time on 10, 15, 20, **25**

Hence, they will go together on **25$^{th}$** day

---

**Que. 46** Which among the following tribe is **not** found in India?

1. Bhils
2. Zulu
3. Bru-Reang
4. Sahariyas

**Solution** Correct Option **- 2**

- The **Zulu** is a tribal community mostly found in **South Africa.**

**Bhils**

- According to Census 2011, the Bhils are the **largest tribal group** in India.

- They are found in the states of **Rajasthan, Andhra Pradesh, Madhya Pradesh, Gujarat.**

## Bru-Reang

- **The Bru-Reang** are tribes of **Tripura and Mizoram.**
- In January 2020, Bru-Reang representatives and the Government of Tripura and Mizoram signed an agreement in New Delhi to end the refugee crisis of the Bru-Reang community.

## Sahariya

- **The Sahariya** is an ethnic group in the state of **Madhya Pradesh.**

**Que. 47** Find the sales of pens in 2016, if the sales is increased by 20% to the sales of pens in previous year.

1. 60400
2. 60700
3. 60600
4. 60800

**Solution Given:** Correct Option **- 3**

Sales of Pens in 2015 = 50500

**Formula used:**

Percentage = (Part value/Original value) × 100

**Calculation:**

In 2016 Sales increased by 20%

$\Rightarrow 50500 \times (20/100)$

$\Rightarrow 10100$

Total sales in 2016

$\Rightarrow 50500 + 10100$

$\Rightarrow 60600$

∴ **The total sales in 2016 is 60600.**

**Que. 48** Find the wrong term in the following series.

0, 4, 17, 48, 100

1. 4
2. 17
3. 48
4. 100

**Solution** Correct Option **- 2**

The logic is :

$1^3 - 1^2 = 0$

$2^3 - 2^2 = 4$

$\mathbf{3^3 - 3^2 = 18 \neq 17}$

$4^3 - 4^2 = 48$

$5^3 - 5^2 = 100$

Thus, the wrong term is "17".

---

**Que. 49** Who among the following was appointed as the first acting Prime Minister of India after the demise of Jawaharlal Nehru in 1964?

1. Lal Bahadur Shastri
2. Gulzarilal Nanda
3. VP Singh
4. PVR Narsimha Rao

**Solution** Correct Option **- 2**

- Gulzarilal Nanda was appointed as the first ever acting Prime Minister of India after the demise of the first PM of India, Jawaharlal Nehru in 1964.
- He remained PM for 13 days after that Lal Bahadur Shastri became the prime minister of India.
- He again became PM in 1966 after the death of Lal Bahadur Shastri.
- He was awarded the Bharat Ratna, the highest civilian award, in 1997.

---

**Que. 50** The sale of pens in 2014 is decreased by how much percent to the sale of pen in 2012.

1. 20%
2. 15%
3. 30%
4. 25%

**Solution Given:** Correct Option **- 4**

Sales of pens in 2012 = 60000

Sales of pens in 2014 = 45000

**Formula used:**

Percentage = (Part value/Original value) × 100

**Calculation:**

Decrease of sales in 2014

⇒ 60000 - 45000

⇒ 15000

Percent decrease in the sale of the pen

⇒ (15000/60000) × 100

⇒ 25%

∴ **Percent decrease in the sale of the pen is 25%.**

---

**Que. 51** The two statements below are followed by three conclusions labeled I, II and III. Assuming that the information in the statements is true, even if it appears to be at variance with generally established facts, decide which conclusion(s) logically and definitely follow(s) from the information given in the statements.

**Statements:**

1. Some mangoes are fruits.

2. All fruits are sweets.

**Conclusions:**

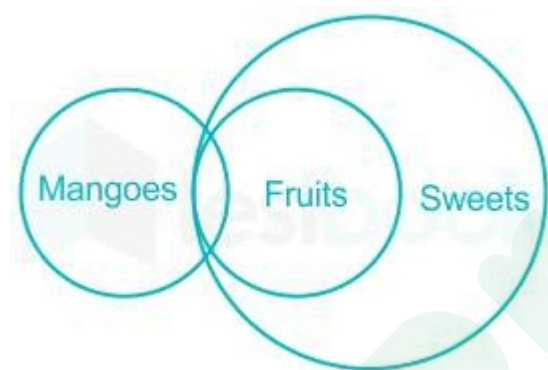I. Some sweets are mangoes.

II. All sweets are fruits.

III. Some mangoes are neither fruits nor sweets.

1. Only conclusions I and III follow
2. Only conclusions II and III follow
3. Only conclusions I and II follow
4. Only conclusion I follows

**Solution**           Correct Option **- 4**
Here the logic is:

The least possible Venn diagram for the given statements is as follows,



Conclusions:

I. Some sweets are mangoes → True (As some fruits are mangoes and all fruits are sweets so some sweets are mangoes)

II. All sweets are fruits → False (All fruits are sweets)

III. Some mangoes are neither fruits nor sweets. → False

Hence, 'only conclusion I follows' is the correct answer

---

**Que. 52** | Sarojini Naidu was the President of which Congress session
1.    1922, Gaya
2.  1928, Calcutta
3.  1925, Kanpur
4.  1931, Karachi

**Solution** Correct Option **- 3**
The correct answer is **1925, Kanpur**.

- **Sarojini Naidu:**
    - She was the **first Indian woman president** of the Indian National Congress.
    - She became the president of the Indian National Congress in the **Kanpur session in 1925**.

- She was given the title of **"Nightingale of India"** for her contributions in the field of poetry writing.
- She was called **'Bharat Kokila'**.
- She is the first woman to hold the office of governor in the dominion of India.
- She became the governor of the United Provinces in 1947.

## 💡 Important Point

- **Notable works of Sarojini Naidu are:**
  - The golden threshold
  - The bird of time: Songs of life, death & spring
  - Muhammad Jinnah: An ambassador of unity
  - Palanquin bearers
  - The village song
  - In the bazaars of Hyderabad

## 📋 Additional Information

- **Chittaranjan Das** became the president of the Indian National Congress in the Gaya session in 1922.
- **Motilal Nehru** became the president of the Indian National Congress in the Calcutta session in 1928.
- **Sardar Vallabhbhai Patel** became the president of the Indian National Congress in the Karachi session in 1931.

