RRB ALP CBT 01 2018

1. The value of g on the moon is $1/6^{th}$ of the value of g on the earth. If a man can jump 1.5 m high on the earth, on the moon, he can jump up to a height of :

A   9 m

B   4.5 m

C   6 m

D   7.5 m

Solution

- The value of g on the moon is 1/8 of the value of g on the earth. As a result, using the same amount of force, we can jump 6 times higher on the moon as compared to that on the earth, since $h \propto \frac{1}{g}$.
- Hence, if a man can jump 1.5 m high on the earth, on the moon, he can jump up to a height of six times i.e. $1.5 \times 6 = 9$ m.
- **Extras**: The first person to go into space in a spacecraft was Yuri Gagarin of the then USSR. He orbited the earth in 1961. On July 21, 1969, Neil Armstrong (USA) landed on the moon for the first time. He was followed by Edwin Aldrin.

2. **The LCM of 48 and 54 is:**

A 48×54

B $6 \times 2 \times 9$

C $6 \times 8 \times 3$

D $6 \times 8 \times 9$

Solution

Factors of $48 = 2 \times 2 \times 2 \times 2 \times 3$

Factors of $54 = 2 \times 3 \times 3 \times 3$

LCM of 48 & 54 $= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 6 \times 8 \times 9$

3. **Select the figure which does NOT belong to the group.**
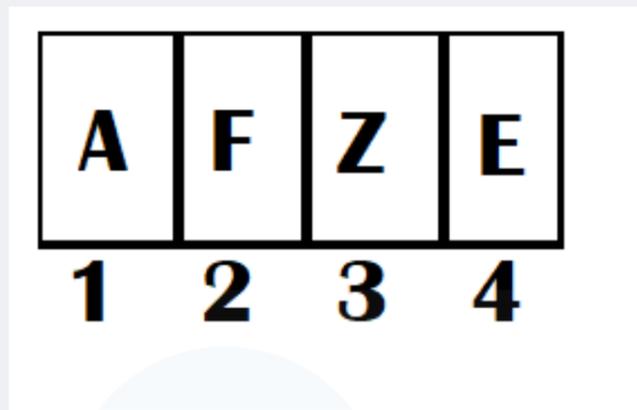
A   4

B   1

C   3

D   2

Solution

The logic here is as follows:

A-Number of lines 3

F-Number of lines = 3

2 Number of lines = 3

E Number of lines = 4

Thus E does not belong to the group.

4. **In which of the following tissues are the cells living, elongated and irregularly thickened at the corners?**

A   Parenchyma

B   Sclerenchyma

C   **Collenchyma**

D   Aerenchyma

Solution

Name of Tissue	Description
Parenchyma	Living cells with thin cell walls and intercellular spaces.
Sclerenchyma	Dead and fibrous cells with thickened cell walls containing lignin.
Collenchyma	Living cells with thickened cell walls at the corners due to cellulose and pec
Aerenchyma	Living cells with irregular cell walls, providing air spaces.

5. At 6% simple interest per annum a sum of money became Rs. 834 in 6 $\frac{1}{2}$ years. The sum initially invested was:

A   600

B   626

C   675

D   650

Solution

Let P be the principal, R be the rate of interest, and N be the time.

Simple Interest $= \frac{(P \times R \times N)}{100}$

834 - P $= \frac{(P \times 6 \times \frac{13}{2})}{100}$

83400 - 100P $=$ 39P

P $=$ 600

Thus, The sum initially invested was Rs. 600.

6. **Complete the following-**

XIGP : 172716 :: ZHEJ :

(A) 191601

(B) 191501

(C) 191511

(D) **191510**

Solution

As per the English alphabetical series,

Positional value of X = 24, 24-7 =17

Positional value of I = 9, 9-7=2

Positional value of G = 7

Positional value of P = 16

Similarly,

Positional value of Z = 26, 26 - 7 = 19

Positional value of H = 8, 8-7 = 1

Positional value of E = 5

Positional value of J = 10

Thus code for ZHEJ is 191510.

7. **Vishnu spends Rs. 5000 in buying 12 tables and some chairs. The cost of one table is Rs. 50 and that of one chair is Rs. 40. What is the ratio of the numbers of the chairs to the number of tables purchased?**

A   5:2

B   **55:6**

C   5:1

D   55:4

Solution

Let number of chairs be M

Vishnu spends RS. 5000 in buying 12 tables and some chairs,

$\rightarrow 5000 = 12 \times 50 + M \times 40$

$\rightarrow 40M = 4400$

$\rightarrow M = 110$

Required ratio 110 : 12 = 55:6

8. **Pipe A can empty a filled tank in 28 hours while Pipe B can fill the same tank, when empty, in 35 hours. If alternately Pipes A and B are turned on for an hour each time, starting when the tank is full, how long will it take to empty the tank?**

A   279 hours

B   **271 hours**

C   275 hours

D   280 hours

Solution

Pipe A can empty a filled tank in 28 hours, while Pipe B can fill the same tank, when empty, in 35 hours.

Let total work = LCM of (28, 35) = 140 units

Efficiency of Pipe A = $\frac{-140}{28}$ = -5 units (-ve sign indicates emptying the tank)

Efficiency of Pipe B = $\frac{140}{35}$ = 4 units

Pipe (A+B) 2 hour's work -5+4 = -1 unit

In 2 hours, both pipes can empty the 1 unit of tank.

Then in 270 hrs, they can empty = $-1 \times 135 = -135$ units

Remaining tank 140-135 = 5 units

Then, pipe A will empty the tank in 1hr.

Total hours = 271 hours

9. **Which of the following physicists explained the existence of Buoyant force?**

| A | **Archimedes** |

| B | Blaise Pascal |

| C | Charles Augustine de Coulomb |

| D | Isaac Newton |

Solution

- Archimedes was a Greek Scientist and a mathematician with sharp intelligence. He found out the value of pi (π) by numerical calculations.
- Archimedes Principle: When an object is partially or fully immersed in a fluid, a force of buoyancy acts on it in the upward direction. This force is equal to the weight of the fluid displaced by the object.
- When Archimedes entered a bath tub for taking bath, he discovered the above principle by observing the overflowing water. He came out in the same state shouting 'eureka', 'eureka', meaning 'I found it, I found it.

10. **Which of the following is a surface phenomenon?**

A   Boiling

B   Meiting

C   Freezing

D   **Evaporation**

Solution

- Evaporation is a process by which water is transformed from liquid to gaseous state.
- The temperature at which the water starts evaporating is known as the **latent heat of vapourisation**.
- Evaporation is a surface phenomenon.

11. **Select the number that does NOT belong in the following group.**

71, 73, 77, 79

A   71

B   **77**

C   73

D   79

Solution

- Here all the numbers except 77 are Prime Numbers,
- 77 is Divisible by 7 and 11.
- Hence, 77 is different from group.

12. **Select the figure that does NOT belong in the following group:**

A   A

B   B

C   C
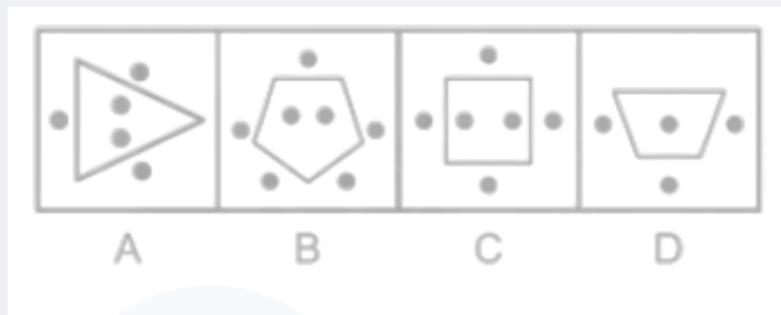
D   D

Solution

- All figures except figure D, have solid dots on each sides of the shape and have 2 dots inside the shape. But in figure D, only 3 sides have solid dots on the sides of the shape and have only 1 dot inside the shape.
- Thus, figure D is the odd one.

13. **Which country hosted the Asian Women's Boxing Championship in 2017 when India's iconic boxer Mary Kom won gold?**

A   **Vietnam**

B   China

C   Indonesia

D   Japan

Solution

Event	Asian Women's Boxing Championshi
Location	Ho Chi Minh City, Vietnam
Winner	Marry Kom (Gold), defeated KIm HyangMi
About Mary Kom	She is famously known as Magnificent Mary. Mary Kom's previous gold m

14. **Which of the following type of medicines is used to treat indigestion?**

A   Sulpha drug

B   Antihistamine

C   Antibiotic

D   **Antacid**

Solution

- Over production of acid in the stomach causes irritation and pain.
- Antacids are used to neutralise acidity.
- Examples: a mixture of aluminium and magnesiune hydroxide.

15. **In the given Venn diagram which letter represents all those who play Kabaddi as well as Football and also all the three games?**
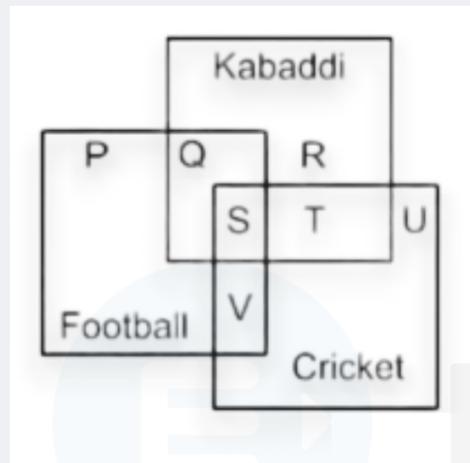
A   **Q + S**

B   T + S

C   S + V

D   S

Solution

- The letter that is common in only Kabaddi and Football is Q.
- The letter that is common in all three games is S
- Thus, the letters which represents all those who play Kabaddi as well as Football and also all the three games are Q + S

16. **Which famous cricketer co-owns the Pro-Kabaddi team from Tamil Nadu named "Tamil Thalaivas'?**

A   Sunil Gavaskar

B   Ravi Shastri

C   **Sachin Tendulkar**

D   Krishnamachari Srikkanth

Solution

$$ \begin{array}{|c|c|} \hline \text{Pro-Kabaddi} & \text{The Pro Kabaddi began in the year 2014} \\ \hline \text{Number of Teams} & \text{In 2014 (Season-1) : 8, In 2018 (Season 6): 12} \\ \hline \text{About Tamil Thalaivas} & \text{Owner: N. Prasad and Sachin Tendulkar, Team Captain : Ajay Thakur, Home Venue: Jawaharlal Nehru Indoor Stadium Chennai} \\ \hline \end{array} $$

17. **India's current finance minister Arun Jaitley is a Rajya Sabha member from which state?**

A **Uttar Pradesh**

B Haryana

C Punjab

D Gujarat

Solution

- Arun Jailley is politician from Bharatiya Janata Party (BJP) and Current leader of House in Rajya Sabha.
- He also served a Union Finance Minister and Union Minister of Corporate Affairs in government of Prime Minister Narendra Modi. Year and State from which he was member of Rajya Sabha is given in following table:

18. **The difference between Peter and Preeti's ages is 5 years. When they married each other 35 years ago, 4 times Peter's age was the same as 5 times the age of Preeti's. What is the current sum of their ages?**

A   105 years

B   110 years

C   **115 years**

D   112 years

Solution

Let Peter and Preeti's age be A and B respectively.

The difference between Peter and Preet's ages is 5 years, A-B = 5

35 years ago, 4 times Peter's age was the same as 5 times the age of Preeti's.

$\rightarrow$ 4(A-35) = 5(B-35)

$\rightarrow$ 4A-140 - 5B-175

$\rightarrow$ 5B-4A = 35

Solving,

$\rightarrow$ 5B - 4(5 + B) = 35

$\rightarrow$ 5B - 20 - 4B = 35

$\rightarrow$ B = 55

$\rightarrow$ A = 60

Sum of their present ages = 60 +55 = 115 years

19. **From the given four figures choose the correct water image of the below figure:**

Problem Figure

Answer Figures
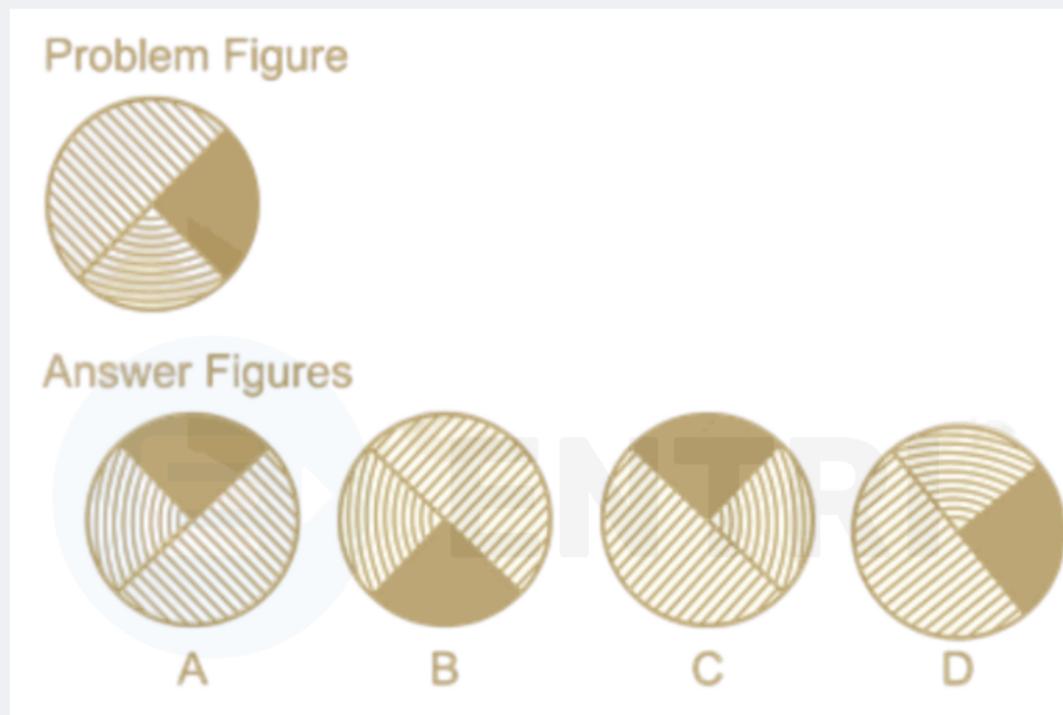
A   B

B   A

C   C

D   D

Solution

Water image of the below figure is D.

- The water image of a circular object is obtained by flipping it vertically.
- Imagine the circular object reflected along a horizontal line (as if it were sitting on the water surface).