---

**Que. 53** Find the average of pens sold in all years.

1. 46000
2. 46700
3. 45000
4. 48400

**Solution Given:** Correct Option **- 2**

Sales of pens in 2011 = 43000

Sales of pens in 2012 = 60000

Sales of pens in 2013 = 35000

Sales of pens in 2014 = 45000

Sales of pens in 2015 = 50500

**Formula used:**

Average = Sum of values/Number of values

**Calculation:**

Sum of sales in all years

$\Rightarrow$ 43000 + 60000 + 35000 + 45000 + 50500

$\Rightarrow$ 233500

Number of values = 5

Average of all years

$\Rightarrow$ (233500/5)

$\Rightarrow 46700$

∴ **Average of all years is 46700.**

---

**Que. 54** | In a certain code language the word MATTER is coded as TAMRET then what is the code for BEYOND?

1. YEDONB
2. YDNBNO
3. YEBDNO
4. YBENOD

**Solution** Correct Option **- 3**

The code for MATTER is



```
M  A  T  T  E  R
      X        X
T  A  M  R  E  T
```

Here the logic is interchanging half of the alphabets in reverse order as shown in above figure

Similarly,

The code for BEYOND is



```
B  E  Y  O  N  D
      X        X
Y  E  B  D  N  O
```

So, the code for BEYOND is  YEBDNO

Hence, the correct answer is  YEBDNO.

---

**Que. 55** | Programme "The Make in India" was started  on

1. November 2012
2. September 2014
3. January 2014
4. September 2016

**Solution** Correct Option **- 2**

The correct answer is **September 2014.**

- The Make in India program aims to convert India to a self-reliant country and to give the Indian economy global recognition.
- The Make in India program was started on **25ᵗʰ September 2014.**
- It was launched by the prime minister of India **Narendra Modi.**
- It was launched during the **12ᵗʰ five-year planning** in  India.
- The Make in India is organized by the government of India.
- The main objectives of the Make in India program are:
  - Enforcement of secondary and tertiary sectors in India.
  - Manufacturing of products in India and sell the products worldwide.
  - Creating job opportunities for more than 10 million people.
  - Boosting of India's GDP, trade, and economic growth.

**Que. 56** The average of 11 numbers is 28. If the average of first 5 numbers is 23 and the average of next 5 numbers is 25, then find the 11th number.

1. 68
2. 58
3. 73
4. 63

**Solution Given:**     Correct Option **- 1**

Average of 11 numbers = 28

Average of first 5 numbers = 23

Average of next 5 numbers = 25

**Formula used:**

Sum of observations = Average × Number of observations

**Calculation:**

Sum of 11 numbers = 28 × 11

⇒ 308

Sum of first 5 numbers = 23 × 5

⇒ 115

Sum of next 5 numbers = 25 × 5

⇒ 125

Total sum of first 10 numbers = (115 + 125)
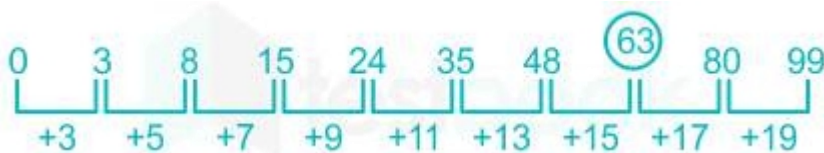
⇒ 240

11th number = (308 – 240)

⇒ 68

∴ **The 11th number is 68**

---

**Que. 57** In the following series, one of the numbers does NOT fit. Find the INCORRECT number.

0, 3, 8, 15, 24, 35, 48, 62, 80, 99

1. 62
2. 35
3. 48
4. 99

**Solution**              Correct Option **- 1**

The logic is:



Instead of 62, it should be 63.

Hence, '62' is the incorrect number in the series.

---

**Que. 58** Which of the following is NOT a computer virus?

1. AIDS
2. Anna Kournikova
3. Brain
4. Don

**Solution** Correct Option **- 4**

- The **Anna Kournikova** VBS.SST computer **virus**, informally known as "**Anna**," is a **viral** worm that uses Visual Basic to infect Windows systems when a user unwittingly opens an e-mail note with an attachment that appears to be a graphic image of Russian tennis star **Anna Kournikova**.
- AIDS and Brain also type of computer virus.
- AIDS is the first virus known to exploit the MS-DOS "corresponding file" vulnerability.

---

**Que. 59** If tanA = x – 1/4x, then what will be the value of secA – tanA?

1. 2x
2. x
3. 1/2x
4. $1/2x^2$

**Solution Given:** Correct Option **- 3**

tanA = x – 1/4x

**Identity used:**

$sec^2A = 1 + tan^2A$

$(x + y)^2 = x^2 + y^2 + 2xy$

$(x – y)^2 = x^2 + y^2 – 2xy$

**Calculation:**

As, tanA = x – 1/4x

Squaring both sides we'll get

$tan^2A = (x – 1/4x)^2$

$⇒ tan^2A = x^2 + 1/16x^2 – 1/2$

We know that $sec^2A = 1 + tan^2A$

$⇒ sec^2A = 1 + x^2 + 1/16x^2 – 1/2$

$⇒ sec^2A = x^2 + 1/16x^2 + 1/2$

$⇒ sec^2A = (x + 1/4x)^2$

$⇒ secA = x + 1/4x$

According to the question we have to find secA – tanA

$⇒ secA – tanA = x + 1/4x – (x – 1/4x)$

$⇒ secA – tanA = 1/4x + 1/4x = 1/2x$

∴ **The value of secA – tanA is 1/2x**

---

**Que. 60** Four letter-clusters have been given, out of which three are alike in some manner, while one is different. Select the odd letter-cluster.

1. JLN
2. UWY
3. PRT
4. VXY

**Solution** Correct Option - **4**

| Alphabets | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positional value | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Positional value | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
| Alphabets | Z | Y | X | W | V | U | T | S | R | Q | P | O | N |

The pattern followed here is:

$$J \xrightarrow{+2} L \xrightarrow{+2} N$$
$$U \xrightarrow{+2} W \xrightarrow{+2} Y$$
$$P \xrightarrow{+2} R \xrightarrow{+2} T$$
$$V \xrightarrow{+2} X \xrightarrow{+1} Y$$

Hence, 'VXY' is odd among them.

---

| **Que. 61** | Which hormone is secreted by the pituitary gland? |
|---|---|

1. Adrenaline
2. Growth hormone
3. Insulin
4. Thyroxin

**Solution** Correct Option - **2**
The Correct Answer is **Growth hormone.**

## 🔑 Key-Points

- **Growth hormone** is released into the bloodstream from the **anterior pituitary gland.**
- This is controlled by two other hormones that are released from the hypothalamus (a part of the brain): **growth hormone-releasing hormone, which stimulates the pituitary to release growth hormone, and somatostatin, which inhibits that release.**

## 💡 Important Point

- The pituitary gland is also called the **master gland,** controls the function of most other endocrine glands.
- The pituitary, a pea-sized gland at the base of the brain, produces a number of hormones.
- Each of these hormones affects a specific part of the body (a target organ or tissue).

| Hormone | Target Organ or Tissue |
|---|---|
| Adrenocorticotropic hormone( ACTH) | Adrenal glands |

| | |
|---|---|
| Beta-melanocyte– stimulating hormone | Skin |
| Endorphins | Brain and immune system |
| Enkephalins | Brain |
| Follicle-stimulating hormone | Ovaries or testes |
| Growth hormone | Muscles and bones |
| Luteinizing hormone | Ovaries or testes |
| Oxytocin | Uterus and mammary glands |
| Prolactin | Mammary glands |
| Thyroid-stimulating hormone | Thyroid gland |
| Vasopressin (antidiuretic hormone) | Kidneys |

## Additional Information

- **Adrenaline** is produced both by the adrenal glands and by a small number of neurons in the medulla oblongata.
- Its major action, together with noradrenaline, is to prepare the body for **'fight or flight'**.
- **Insulin** is a peptide hormone produced by beta cells of the pancreatic islets.
- **Insulin** regulates the blood glucose level in the body.
- Thyroxin hormone is produced by the thyroid gland.
- This hormone increases the metabolic rate and so regulates growth and development.

---

**Que. 62**   A : B = 3 : 4 and B : C = 5 : 6 Find the C : A

1.    5 : 2
2.   15 : 24
3.   8 : 5
4.   5 : 8

**Solution Given:**   Correct Option **- 3**

A : B = 3 : 4 and B : C = 5 : 6. We have to find the C : A

**Concept Used:**

Concept of ratio and proportion

**Calculation:**

A : B = 3 : 4

⇒ A/B = 3/4-------- (1)

And, B : C = 5 : 6

⇒ B/C = 5/6-------- (2)

Multipling (1) and (2) get,

(A/B) × (B/C) = (3/4) × (5/6)

⇒ (A/C) = (5/8)

⇒ A : C = 5 : 8

⇒ C : A = 8 : 5

∴ **C : A = 8 : 5**

---

**Que. 63**  **Direction:** In the question below there are two statements followed by two conclusions I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

**Statements:**

I. All bottles are cups.

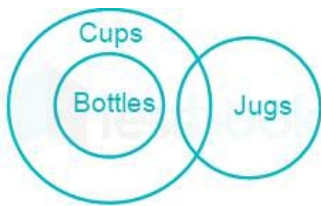II. Some cups are jugs.

**Conclusions:**

I. Some bottles are jugs.

II. No jug is cup.

1. Only conclusion I follows.

2. Only conclusion II follows.

3. Either conclusion I or II follows.

4. Neither conclusion I nor II follows.

**Solution** Correct Option - **4**

The least possible Venn diagrams are given below,



Conclusions:

I. Some bottles are jugs → False (It is possible but not definite.)

II. No jug is cup → False (Some cups are jugs.)

Hence, neither conclusion I nor II follows.

---

**Que. 64**  Heating of sulphide ore to a high temperature in presence of air _____

1. Refining

2. Calcination

3. Roasting

4. Smelting

**Solution** Correct Option - **3**

The correct answer is **Roasting.**

- **Calcination** is a process in which the ore is heated below its melting point in the absence or in a limited supply of air. Its aim is to drive off moisture, hydrates of water and organic matter from the ore.
- **Refining** is a process of removing impurities or unwanted elements from a substance, typically as part of an industrial process.
- **Roasting** is a process of heating of sulphide ore to a high temperature in the presence of air. It is a step in the processing of certain ores.
- **Smelting** is a process of extracting metal from its ore by a process involving heating and melting.

---

**Que. 65** If sinA = 1/2 and cosB = 1/2 then find the value of A + B.

1. 75°
2. 60°
3. 120°
4. 90°

**Solution Given:** Correct Option - **4**

sinA = 1/2

cosB = 1/2

**Values used:**

sin30° = 1/2

cos60° = 1/2

**Calculation:**

sinA = 1/2 = sin30°

⇒ A = 30°

cosB = 1/2 = cos60°

⇒ B = 60°

We have to find the value of A + B

A + B = 30° + 60°

⇒ A + B = 90°

∴ **The value of A + B is 90°**

---

**Que. 66** Kunal's birthday is on Monday 29th June. On what day of the week will be Nishith's Birthday in the same year if Nishith was born on 17th December?

1. Friday
2. Thursday
3. Saturday
4. Wednesday

**Solution** Correct Option - **2**

Kunal's birthday → 29 June, Monday

Nishith's birthday → 17 December

So, June has remaining → 1 Day

July → 31

August → 31

September → 30

October → 31

November → 30

December 17 → (as Nishith was born on 17$^{th}$ December)

Total Days → 171 Days

Dividing 171 days by 7 (as there are 7 days in a week)

We get remainder 3

Thus, 3 days ahead of Kunal's birthday will be the Nishith birthday which will be on Monday + 3 = Thursday.

Hence the answer is Thursday.


**Que. 67**    What is special about a sword-billed hummingbird?

1.        It is the largest bird in the world

2.    Its bill is longer than rest of its body

3.    It lives only in Antarctica

4.    It cannot fly

**Solution** Correct Option **- 2**

The sword-billed hummingbird (Ensifera ensifera) is a species of hummingbird from South. It is noted as the only species of bird to have a bill longer than the rest of its body.