20. **The given Problem Figure is embedded in one of the given Answer Figures. Which is that Answer Figure?**

A   A

B   B

C   C
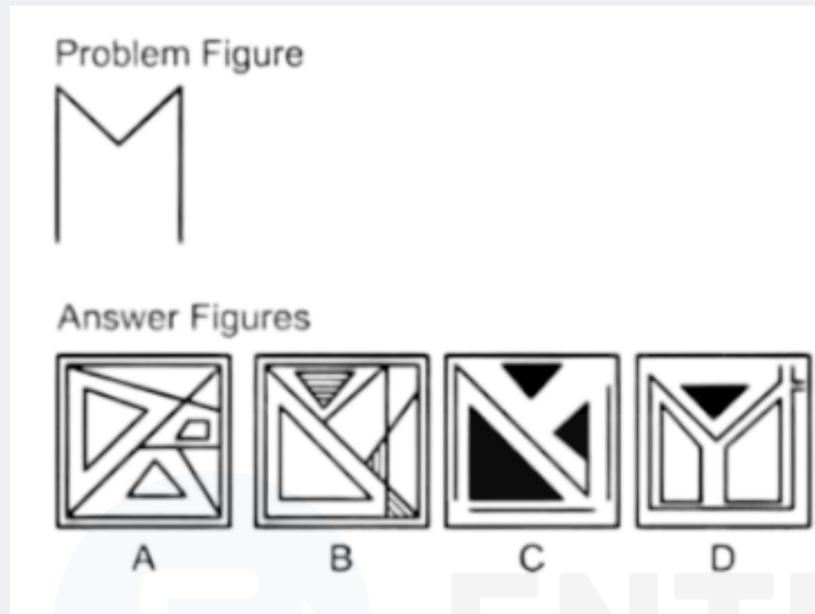
D   D

Solution

Problem Figure is embedded in B.
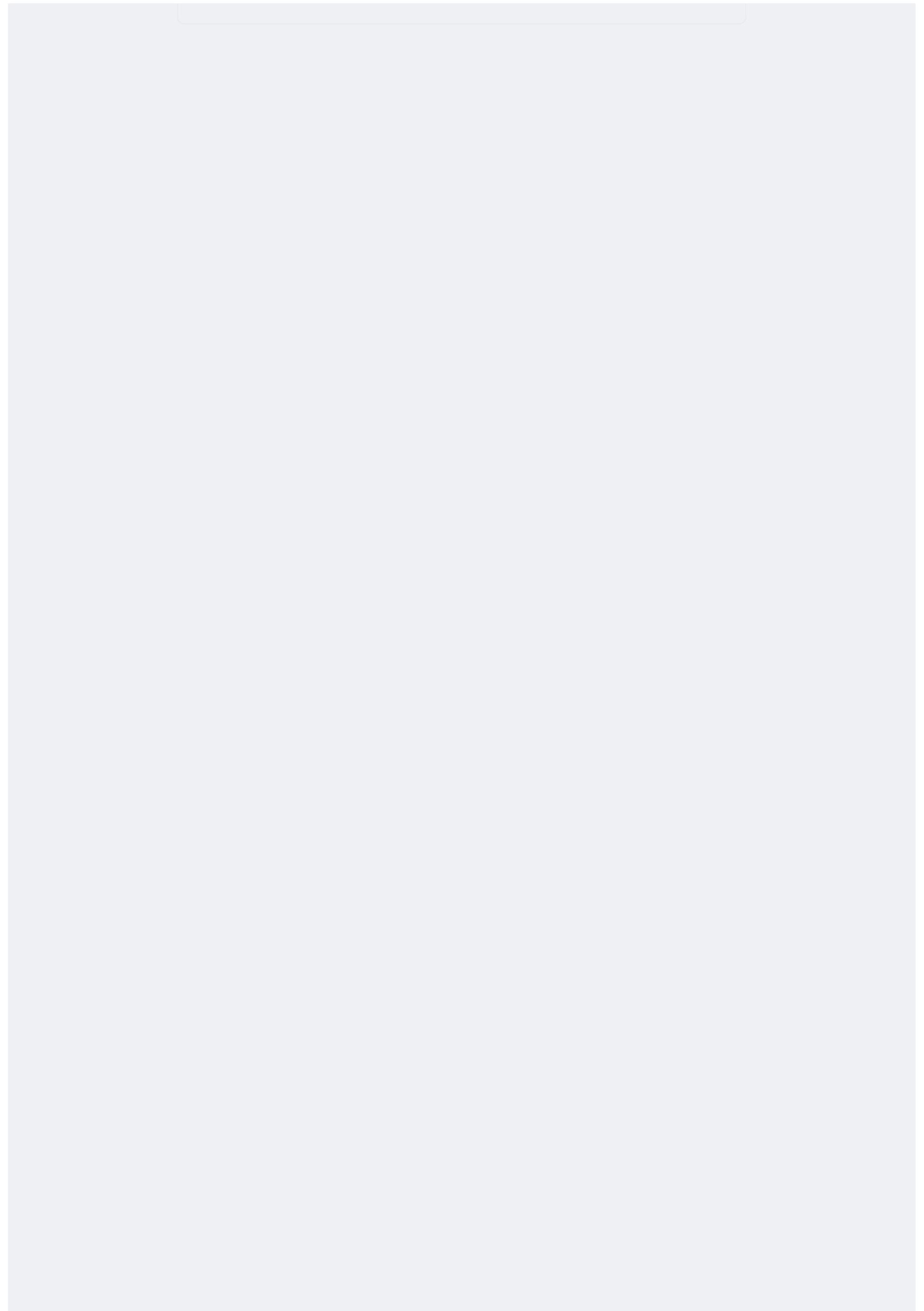
21. **Select the related word from the given alternatives:**

Wheel : Spokes :: Fan :

A Round

B Air

C **Wings**

D Motor

Solution

- A wheel has spokes. Similarly fan has wings which produce air by moving In clockwise direction (round).
- Thus Fan is related to Wings

22. **Who is the first female pilot to be inducted into the Indian Navy in 2017?**

A   Tessy Thomas

B   Zaira Wasim

C   **Shubhangi Swaroop**

D   Dipa Karmakar

Solution

Name	Information
ShubhangiSwaroop	The **first woman** to be inducted as a pilot in the **Indian Navy**
Tessy Thomas	First woman **to head an Indian missile project**
ZairaWasim	Film Actress
DipaKarmakar	First Indian woman **gymnast** to compete in Olympic games
Other 3 Women inducted into the Naval Armament Inspectorate	• Astha Segal from New Delhi • Roopa A from Puducherry • Sakthi Maya S from Kerala

23. **The length of one side of a rhombus is 41 cm and its area is 720 \\(cm^2\\). What is the sum of the lengths of its diagonals?**

A   82 cm

B   90 cm

C   **98 cm**

D   80 cm

Solution

- Area of Rhombus = \\(\frac{1}{2} \times\\) product of diagonals.

\\(\rightarrow\\) 720 = \\(\frac{1}{2} \times\\) product of diagonals

→ Product of diagonals = 1440

(Side of rhombus\\()^2\\) = (half of one diagonal \\()^2 \times\\) (half of the other diagonal\\()^2\\)

→ (One diagonal\\()^2\\)+(Other diagonal\\()^2\\) = 41 x 41 x 4

(Sum of two diagonal\\()^2\\) = (One diagonal \\()^2\\) + (other diagonal\\()^2\\) + 2 \\(\times\\) product of diagonals

→(Sum of two diagonal) = 6724 + 2880 = 9604

- Sum of the lengths of its diagonals is 98 cm.

24. **What does the kinetic energy of an object increase with?**

A   Friction

B   Time

C   Density

D   **Velocity**

Solution

- The energy which an object has gained because of its motion is called it is kinetic energy.
- The kinetic energy of an object is given as: K.E. = $\frac{1}{2} \times m \times v^2$

  where,

  m = mass of object

  v= Velocity of Object

- Hence, Kinetic Energy (K.E.) is directly proportional to the square of the velocity.

- Hence, by increasing the speed of the object K.E. also increases.

25. **Find the number which will complete the following series:**

0, 1, 8. 27

A   25

B   16

C   125

D   **64**

Solution

- Pattern of the series is as follows:

$\rightarrow$ 0 = 0

$\rightarrow 1^3$ =1

$\rightarrow 2^3$ = 8

$\rightarrow 3^3$ = 27

$\rightarrow 4^3$ = 64

26. **If $493 \div 29 = 17$, then $4.93 \div 0.0017 = ?$**

A   290

B   2.90

C   0.290

D   **2900**

Solution

- $493 \div 29 = 17$

  $4.93 \div 0.0017 = (493 \times 10^{-2}) (17 \times 10^{-4}) = 29 \times 10^{2} = 2900$

27. **Who wrote the book 'Two Fates - The Story of My Divorce' , which is a parody of Chetan Bhagat's 'Two States - The Story of My Marriage' ?**

A   Namita Gokhale

B   **Judy Balan**

C   Swati Kaushal

D   Arundhati Roy

Solution

- Judy Balan is the author of the book Two Fates The Story of My Divorce. She is also a famous blogger.

28. **In a bag containing red, green and pink tokens, the ratio of red to green tokens was 5: 12 while the ratio of pink to red tokens was 7: 15. What was the ratio of green to pink tokens?**

A   25:28

B   **36:7**

C   28:25

D   12:7

Solution

Given:

Red : Green = 5:12

Pink : Red = 7:15

Calculation:

LCM of 5 and 15 = 15

R:G = (5 x 3) : (12 x 3) = 15:36

So, G:P = 36:7

Ratio of green to pink is 36:7

29. **The gas evolved when sodium carbonate reacts with hydrochloric acid is**

A   Hydrogen

B   Chlorine

C   Hydrogen Chloride

D   **Carbon dioxide**

Solution

- Carbon dioxide gas is evolved when sodium carbonate reacts with hydrochloric acid.

- Chemical equation: $Na_2CO_3 + 2HCl \rightarrow 2NaCl + CO_2 + H_2O$

- Word equation:

  Sodium carbonate + hydrochloric acid → sodium chloride + carbon dioxide + water

30. **Number of σ and π bonds present in a benzene molecule, respectively is.**

A   **12 and 3**

B   3 and 3

C   6 and 3

D   9 and 3

Solution

- Benzene was isolated by Michael Faraday in the year 1825.
- The molecular formula of benzene is C_6H_6, indicating a high degree of unsaturation.
- Benzene has 12 σ and 3 π bonds.

31. The people of the Indus Valley Civilisation worshipped ---------------------

A   Hanuman

B   Kali

C   Ayyappa

D   **Pashupati**

Solution

- The seals of the Harappan Civilization were mainly square-shaped and made from a stone called steatite from these seals we get an idea of the religious life of the Indus Valley Civilisation.
- The chief male deity was Pashupati (proto-Siva) represented in seals as sitting in a yogic posture with three faces and two horns.
- He is surrounded by four animals (elephant, tiger, rhino, and buffalo) and two deer appear on his feet.
- The Indus Valley Civilization was spread from present-day North-East Afghanistan to Pakistan and North-West India.

32. **What is the type of asexual reproduction in Amoeba?**

A   Spore formation

B   **Binary fission**

C   Vegetative propagation

D   Budding

Solution

Binary Fission

- Simple binary fission: Amoeba
- Transverse binary fission: Paramecium
- Longitudinal binary fission: Euglena

Budding

- Asexual reproduction occurs by budding in yeast- a unicellular fungus

Vegetative propagation

- Reproduction in plants with the help of vegetative parts like root, stem, leaf and bud. It is also a form of asexual reproduction.

33. **If in a certain code, GREEN is written as ITGGP, then how will PINK be written as in the same code?**

A   TUMJ

B   KLON

C   RKOS

D   **RKPM**

Solution

- The logic here is as follows,

34. **The square root of 5329 is:**

A   97

B   94

C   **73**

D   96

Solution

$$\sqrt{ } 5329=\sqrt{ }(73 \times 73)=73$$

Trick:

Unit digit of $5329=9$

$\because$ We know that unit digit of $3^{2}=9$ and unit digit of $7^{2}=9$

The square root must be a number whose unit digit will be either 3 or 7 .

Hence, the required answer must be either 97 or 73.

Now, we know that $80^{2}=6400$

$\therefore$ The required answer must be less than 80 .

$\therefore$ The square root of 5329 will be 73 .

35. **Find the smallest square number from among the given options, which is divisible by each of 8, 15 and 20.**

A   **3600**

B   6400

C   14400

D   6900

Solution

- LCM of 8, 15, 20.

  8 = 2 x 2 x 2

  15 = 3 x 5

  20 = 2 × 2 × 5

  LCM = 2 × 2 × 2 × 5 × 3

To make perfect square then each prime factor has even powers LCM = 2×2×2×2×5×5×3×3 = 3600

36. **By what number should 10 $\frac{2}{3}$ be divided to obtain 20?**

A   9/15

B   7/15

C   **8/15**

D   6/15

Solution

- Let number be A
- 20 = $\frac{32/3}{A}$
- A = 32/60

  $\rightarrow A = \frac{8}{15}$

37. $SnCl_2 + 2HgCl_2 \rightarrow Hg_2Cl_2 + SnCl_4$
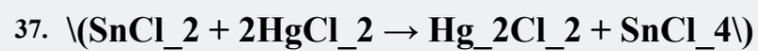
In the given reaction:

A $HgCl_2$ is oxidized

B   **$SnCl_2$ is oxidized**

C $HgCl_2$ is oxidized

D $SnCl_2$ is reduced

Solution

- Oxidation: The addition of oxygen/electronegative element to a substance or removal of hydrogen/electropositive element from a substance.
- Reduction: The removal of oxygen/electronegative element from a substance or addition of hydrogen/electropositive element to a substance.
- In the given reaction, stannous chloride ($SnCl_2$) is oxidized to stannic chloride ($SnCl_4$) because of the addition of the electronegative element chlorine (Cl) to it. This increases the oxidation state of Sn from +2 to +4.

38. **What are the products formed during photosynthesis?**

A **Glucose, Water and Oxygen**

B Glucose and Oxygen

C Starch and Oxygen

D Starch, Water and Oxygen

Solution

- Photosynthesis is the process through which plants utilize sunlight to make food and it takes place inside the green part (chloroplasts) of the plant.

- The correct equation to represent the overall process of photosynthesis is given as:

$$6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} + 6\text{O}_2$$
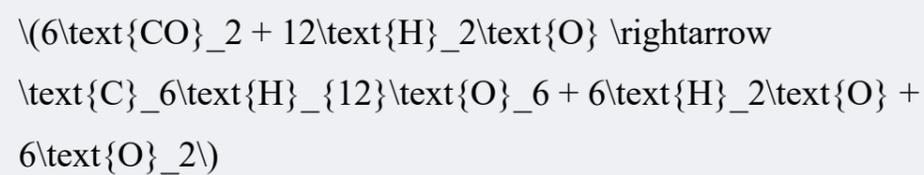
Where $\text{C}_6\text{H}_{12}\text{O}_6$ represents glucose. H_2O represents water. O_2 represents Oxygen.

- Photosynthesis takes place in the green leaves of plants, and it is the process through which green leafy plants synthesize their food.