**Que. 68**    A and B invested Rs. 1.5 lakh and Rs. 1 lakh respectively in a firm. If the profit after 1 year is  Rs. 24,000, find the share of A.

1.    Rs. 12,360

2.    Rs. 14,400

3.    Rs. 9600

4.    Rs. 15,480

**Solution Given:**        Correct Option **- 2**

Investment of A = Rs. 1.5 lakh

Investment of B = Rs. 1 lakh

Total profit after 1 year = Rs. 24,000

**Concept used:**

Share of profit is directly proportional to the amount of investment multiplied by time of investment

**Calculation:**

Total investment of A and B = Rs. (1.5 + 1) lakh

⇒ Rs. 2.5 lakh

Share of A = Rs. (1.5/2.5) × 24,000

⇒ Rs. 14,400

∴ **The share of A is Rs. 14,400**


**Que. 69**    Select the letter that can replace the question mark (?) in the following series.

        F, I, K, N, P, S, U, ?

1. Q
2. P
3. S
4. X

**Solution** Correct Option **- 4**

According to the English Alphabet series and its positional value:

| Alphabets | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positional value | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Positional value | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
| Alphabets | Z | Y | X | W | V | U | T | S | R | Q | P | O | N |

The pattern followed here is,

$$F \xrightarrow{+3} I \xrightarrow{+2} K \xrightarrow{+3} N \xrightarrow{+2} P \xrightarrow{+3} S \xrightarrow{+2} U \xrightarrow{+3} X$$

Hence, **'X'** is the correct answer.

**Que. 70** Ornithology is the study of

1. Fish
2. Coins
3. Relics
4. Birds

**Solution** Correct Option **- 4**

The correct answer is **Birds**.

🔑 **Key-Points**

| | | |
|---|---|---|
| 1 | **Ornithology** | Branch of Zoology which deals with the study of **birds.** |
| 2 | **Ichthyology** | Branch of Zoology which deals with the study of **fish.** |
| 3 | **Numismatics** | It is the study or collection of banknotes, **coins,** and medals. |

- The word **Ornithology** comes from two Greek words- **'Ornis'** (Birds) and **'logos'** (theory).
- It deals with the **scientific** study of all **aspects of birds** like body shape, appearance, habitat, migration pattern, mating behaviours, warning predators, flock movement, voice, ability to mimic, etc.
- A person who studies birds is known as an **Ornithologist**.

💡 **Important Point**

- **Conservation of Migratory Species** (CMS) or the **Bonn Convention** is the only global convention that provides a platform for the conservation of migratory species, their habitat, migration routes, etc.

- **India** became a signatory to the Bonn Convention for the conservation of migratory species in **1983**.
- The **13th COP** (Conference of Parties) of **CMS** was hosted by **India** in February **2020** at **Gandhinagar (Gujarat)**.
- The **Theme** of CMS COP 13 was "**Migratory species connect the planet and we welcome them home**".
- The COP 13 **logo** was inspired by '**Kolam**' which is a traditional art form of South India.
- '**Gibi- The Great Indian Bustard**' was the **mascot** for CMS COP 13.
- The **Great Indian Bustard** is a **critically endangered** species under the **Wildlife Protection Act 1972**.

## Additional Information

- **Dr Salim Ali Bird Sanctuary** located in **Goa** is a famous estuarine **mangrove** habitat named after **Dr Salim Ali**, a famous **Indian ornithologist.**
- **India** has **three flyways** (Migratory routes for birds): **Central Asian** flyway, **East Asian** flyway, and **East Asian-Australasian** flyway.

**Que. 71** In 80 litres pure milk, 8 litres of milk is replaced by water if this process is repeated two times then what will be the ratio of milk and water in the final mixture?

1. 81 : 19
2. 19 : 81
3. 63 : 17
4. 17 : 63

**Solution Given:** Correct Option **- 1**

Quantity of pure milk = 80 litres

Quantity of milk removed and replaced by water = 8 litres

**Formula used:**

Amount of milk left = Initial amount × [1 – (Amount taken out and replaced)/Initial amount]$^n$

Here n is the number of times the process repeated

**Calculation:**

Amount of milk left = 80 × [1 – 8/80]$^2$

⇒ Amount of milk left = 80 × 81/100 = 64.8 litres

Amount of water in the final mixture = 80 – 64.8 = 15.2 litres

The ratio of milk and water in the final mixture = 64.8 : 15.2 = 81 : 19

∴ **The ratio of milk and water in the final mixture is 81 : 19**

**Que. 72** Study the given pattern carefully and select the number that can replace the question mark (?) in it.

$$\begin{vmatrix} 14 & 4 & 28 \\ 21 & 6 & 63 \\ 45 & 8 & ? \end{vmatrix}$$

1. 195
2. 180
3. 210

4.    150

**Solution** Correct Option **- 2**
The Logic followed here is:

**The third number = The First number × second number ÷ 2**

In Row 1,

$14 \times 4 \div 2$

$= 14 \times 2 = 28$

In Row 2,

$21 \times 6 \div 2$

$= 21 \times 3 = 63$

Similarly,

In Row 3,

$45 \times 8 \div 2$

$= 45 \times 4 = 180$

Hence, the correct answer is **"180".**

**Que. 73**    'Delhi-Agra-Jaipur' has been called –

1.        Rajasthan calling
2.    Place on Wheels
3.    Maru Triangle
4.    Golden Triangle

**Solution** Correct Option **- 4**
The correct option is the **Golden Triangle**.

- **Delhi-Agra and Jaipur are known by the name of Golden Triangle**.
- It is called this because of the **Triangular shape formed due to the location of these cities**.