39. **Two identical resistors, each of 10Ω, are connected in parallel. This combination, in turn, is connected to a third resistor in series of 10Ω. The equivalent resistance of the combination is**

A   5 Ω

B   30 Ω

C   **15 Ω**

D   10 Ω
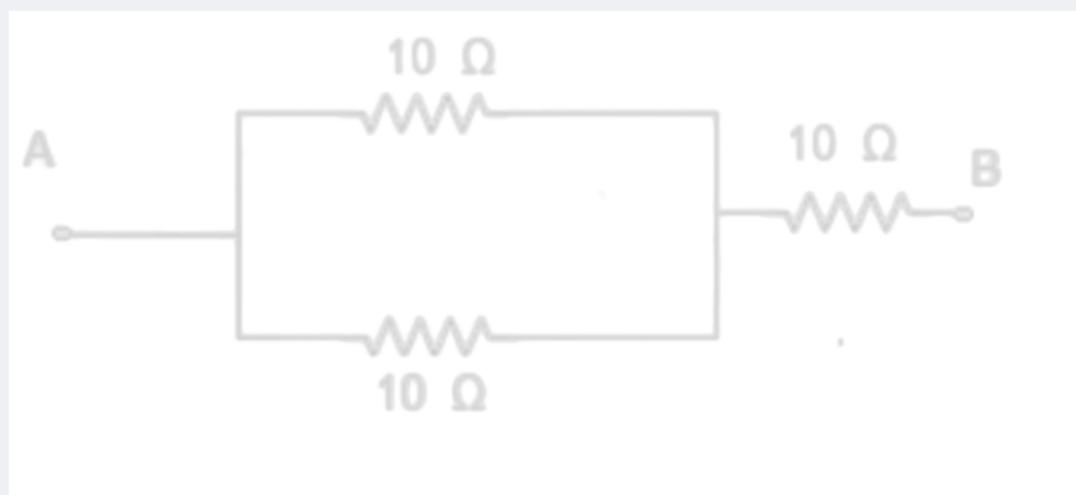
Solution

Hence, $R_{parallel}$ = 5 Ω

$R_{Equivalent}$ = $R_{parallel}$ + R_{series} = 5 + 10 = 15 Ω

40. **If - means $\div$, $\div$ means +, x means - and + means x, then determine the value of 35 - 7 x 14 $\div$ 28.**

A   **19**

B   24

C   15

D   20

Solution

New equation after replacing signs with their meaning signs is:-

35 $\div$ 7 - 14 + 28 = 19

Applying BODMAS

- First, apply the operation inside the division, which is 35 divided by 7.

  $35 \div 7 = 5$

- Next, apply the operation of Addition, which is 5 plus 28.

  $5 + 28 = 33$

- Finally, apply the operation of subtraction, which is 33 minus 14.

  $33 - 14 = 19$

Distribution of Various Minerals in Human Body

The given graph shows the distribution of minerals in the human body.
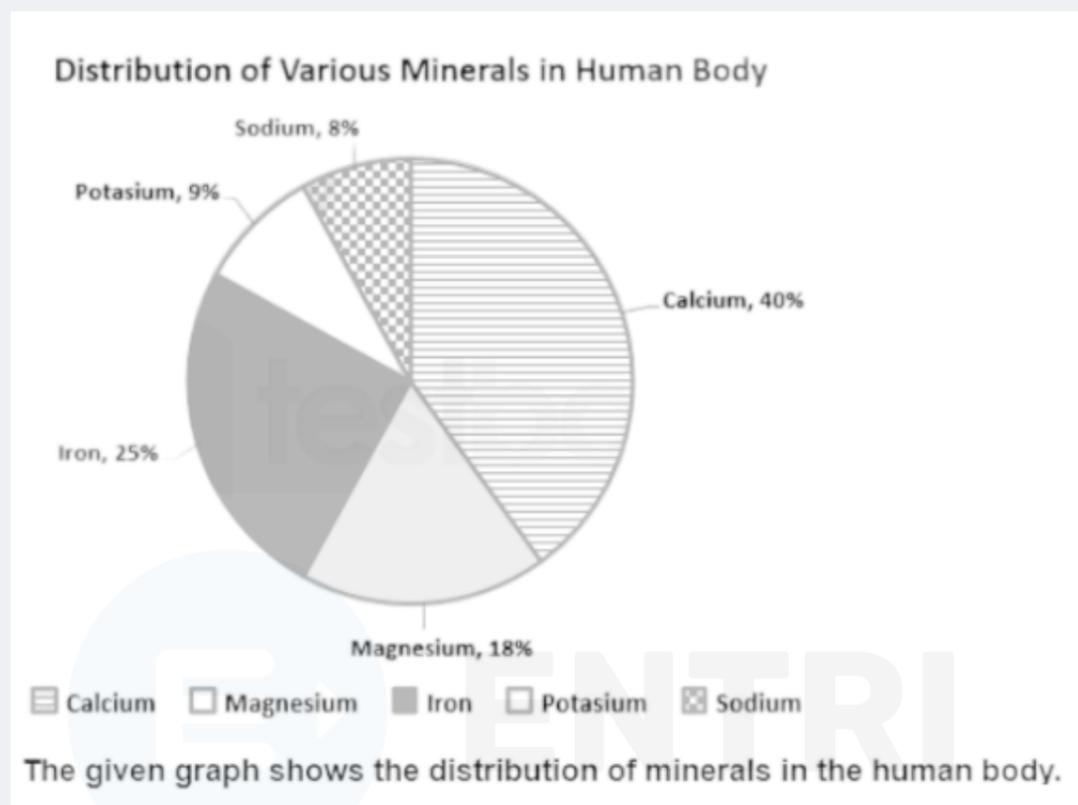
41. **Based on the given data, If a person has a total of 1000 IU of all the mentioned minerals in his body, what is the units of calcium distributed in his body?**

A   300 (IU)

B   200 (IU)

C   **400 (IU)**

D   500 (IU)

Solution

- Given,

  calcium distribution in body 40%

  Total mineral in body = 1000 IU

- Calculation

  Hence, units of calcium = 40% of 1000 = $1000 \times \frac{40}{100}$ = 400 IU

Hence, option 3 is correct.

42. **Consider the given argument and decide which of the given assumption's is/are implicit**

Argument

Due to IT recession, many software engineers lost their job.

Assumptions:

1. IT sector jobs are not secure.

2. IT sector companies lay off software engineers quite often.

A Only assumption 1 is implicit

B Only assumption 2 is implicit

C Both 1 and 2 are implicit

D **Neither 1 nor 2 is implicit**

Solution

- Many software engineers lost their job, but that happened because of the IT recession. Assumption 1 states that "IT sector jobs are not secure which cannot be folowed from the given argument. We can't be sure that IT sector jobs are not secure. So. Assumption 1 is not implicit.
- Assumption 2 states that "IT sector companies lay off software engineers quite often which also cannot be followed from the given argument. There can be many different reasons for the IT sector companies laying off engineers. Hence, assumption 2 is also not implicit

43. **Samil was given sonia money to lake care of his travel during a 6-day sales drive ho had to undertake. However, he had to increase his stay by another 4 days and as a result his average daily travel allowance went down by Rs 56. What was the amount that was sanctioned to him in the beginning ?**

A   Rs 336

B   Rs 560

C   **Rs 840**

D   Rs 420

Solution

Let in the beginning per day travel be Rs M

6 days travel cost = 6 M

He had to increase his stay by another 4 days and as a result his average daily travel allowance went down by Rs. 56,

For 10 days it would be = (M-56) $\times$ 10

6M = (M-56) $\times$ 10

4M = 560

M = 140

$\rightarrow$ For 6 days, 6M = 6 x 140 = Rs. 840.

44. **54% of 4000 is:**

A   2025

B   2172

C   2232

D   **2160**

Solution

X = 54% of 4000

→X = $\frac{54}{100}$ × 4000 = 2160

45. **Select the option that depicts the correct mirror image for the given word:**

STRONG

A   ƧTᴙOᴎG

B   ƎИOᴙTƧ

C   ƆИORTƧ

D   GИORTƧ

Solution

ƎИOᴙTƧ

46. **Two numbers are in the ratio of 15 : 11. If their H.C.F is 13. Find the numbers.**

A   195, 143

B   196, 143

C   195, 141

D   195, 142

Solution

Given:

Ratio of two numbers = 15:11

HCF = 13

Calculations:

Let the two numbers be 15a and 11a respectively.

HCF of these = a

$\rightarrow a = 13$

Two numbers $15 \times 13 = 195$ and $11 \times 13 = 143$

47. **Consider the given question and decide which of the following statements is sufficient to answer the question. How many cows in a herd are black?**

Statements:

1. **There are in total 60 cows.**
2. **40% of them are black**

A

Both statements taken together are sufficient to answer the question, but neither statement alone is sufficient.

B

Statement 1 alone is sufficient but statement 2 alone is not sufficient to answer the question.

C

Statements 1 and 2 together are not sufficient, and additional data is needed to answer the question.

D

Statement 2 alone is sufficient but statement 1 alone is not sufficient to answer the question.

Solution

- Statement 1:

  Total cows = 60

- Statement 2:

  40% of them are black

  Number of black cows = 40% of 60 = $\frac{40}{100} \times 60 =$ 24

- Both statements taken together are sufficient to answer the question, but neither statement alone is sufficient

48. **The number of free electrons in the outermost shell of carbon atoms in diamond is:**

A ⃝ **0**

B ⃝ 2

C ⃝ 4

D ⃝ 3

Solution

- The electronic configuration of carbon (2, 4). Therefore, the Valency of carbon is 4.
- Carbon atom forms four covalent bonds with other carbon atoms in a diamond.
- This phenomenon is termed as catenation. Hence there are no free electrons in outmost shell of carbon.
- The name 'carbon' is derived from the Latin word 'carbo' meaning coal.
- Carbon is found in nature in free as well as compound state,

49. **13 years ago, Ram was twice as old as Sunny. Three years from now Sunny's age will be 3/5 of Ram's age. What is Ram's current age?**

A 64 years

B 72 years

C 80 years

D 77 years

Solution

- 13 years ago, Ram was twice as old as Sunny,
- Let Ram be 'R' years old and Sunny be 'S' years old,

  $\rightarrow (R-13) = 2 \times (S-13)$

  R-13 = 2S-26

  2S - R = 13

- Three years from now. Sunny's age will be 3/5 of Ram's age,

  $(S+3) = \frac{3}{5} \times (R+3)$

  5S + 15 = 3R + 9

  3R - 5S = 6

  Solving,

  3R - 5(13 + R) / 2 = 6

  6R - 65 - 5R = 12

  → R = 77

- Ram present age is 77 years.

50. **If the power of a corrective lens in +2.0D, then it is a**

A **Convex lens**

B Concave lens

C Convex mirror

D Concave mirror

Solution

- The correct answer is Convex lens.
- The capacity of a lens to converge or diverge incident rays is called its power (P). The unit of the power of a lens is Dioptre (D).
- Power is the Inverse of its focal length (f). The power of a lens depends on its focal length.
- The focal length of a convex lens is positive thus the spectacles used to correct far sightedness has positive power.

51. **Consider the argument and decide which of the given assumptions Is/are implicit,**

Argument:

Alexander the Great was mortal

Assumption:

1. **Alexander the Great was human.**
2. **Alexander the Great was Greek**

A   Both 1 and 2 are implicit

B   **Only assumption 1 is implicit**

C   Only assumption 2 is implicit

D   Neither 1 nor 2 is implicit

Solution

- Alexander the great was a mortal. Mortal means which cannot live forever. So, it can be assumed that Alexander was a human. Hence, assumption 1 is implicit
- The argument doesn't tell about Alexander's ethnicity. So, assumption 2 is not implicit.

52. **This pass is in the Zaskar range of Jammu & Kashmir. The road route from Srinagar to Leh goes through this pass. It has been created by the Indus River. Identify the pass.**

A **Zoji La Pass**

B Mana Pass

C Niti Pass

D Rohtang Pass

Solution

- The important road link between Srinagar on one side and Kargil and Leh on the other side. The road passing through Zoji La Pass has been named as NH-1D.

53. **A ball is dropped from a height of 10 m. It strikes the ground and rebounds up to a height of 2.5 m. During the collision, the per cent loss in the kinetic energy is:**

A 100%

B 25%

C 50%

D **75%**

Solution

- In condition of free fall, the potential energy is converted into kinetic energy (K.E)
- According to the law of conservation of mechanical energy:
- Initial kinetic energy = Potential Energy = mgh
- Final kinetic energy = $mg h_1$
- Change in kinetic energy = $mg(h - h_1)$
- Percentage change in kinetic energy = $\frac{mg \times (h - h_1)}{mgh} \times 100$ = 75%

54. **Complete the following sentence with the most appropriate option.**

Wind energy is considered --------- efficient than solar energy.

A sometimes

B never

C **more**

D often

Solution

- Wind Energy is considered **more** efficient than solar energy

- The preposition "more" is commonly used to compare two things or actions, indicating a higher degree or quantity in comparison.

- It is often used in comparative structures to show the superiority of one element over another.
- For example, in the sentence "Wind energy is considered more efficient than solar energy," "more" is used to compare the efficiency of wind energy to that of solar energy.

55. **Select the figure that does NOT belong in the following group.**
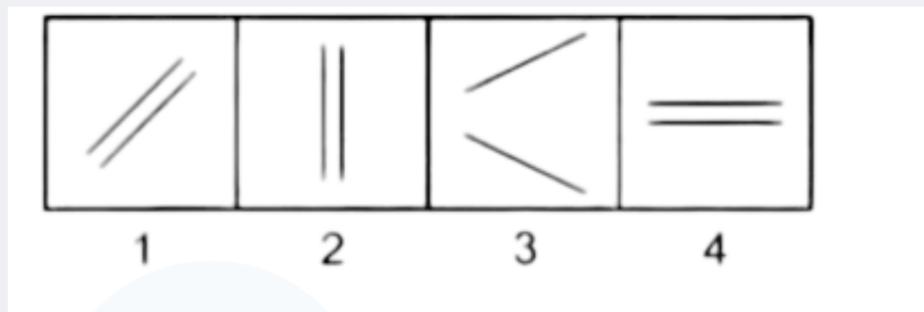
A   4

B   **3**

C   1

D   2

Solution

- In figure 1, 2 and 4 both the lines are straight. But the lines in figure 3 are at angle to each other .Thus figure 3 does not belong to the group.

56. **Who among the following dedicated the Chennai-Nashri Tunnel- the longest road tunnel in India to the nation in April 2017?**

A   Chandrababu Naidu

B   Pranab Mukherjee

C   **Narendra Modi**

D   Omar Abdullah

Solution

- The longest road tunnel in India is actually the Atal Tunnel Rohtang, located in Himachal Pradesh. This tunnel was inaugurated by Prime Minister Narendra Modi on October 10, 2020.

- In April 2017, Prime Minister Narendra Modi dedicated the Chenani-Nashri Tunnel in Jammu and Kashmir to the nation. This tunnel is not the longest in India, but it was at the time of its inauguration the longest highway tunnel in the country.

57. **The 2017 Brahmaputra Literary Festival was hosted by which city?**

A   Lucknow

B   Kolkata

C   Shillong

D   **Guwahati**

Solution

- The three day Brahmaputra Literary Festival was hosted by Guwahati in Assam.
- The Brahmaputra Literary Festival 2017 was organised jointly by the National Book Trust (NBT) and the Assam government.
- Events like panel discussions, book releases, readings and culture events, Including screenings of films based on books, musical and dance performances were held in festival.

58. **X walks 3 km towards west, and then turns and travels 4 km towards north. The shortest distance between the start and the end point of X's journey is**

A   7 km

B   **5 km**

C   6 km

D   8 km

Solution

- So the shortest distance between starting and ending point is 5 km.

59. **A train crosses a 375 m long platform in 27 seconds. How long was the train if it was travelling at the speed of 70 km/h?**

A   525 m

B   **150 m**

C   140 m

D   160 m

Solution

- Let length of train be A meter.