# 📋 Additional Information

- Such circuit usually begins with Delhi, then moves towards **Agra and then westward movement which depicts the desert landscape of the state of Rajasthan.**
- The **Golden Triangle is 720 km long, touring here, walking in cities, monuments and streets are like getting acquainted with India.**

**Que. 74**    By selling a sweater for Rs. 750, a shopkeeper gains 25%. For how much should he sell it to gain 30%?

1.    720
2.    780
3.    600
4.    180

**Solution Given:**    Correct Option **- 2**

Initial Selling Price (SP) of the sweater = Rs. 750

Initial gain% = 25%

Required gain% = 30%

**Formula used:**

CP = SP × 100/(100 + P%)

SP = CP × (100 + P%)/100

Here CP is Cost Price, SP is Selling Price and P% is Gain percentage

**Calculation:**

CP = (Initial SP) × 100/(100 + P%)

⇒ CP = 750 × 100/(100 + 25)

⇒ CP = Rs. 600

As he wants to sell the sweater at gain of 30%

Required SP = CP × (100 + P%)/100

⇒ Required SP = 600 × (100 + 30)/100 = 780

∴ **He should sell the sweater at Rs. 780 to gain 30%**


**Que. 75** Select the number-pair that is different from the other three?

1.   15-120
2.   16-416
3.   12-648
4.   6-38

**Solution** Correct Option **- 4**

The pattern is as follows,

All the numbers on right are multiple numbers of the left side number.

1) 15-120 → 120 is the multiple of the 15.

2) 16-416 → 416 is the multiple of the 16.

3) 12-648 → 648 is the multiple of the 12.

Only 38 is not the multiple of the number 6

Hence, 6 – 38 is the correct answer.


**Que. 76** Velocity of sound is maximum in_____.

1.   Solid
2.   Liquid
3.   Gas
4.   Steam

**Solution** Correct Option **- 1**

The correct answer is **Solid.**

- Sound travels **fastest in solids and slowest in air.**

🔑 **Key-Points**

- **The correct order of sound velocity is- solids> liquids (Oil>water) >gases.**
- This is due to the fact that the particles in solids are closer together than the particles in liquids or gases.

- The tighter particles are packed in a space, they collide more frequently.
- Thus allows sound to travel fastest in solids, which is simply the combined collisions of particles.

# Additional Information

- **The velocity of sound in different medium/substances:**

| State | Substance | Speed in m/s |
|---|---|---|
| Solids | Aluminium | 6420 |
| Solids | Iron | 5950 |
| Solids | Glass | 3980 |
| Liquid | Sea Water | 1531 |
| Liquid | Distilled Water | 1498 |
| Gases | Air | 344 |

**Que. 77** The marked price of a article is Rs. 4000. If the shopkeeper sold the article at 10% discount but still got a profit of 20%, find the cost price of the article.

1. Rs. 3200
2. Rs. 2880
3. Rs. 3000
4. Rs. 3300

**Solution Given:** Correct Option **- 3**

Marked price = Rs. 4000

Discount = 10%

Profit = 20%

**Formula used:**

SP = MP × [(100 – Discount%)/100]

CP = SP × [100/(100 + Gain%)]

**Calculation:**

SP = Rs. 4000 × (90/100)

⇒ Rs. 3600

CP = Rs. 3600 × (100/120)

⇒ Rs. 3000

∴ **The cost price of article is Rs. 3000**

**Que. 78** A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

EKP, ?, IQX, KTB, MWF

1. GMU
2. GNT
3. HOV
4. FLT

**Solution** Correct Option - **2**

| Alphabets | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positional value | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Positional value | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
| Alphabets | Z | Y | X | W | V | U | T | S | R | Q | P | O | N |

The pattern followed is:



Hence, 'GNT' is the correct answer.

**Que. 79** Which acid is used in eye wash?

1. Nitric Acid
2. Boric Acid
3. Oxalic acid
4. None of the above

**Solution** Correct Option - **2**

- **Boric acid** ($H_3BO_3$) is used in eye, to wash to and clean the eyes. It helps remove pollutants from the eye and provide soothing relief from irritants.
- Also known as hydrogen borate, boric acid is a weak acid which is exploited for its antiseptic, flame retardant, and insecticidal properties.

| Acid | Used |
|---|---|
| Nitric Acid | For the production of ammonium nitrate for fertilizers. |
| Oxalic acid | Used to clean iron rust. |

**Que. 80** The length of a room is $(3x + 10)$ m and the breadth of the room is $(2x + 5)$ m. The area of four walls of the room is $(60x + 180)$ m$^2$. What is the height of the room?

1. 4 m
2. 6 m

3. 7 m

4. 8 m

**Solution** Correct Option **- 2 Given:**

The length of the room is (3x + 10) m and breadth of the room is (2x + 5) m. The area of four walls of the room is (60x + 180) m². We have to find the height of the room.

**Concept Used:**

If the length, breadth and height of a room be l, b and h then the area of four walls of the room is [2 × (l + b) × h]

**Calculation:**

Let, the height of the room be h

Accordingly,

2 × {(3x + 10) + (2x + 5)} × h = (60x + 180)

⇒ (5x + 15)h = 30x + 90

⇒ (5x + 15)h = 6(5x + 15)

⇒ h = 6

∴ **The height of the room is 6 m.**


**Que. 81** Read the statement below and decide which of the conclusions logically follows it?

**Statement:**

Nowadays the prices of goods are increasing.

**Conclusions:**

I. All things are becoming rare.

II. People cannot eat things.

1. Only conclusion (I) follows.

2. Neither (I) nor (II) follows.

3. Only conclusion (II) follows.

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

**Solution** Correct Option **- 2**

Given,

**Statement:**

Nowadays the prices of goods are increasing.

**Conclusions:**

I. All things are becoming rare. → This statement does not follow as all things are not becoming rare.

II. People cannot eat things. → This statement also does not follow as the statement is regarding increasing prices of goods and it has nothing to do what people can eat and not.

**Hence, the correct answer is Neither (I) nor (II) follows.**


**Que. 82** Blood and lymph are types of

1. Permanent tissue

2. Connective tissue

3. Epithelial tissue

4. Muscular tissue

**Solution** Correct Option **- 2**

The correct answer is Option **2**, i.e **Connective Tissue**.

- **Connective tissue** provides support, binds together, and protects tissues and organs of the body.
  - Connective tissue consists of three main components: cells, protein fibers, and an amorphous ground substance.
- Together the fibers and ground substance make up the extracellular matrix.
- **Permanent tissues** are the plant tissues that have lost the ability to grow and divide.
- Whereas the other tissue types (**epithelium**, **muscle**, and **nervous tissue)** are largely made up of cells, the extracellular matrix is the major component of most connective tissue.

**Que. 83** $2^{x-1} + 2^{x+1} = 320$. Find the value of x.

1. 6
2. 7
3. 8
4. 5

**Solution Given:** Correct Option **- 2**

$2^{x-1} + 2^{x+1} = 320$. We have to find the value of x.

**Calculation:**

$2^{x-1} + 2^{x+1} = 320$

$\Rightarrow 2^x/2 + 2^x \times 2 = 320$

$\Rightarrow 2^x(1/2 + 2) = 320$

$\Rightarrow 2^x \times (5/2) = 320$

$\Rightarrow 2^x = 320 \times (2/5)$

$\Rightarrow 2^x = 64 \times 2$

$\Rightarrow 2^x = 128$

$\Rightarrow 2^x = 2^7$

$\Rightarrow x = 7$

∴ **The required value of x is 7.**

**Que. 84** In a code language, 'TORCH' is written as 'WRUFK'. How will 'WINTER' be written in that language?

1. ZLPWGU
2. ZLQWHU
3. YLQXHU
4. ZLQWHV

**Solution** Correct Option **- 2**

THe positions of the letters according to the English alphabet series :

| Alphabets | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positional value | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Positional value | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
| Alphabets | Z | Y | X | W | V | U | T | S | R | Q | P | O | N |

Given,

'TORCH' is written as 'WRUFK'

The pattern followed here is,



Similarly,



**Hence, the correct answer is ZLQWHU.**

**Que. 85** Hydrochloric acid is present in

1.    Stomach
2.    Small intestine
3.    Large intestine
4.    Liver

**Solution** Correct Option **- 1**

Hydrochloric acid breaks down proteins in stomach to prepare them for digestion and kills bacteria that enter stomach. HCL also helps digest other foods in your stomach.

**Que. 86**    Two varieties of milk with different prices is mixed in the ratio 2 : 3. The price of 1st type of milk is Rs 10 per litre while the price of 2nd type of milk is Rs. 15 per litre. The average price of the mixture.

1.    Rs. 11 per litre
2.    Rs. 12 per litre
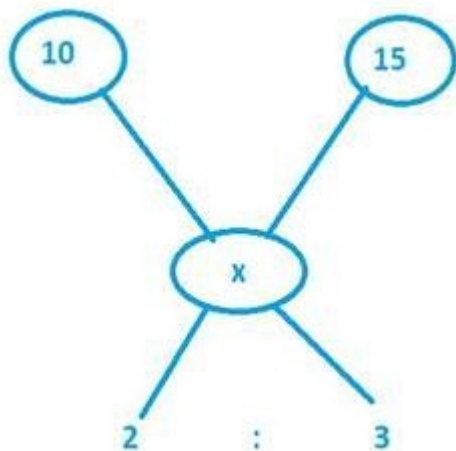3.    Rs. 13 per litre
4.    Rs. 14 per litre

**Solution Given:**    Correct Option **- 3**

Ratio of two varieties of milk = 2 : 3

Price of 1st type of milk = Rs. 10

Price of 2nd type of milk = Rs. 15

**Calculation:**

Let the average price of mixture be 'x'

$\Rightarrow (x - 10)/(15 - x) = 3/2$

$\Rightarrow 2x - 20 = 45 - 3x$

$\Rightarrow 5x = 65$

$\Rightarrow x = 13$

∴ **The average price of mixture is 13 Rs per litre.**

**Que. 87** Select the number that can replace the question mark (?) in the following series.

5, 6, 10, 19, 35, ?

1. 64
2. 73
3. 55
4. 60

**Solution** Correct Option **- 4**

The pattern followed is,

$5 + 1^2 = 6$

$6 + 2^2 = 10$

$10 + 3^2 = 19$

$19 + 4^2 = 35$

Similarly,

$35 + 5^2 = 60$

Hence, '60' is the correct answer.

**Que. 88** Chemical formula of plaster of paris:

1. $CaSO_4$
2. $CaSO_4.2H_2O$
3. $CaSO_4.1/2\ H_2O$
4. $CaSO_4.H_2O$

**Solution** Correct Option **- 3**

The correct answer is **CaSO₄.1/2 H₂O.**

**EXPLANATION:**

- **Plaster of Paris (POP)**, quick-setting gypsum plaster consisting of a **fine white powder (calcium sulfate hemihydrate)**, which hardens when moistened and allowed to dry.
- It is also known as the **Plaster of Paris** because for the preparation of POP, the **abundant gypsum found near the capital city of France i.e. Paris**.
- The chemical formula of the Plaster of Paris is **CaSO₄. $\frac{1}{2}$ H₂O**. Therefore option 3 is correct.
- **Application of Plaster of Paris** is as follows
    1. It is used as a **building material** as a protective coating on walls and ceilings.
    2. It is used as a **moulding and vesting agent for decorative elements**.
    3. It is also used for **aesthetic touch to the construction elements**.
    4. It is also field as **plaster in orthopaedics** and as a **filling material by dentists**, etc.



### Mistake Point

- **Gypsum** is an ore of **Calcium (Ca).** The chemical formula of Gypsum is **CaSO₄. 2H₂O.**
- Gypsum is mainly used as a **fertilizer,** as the main constituent in **plaster, chalk etc.**
- **The plaster of Paris on mixing with water produces gypsum.**
- Calcium Sulphate Hemihydrate ($CaSO_4 \cdot 1/2$ H₂O) on hydration leads to the crystallization of gypsum calcium sulphate dihydrate ($CaSO_4 \cdot 2H_2O$).

**Que. 89**  If 3 small spherical balls having radius 3 cm, 4 cm, and 5 cm melt together to form a big spherical ball. What is the radius of big spherical ball?

1. 8 cm
2. 7 cm
3. 6 cm
4. 9 cm

**Solution Given:**      Correct Option **- 3**

Radius of 3 small spherical balls are 3 cm, 4 cm and 5 cm respectively.