  70 kmph = 70 × $\frac{5}{18}$ = $\frac{175}{9}$ m/sec

- A train crosses a 375 m long platform in 27 seconds,

  $\frac{175}{9}$ = $\frac{(375 + A)}{27}$

  →A=150

- The length of the train = 150 m

60. **Which of the following is NOT a noble gas?**

A Radon

B Krypton

C Xenon

D **Hydrogen**

Solution

Noble gas characteristics:

- Full outermost electron shell: Noble gases have a stable configuration with a full outermost electron shell. This makes them highly reluctant to react with other elements.
- Inertness: Due to their stable electron configuration, noble gases are generally unreactive and non-flammable.
- Group 18 (Group 0) placement: All noble gases belong to Group 18 (previously Group 0) of the periodic table.
- Hellum (He), Radon (Rn), Neon (Ne), Krypton (Kr), Argon (Ar) and Xenon (Xe).

Hydrogen:

- Incomplete outermost shell: Hydrogen only has one electron in its outermost shell, making it highly reactive and eager to lose or share this electron to achieve a stable configuration.
- Reactivity: Hydrogen readily forms compounds with other elements, such as water with oxygen or methane with carbon.
- Group 1 placement: Hydrogen belongs to Group 1 of the periodic table, not Group 18.

61. **A and B together can complete a task in 12 days. However, if A works alone, completes half the job and leaves and then B works alone and completes the rest of the work, it takes 25 days in all to complete the work. If B is more efficient than A, how many days would it have taken B to do the work by herself?**

A   18

B   22

C   **20**

D   15

Solution

- Given,

  $((A+B)^{'})$s 1 day's work = $\frac{1}{12}$

  $\rightarrow \frac{1}{A} + \frac{1}{B} = \frac{1}{12}$

- Given,

  $\rightarrow \frac{A}{2} + \frac{B}{2} = 25$

  A + B = 50

- Solving,

  $\rightarrow \frac{1}{50-B} + \frac{1}{B} = \frac{1}{12}$

  Then, B = 30 or B = 20

  If B = 30 Then A = 20

  If B = 20 Then A = 30

- But B is more efficient than A, so B takes 20 days to complete the work.

62. **Which of the following is NOT a pollinating agent for cross pollination?**

A   Water

B   Animals

C   Wind

D   **Plants**

Solution

- When pollination involves only one flower or two flowers borne on same plant, it is called as self-pollination whereas if it involves two flowers borne on two plants of same species, it is cross-pollination.
- Agents for cross pollination: Air, Water, Animal, Birds etc.

63. **The length of one side of a rhombus is 13 cm and one of the diagonals is 10 cm. What is the length of the other diagonal?**

A   **24 cm**

B   23 cm

C   25 cm

D   22 cm

Solution

- We know that,

  (Side of mombus)^2= (half of one diagonal)^2 + (half of the other diagonal)^2

  $\rightarrow 13^2 = (\frac{10}{2})^2$ + (half of other diagonal)^2

  169 - 25 = (half of other diagonal)^2

  Half of other diagonal = 12

  Length of the other diagonal = 12 × 2 = 24cm

64. **Who took over as the new chairman of the Tata Sons owned Vistara Airline in 2016? Prior to this, he was the Managing Director of Titan for a long time.**

A   Ramadural

B   **Bhaskar Bhatt**

C   Cyrus Mistry

D   N Chandrashekaran.

Solution

- BhaskarBhattook over as the new chairman of Tata Sons owned Vistara Airline in 2016.
- He was serving in Titan Company Limited as the Managing Director since 2002

65. **Use each of the below figures only once and form three groups. The three groups so formed are.**
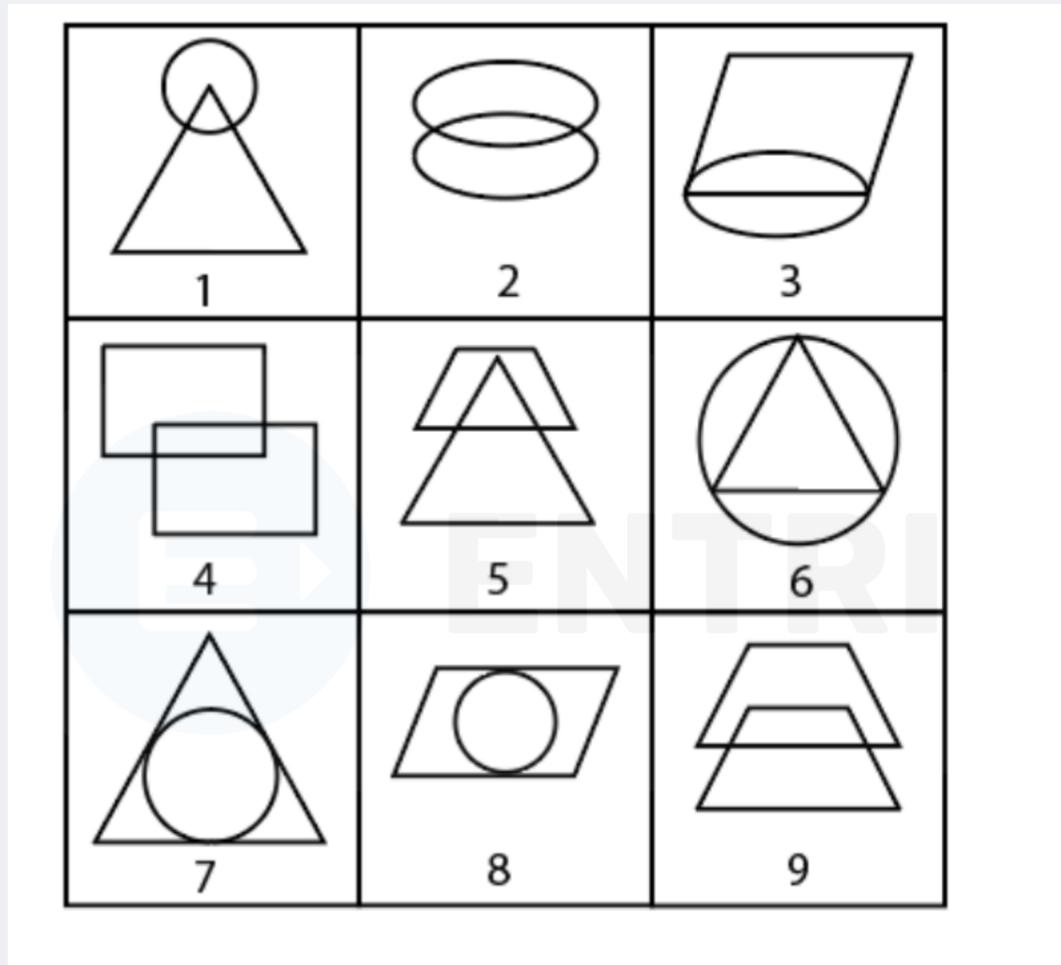
A   (1, 3, 5), (2, 7, 9), (6, 4, 8)

B   (1, 3, 5), (2, 4, 8), (6, 7, 9)

C   (1, 3, 5), (6, 4, 9), (2, 7, 8)

D   **(1, 3, 5), (2, 4, 9), (6, 7, 8)**

Solution

- Figure 1, 3 and 5 form a group because two shapes are intersecting in all the figures.
- Figure 2, 4 and 9 forms a group because there are two same shapes in the figures. Figure 6, 7 and 8 forms a group because there is a shape completely inside another shape in all the figures.
- Thus, the required set is (1, 3, 5), (2, 4, 9), (6, 7, 8).

66. **Read the following statements and identify the logically correct conclusion from the given information,**

Statement:

Time and tide wait for none.

Conclusions:

1. **Time is not in anyone's control.**
2. **One has to keep moving in life, forgetting the bad experiences of the past**

A   Both conclusions 1 and 2 follow..

B   Conclusion 2 follows:

C   Neither conclusion 1 nor 2 follows..