**Concept used:**

Volume of 3 small spherical melted balls = Volume of 1 big spherical ball

**Formula used:**

Volume of sphere = $(4/3) \times \pi \times r^3$

where,

r = Radius of sphere

**Calculations:**

Volume of sphere = $(4/3) \times \pi \times r^3$

Volume of first small ball = $(4/3) \times \pi \times (3)^3$

⇒ $(4/3) \times \pi \times 27$

⇒ $36\pi$ cm³

Volume of second small ball = $(4/3) \times \pi \times (4)^3$

⇒ $(4/3) \times \pi \times 64$

⇒ $256\pi/3$ cm³

Volume of third small ball = $(4/3) \times \pi \times (5)^3$

$\Rightarrow (4/3) \times \pi \times 125$

$\Rightarrow 500\pi/3$ cm$^3$

Volume of big ball = $(4/3) \times \pi \times R^3$

Total volume of small balls = $36\pi + (256\pi/3) + (500\pi)/3$

$\Rightarrow (108\pi + 256\pi + 500\pi)/3$

$\Rightarrow 864\pi/3$

$\Rightarrow 288\pi$ cm$^3$

Volume of 3 small spherical melted balls = Volume of 1 big spherical ball

$\Rightarrow 288\pi = (4/3) \times \pi \times R^3$

$\Rightarrow R^3 = 216$

$\Rightarrow R = \sqrt[3]{216}$

$\Rightarrow R = 6$ cm

∴ **The radius of big spherical ball is 6 cm.**


**Que. 90** In the following question, select the related letters from the given alternatives.

AG : ZT :: JD : ?

1. UV
2. PX
3. QW
4. OY

**Solution** Correct Option - 3

The pattern here is as follows is replacing the letter by its opposite or reverse letter in alphabetical order i.e. A is replaced by Z, B by Y, C by X, D by W and so on as shown in the figure below:



Hence the required conversion is,



Hence, QW is the correct alternative.


**Que. 91** In a circuit, voltmeter is always connected in_____?

1. Either series or parallel
2. Triangular
3. Series
4. Parallel

**Solution** Correct Option **- 4 CONCEPT**:

- **Circuit:** It is a closed-loop or path which forms a network of electrical components, where electrons are able to flow. This path is made using electrical wires and is powered by a source, like a battery.
- **Simple circuit:** A simple circuit comprises the power source, conductors, switch, and load.
    **Cell:** It is the power source
    **Load:** It is also termed as the resistor. It is a light bulb that lights when the circuit is turned on.
    **Conductors:** They are made of copper wires with no insulation. One end of the wire is connected the load to the power source and the other end of the wire connects the power source back to the load.
    **Switch:** It is a small gap in the circuit. There are various types of switches. A switch can be used to open or close a circuit.
- **Voltmeter:** A voltmeter is an instrument used for measuring the electric potential difference between two points in an electric circuit. It is connected in parallel. It usually has high resistance so that it takes a negligible current from the circuit.

**EXPLANATION:**

- The **voltmeter is used to measure the potential difference.** It is always connected in parallel across the points where the potential difference is to measure so one end of the voltmeter is connected to the point A of a resistance AB and the other end to the point Bm and also it has high resistance so that it takes a negligible current from the circuit.
- **Voltmeters** have **high resistance,** so in series, **they would greatly decrease the current going to the circuit.**
- Hence option 4 is correct.

**Que. 92**    The SI unit of electrical conductance is_____.

1.      Ohm
2.   Siemens
3.   Ohm meter
4.   Ampere

**Solution**                **Correct Option - 2**
**CONCEPT**:

- **Electrical conductance (K):** The reciprocal of electrical resistance is called conductance.
      It is a measure of how easily current can flow through a material.
      Its **SI unit is Siemens**.

Electrical conductance (K) = 1/R

- **Electrical resistance (R)**: The electrical resistance of a material refers to its opposition to the flow of current.
      Its SI unit is **Ohm (Ω)**.

**EXPLANATION**:

The **SI unit of conductance = 1/ (The SI unit of resistance) = $1/\Omega = \Omega^{-1}$ = Siemens.** Hence option 2 is correct.

- Ohm is the SI unit of resistance.
- **Ampere** is the SI unit of **current**.
- **Ohm-meter** is the SI unit of **electrical resistivity** which is the measure of an object's ability to oppose the flow of current.

**Que. 93**    Glucose and fructose are example of

1.    Isotopes

2.    Isotones

3.    Isobars

4.    Isomers

**Solution** Correct Option **- 4**

The correct answer is **Isomers.**

- Glucose, galactose, and fructose are **isomers.**
- Glucose and Fructose have the same formula, meaning they are isomers.
- It means they all have the same molecular formula but differ structurally and chemically.
- **The position of the oxygen differs giving different physical properties.**

📋 Additional Information

| Isotopes | Isomers | Isotones | Isobars |
|---|---|---|---|
| It is defined as the atoms which have the same number of protons (or same atomic number) but having different neutrons. | The two or more compounds having the same formula but a different arrangement of atoms in the molecule and different properties are called isomers. | The nuclei having an equal number of neutrons (A-Z) but different numbers of protons (Z) and different mass number (A) are called isotones | The nuclei which have the same mass number (A) but a different atomic number (Z) are called isobars. |
| Ex: 1735Cl and 1737Cl are isotopes of Cl. | Ex: butane and isobutane | Ex:16S, 37Cl, 38Ar, 39K, and 40Ca, they all have 20 neutrons. | Ex: 40S, 40Cl, 40Ar, |

**Que. 94**    The first Satyagraha was started in Champaran,  Bihar in_____.

1.    1929

2.    1907

3.    1922

4.    1917

**Solution** Correct Option **- 4**

The Correct Answer is **Option 4** i.e **1917.**

- **Champaran Satyagraha (1917)**:
  It was the first Satyagraha started in Champaran, Bihar.
  The Issue was Indigo Cultivation under the Tinkathia System ((3/20)th of total land).
  Gandhi convinced the authorities to end the system
  Demand was accepted and 25% compensation was given.
- **Ahmedabad Satyagraha (Feb 1918)**:
  The issue was Plague Bonus.
  Workers demanded a 35% bonus but the mill owners under Ambalal Sarabhai were offering 25%.
  Gandhi started a Hunger strike against this and later the demand was accepted and a 35% bonus was given to the workers.
- **Kheda Satyagraha (March 1918)**:
  The issue was the payment of Land revenue during Famine.
  Gandhi started satyagraha and later the government accepted the demand of the satyagrahis and exempted the payment of land revenue.

**Que. 95**    Malaria is caused by :

1.    Plasmodium
2.    Female Anopheles mosquito
3.    Culex mosquito
4.    Virus

**Solution**                **Correct Option - 1**
**Explanation:**

- **Malaria** is caused by a protozoan **Plasmodium** (P. vivax, P. malaria, and P. falciparum)
- **P. falciparum** causes the most serious and fatal malignant malaria.
- The Vector of malaria is the **female Anopheles mosquito** which transfers the **sporozoites** (an infectious form of plasmodium).
- The sporozoites mainly attack red blood cells, liver and spleen of the human body.
- It ruptures the RBCs and releases a toxin called **haemozoin,** which is responsible for high recurring fever, chills and shivering.
- Malarial Symptoms: Temperature falls and rises at fixed time intervals, Chills, Sweating, Headache, and Nausea.
- Treatment is by antimalarial drugs like **quinine, chloroquine**.

## Additional Information

- **Culex** is a mosquito genus that serves as a vector for viruses that cause many diseases like the West Nile virus, Japanese encephalitis.
- **A virus** is a submicroscopic infectious agent that can only replicate inside a living cell.
- Viruses infect all types of life forms, from animals and plants to microorganisms, including bacteria and archaea.

**Que. 96**    Which Vitamin is popularly known as the 'sunshine vitamin'?

1.    Vitamin A
2.    Vitamin C
3.    Vitamin D
4.    Vitamin B

**Solution** Correct Option **- 3**
The correct answer is **Vitamin D.**

- ○ **Vitamin D** is known as '**Sunshine Vitamin'**. Because our body produces **vitamin D** naturally when it's directly exposed to **sunlight**.
- ○ Vitamin D protects the teeth and bones and defends against diseases.
- ○ Vitamin A helps form and maintain healthy teeth, skeletal and skin. It is also known as retinol because it produces the pigments in the retina of the eye.
- ○ Vitamin C is also known as 'Ascorbic acid' and 'Ascorbate'. It is used to prevent and treat scurvy and tissue problem.

**Que. 97**    The famous book written by the scholar  Al-Biruni is_____.

1. Kitab ul-Hind
2. Hindustani
3. Al-Hindustani
4. Sher-e-Hind

**Solution** Correct Option **- 1**

- ● **Kitab ul-Hind** is the famous book written by the scholar Al-Biruni.
- ◆ Al-Biruni was a Persian historian, mathematician, and astronomer.
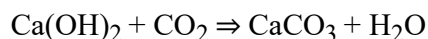- ● His other works include Kitab al-Tafhim, Bhārata: Ala-Birūnī Al-Biruni, etc.

| Traveler | Period | Nationality | Rulers | work |
|---|---|---|---|---|
| Deimachos | 320-273 BC | Greek | Bindusara. | |
| Megasthenes | 302-298 B.C. | Greek | Chandragupta Maurya. | Indica. |
| Ptolemy | 130 A.D. | Greek | | Geography of India |
| Fa-Hien | 405-411 A.D. | Chinese | Chandragupta II Vikramaditya | Fo-Kyo-Ki |
| Hiuen-Tsang | 630-645 A.D. | Chinese | Harshavardhana | Si-Yu-Ki |
| *Al- Beruni* | *1024-1030 A.D.* | *Afghan* | *Mahmud Ghazni, Chandela Dynasty* | *Kitab-ul-Hind* |
| Marco Polo | 1292-1294 AD | Venetian | Pandya Dynasty | The Book of Sir Marco Polo |
| Ibn Batuta | 1333-1347 A.D. | Morrocco | Muhammad-Bin-Tughlaq | Rehla/Rihla |

**Que. 98** Lime water becomes milky due to which of the following gases?

1. $CO_2$
2. $O_2$
3. $NO_2$
4. $N_2$

**Solution** Correct Option **- 1**

- Lime water becomes milky due to $CO_2$.
- $CO_2$ turns lime water milky, due to the formation of $CaCO_3$ (calcium carbonate).
- The chemical reaction is as follows:

$$Ca(OH)_2 + CO_2 \Rightarrow CaCO_3 + H_2O$$

**Que. 99** The joint sitting of the Lok Sabha and the Rajya Sabha of states is summoned by

1. The president
2. The speaker of the Lok Sabha
3. The Parliament
4. The Chairman of the Rajya Sabha

**Solution** Correct Option **- 1**
Joint session (Article 108) refers to the **meeting of both houses of parliament to consider bills together.** In India Concurrence of both houses are required to pass any bill and if an ordinary bill has been **rejected by any house of the parliament** and if more than six months have elapsed from the date of the reception of the bill the **President summon a joint session** presided over by Speaker for purpose of passing the bill.

**Note**: Money bill and Constitution Amendment Bill can't be referred to a joint sitting of both houses.

**Additional information:**

| | |
|---|---|
| **Lok Sabha** | The lower house of the Parliament has 545 members of which 543 members are directly elected by citizens of India while the remaining 2 are appointed by the President of India from the Anglo-Indian Community. |
| **Rajya Sabha** | The upper house of the Parliament has 245 members in which 233 are elected by the states and UTs using a single transferable vote and the remaining 12 are appointed by the President for their contributions to literature, social services, etc. |

**Que. 100** Which of the following parts of the brain does regulate pituitary gland?

1. Thalamus
2. Hypothalamus
3. Cerebellum
4. Cerebrum

**Solution** Correct Option **- 2**
Option **2** is correct:

- **Hypothalamus** regulates the **pituitary gland**.
- Hypothalamus is a small area of the brain.

- The hypothalamus is located below the thalamus in the brain.
- The hormones from the hypothalamus govern physiological functions such as temperature regulation, thirst, hunger, sleep, mood, and the release of other hormones within the body.
- **The cerebrum** is the largest part of the brain.
- It is responsible for Skill power, Will power, Decision-making power, Problem Solving, Intelligent Quiscent (IQ), Memory.
- The **cerebellum** is also called a little brain of the human body.
- It is a part of Hindbrain.
- The cerebrum wraps around a structure called the **thalamus**,
- It is a major coordinating centre for sensory and motor signalling.

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