D   **Conclusion 1 follows.**

Solution

- As stated in statement, "time and tide wait for none", which means that time and tide do not work according to us and we can't control either one of them. So, conclusions 1 is correct according to the statement.
- There is nothing mentioned about past in the statement so conclusion 2 is not correct according to statement. Hence, conclusion 2 does not follow.

67. **How many triangles are present in the below figure?**
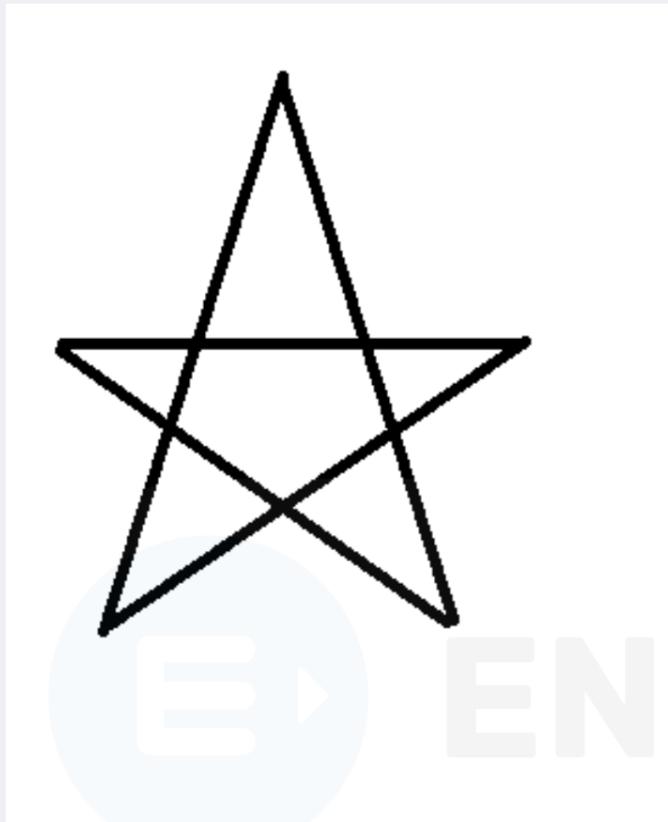
A 6

B 8

C 9

D 10

Solution

The figure may be labelled as below:
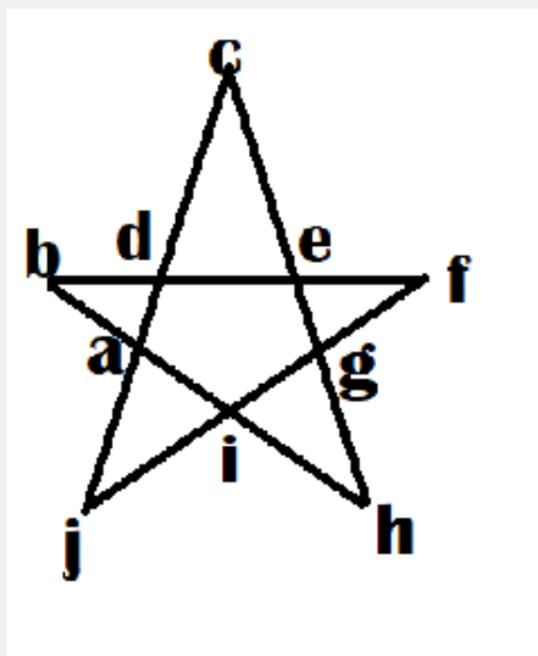
- The triangles in the figure are:

cde, feg, hgi, jia, bad, cah, fdj, heb, jgo and bif

Thus there are total 10 triangles in this figure.

68. **In the following series, one letter is missing as shown by the question mark (?). Select the missing term from the given options.**

    Q, O, L, H, ?

    A   D

    B   A

    C   B

    D   C

Solution

- The pattern followed is as follows,

  Q-2 = O

  O-3 = L

  L-4 = H

  H-5 = C

  Thus the next term in the series is C.

69. **Rathin is now 16 years old while his cousin is 7 years. After how many years will Rathin's age be 1.5 times that of his cousin?**

A 12

B **11**

C 10

D 9

Solution

- Let after N years Rathin's age be 1.5 times it's cousin.
- Rathin is now 16 years old while his cousin is 7 years,

  $(\rightarrow (16+N) = 1.5 \times (7 + N))$

  32 + 2N = 21+ 3N

  N=11

70. **Which of the following is the third member of the Dobereiner triad, that also features Lithium and Sodium?**

A **Potassium**

B Boron

C Barium

D Hydrogen

Solution

- Dobereiner triad: Lithium (Li), Sodium (Na) and Potassium (K)
- In the year 1817 a German scientist Dobereiner suggested that properties of elements are related to their atomic masses.
- Triads: He made groups of three elements each having similar chemical properties and called them triads.

71. **Insulators have resistivity of the order of -----------------**

A $10^6 \ \Omega m$ to $10^8 \ \Omega m$

B $10^6 \ \Omega m$ to $10^7 \ \Omega m$

C $10^4 \ \Omega m$ to $10^7 \ \Omega m$

D   **$10^4 \ \Omega m$ to $10^{16} \ \Omega m$**

Solution

- Insulators: The substance which have extremely high resistance and through which current cannot flow are called Insulator.
- The materials are classified as conductors, semiconductors and insulators depending on their resistivity in an increasing order of their values.
- Metals have low resistivity in the range of $10^{-8} \ \Omega m$ to $10^{-6} \ \Omega m$.
- Insulators like ceramic, rubber and plastics having resistivity 10^{18} times greater than metals or more.

72. In a test, the mean score of 10 boys in a class was 15 while the overall mean score of 25 students in the class was 16.2. What was the mean score of the girls?

A   16.8

B   **17**

C   16.5

D   17.5

Solution

Average = $\frac{Sum \space of \space elements}{Number \space of \space elements}$

Total score of 10 boys = 10 x 15 = 150

Total score of class = 25 × 16.2 = 405

Total score of girls = 405 - 150 = 255

Mean score of girls = $\frac{255}{15}$ = 17

Direction: Read the given table and answer the following question.

Parties and Seats won					
Serial number	Party	South	East	West	North
1	A	40	37	35	27
2	B	6	26	76	86
3	C	83	71	4	21
4	D	1	7	3	11

73. **In south, what is the percentage of seats won by party A (round to one decimal)?**

A   30 %

B   30.8 %

C   30.5 %

D   31 %

Solution

Total seats won by all parties in South = 40 + 6 + 83 + 1 = 130

Required percentage = $\frac{40}{130} \times 100 = 30.8\%$

74. **A curved mirror where the reflecting surface is curved inwards is called a ---------------------**

A **Concave mirror**

B Plano-convex mirror

C Plane mirror

D Convex mirror

Solution

- Concave mirror: Inner surface of the spherical mirror is the reflecting surface.
- Convex mirror: Outer surface of the spherical mirror is the reflecting surface.
- Bifocal lenses: The upper part is concave lens and corrects near-sightedness while the lower part is a convex lens which corrects the far sightedness.

75. **Argument:**

Warning: Consumption of alcohol is injurious to health

Assumptions:

1. **This warming is not required.**
2. **Non-alcoholic people are healthy.**

A **Neither 1 nor 2 is implicit**

B Only assumption 1 is implicit

C Only assumption 2 is implicit

D Both 1 and 2 are implicit

Solution

- The warning is a type of alert message that is given before starting or using a product or service. So, to alert people about the effects of the product or service, the word warning is used. Alcohol has ill effects on health, so to make people aware about it, warning should be given. So, assumption 1 is not implicit.

- It's not stated anywhere that people who don't consume alcohol are healthy. So, assumption 2 is not impilcit

  Thus, neither assumption 1 nor 2 is implicit

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