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Que. 1 Out of 245 members of Rajya Sabha, how many members are nominated by the President?

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

Solution Correct Option **- 2**
The correct answer is **12**.

- **The Composition of the house**: Article 80 of the Constitution has provisions for members of the Rajya Sabha.
- Currently, it has 245 members, including 233 elected members and 12 nominated.
- **These 12 nominated candidates are selected from a list of people who have knowledge and experience in fields like science, art, social service, and literature.**
- As per the constitutional limit, the Upper House strength cannot exceed 250.
- The number of Rajya Sabha members a state can send depends on its population.
- Hence, the number of elected seat changes as states are merged, bifurcated or new ones are created.
- Nominated members of the Rajya Sabha are nominated by the President of India in the field of art, literature, science, and social service.

Que. 2 A shopkeeper marked an article at Rs. 1500 and gives discount to a customer of 10% but still earns a profit of 20%. Find the cost price of the article.

1. Rs. 1135
2. Rs. 1115
3. Rs. 1125
4. Rs. 1145

Solution Given: Correct Option **- 3**

Marked price = Rs. 1500

Discount = 10%

Profit = 20%

Formula used:

SP = MP × [(100 – Discount%)/100]

CP = SP × [100/(100 + Gain%)]

Calculation:

SP = Rs. 1500 × [(100 – 10)/100]

⇒ Rs. 1500 × (90/100)

⇒ Rs. 1350

CP = Rs. 1350 × [100/(100 + 20)]

⇒ Rs. 1350 × (100/120)

⇒ Rs. 1125

∴ The cost price of article is Rs. 1125

Que. 3 **Directions:** The question consists of two statements, an assertion (A) and a reason (R). Read both the statements and decide which of the following answer choice correctly depicts the relationship between these two statements.

Assertion (A): Qutub Minar attracts many tourists.

Reason (R): Qutub Minar is one of the seven wonders of the world.

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true and R is not the correct explanation of A.
3. A is true but R is false
4. A is false but R is true.

Solution Correct Option **- 3**

It is true that Qutub Minar is a tourist spot and attracts many tourists.
Therefore, the assertion is true.

The reason mentioned is incorrect as Qutub Minar is not one of the seven wonders of the world.
Therefore, the reason is false.

Hence, A is true but R is false.

Que. 4 Which one of the following is a natural source of Acetic acid?

1. Orange
2. Lemon
3. Vinegar
4. Tamarind

Solution Correct Option **- 3**

The correct answer is option **3,** i.e **Vinegar**.

Natural Source	**Acid**
Orange	Citric Acid
Vinegar	**Acetic Acid**
Tamarind	Tartaric Acid
Lemon	Citric acid
Tomato	Oxalic Acid
Ant Sting	Methanoic Acid

Que. 5 When did India conducted its First Nuclear explosion?

1. 28 August 1975
2. 18 May 1974
3. 28 August 1974
4. 18 may 1975

Solution Correct Option **- 2**

The correct answer is Option 2 i.e. **18 May 1974.**

- The Code name for this test was **'Smiling Buddha'.**
- **Mrs. Indira Gandhi** was the **Prime minister** of India at that time

- India became **the 6th country in the world to conduct a successful nuclear test.**
- After the **1974 tests,** India conducted five tests, **three on May 11 and two on May 13, 1998.**
- **11 May is celebrated as National Technology day in India.**
- The test was conducted in **Pokharan, Rajasthan.**
- The nuclear program in India was initiated in the **late 1940s** under the supervision of **Homi J. Bhabha.**
- India had adopted a policy of the **No-First Use of nuclear weapons.**

Que. 6 Arindam bought an article for Rs. 1330 and sold it for Rs. 1520. Find the profit%.

1. 14.28%
2. 16.66%
3. 16.25%
4. 12.5%

Solution Given: Correct Option **- 1**

CP = Rs. 1330

SP = Rs. 1520

Formula used:

Profit = SP – CP

Profit% = (Profit/CP) × 100%

Calculation:

Profit = Rs. 1520 – Rs. 1330

⇒ Rs. 190

Profit% = (190/1330) × 100%

⇒ 100/7%

⇒ 14.28%

∴ The required profit% is 14.28%

Que. 7 **Directions:** The question consists of two statements, an assertion (A) and a reason (R). Read both the statements and decide which of the following answer choice correctly depicts the relationship between these two statements.

Assertion (A): Honey is sweet.

Reason (R): Honey is collected by honeybees.

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true and R is not the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.

Solution Correct Option **- 2**

It is true that honey is sweet in taste.

Therefore, the assertion is true.

The reason mentioned is also true that honey is collected by honeybees.

But it is not the reason behind honey been sweet.

Hence, Both A and R are true and R is not the correct explanation of A.

Que. 8 What is the formula for Methane?

1. CH_4
2. MH_4
3. M_2H_4
4. C_2H_4

Solution Correct Option **- 1**
The correct answer is option **1,** i.e **CH_4**.

- **Methane**:
  - Methane (CH_4), is a gas produced by a group of colonic anaerobes, absorbed from the colon and excreted in expired air.
  - Methane is a colourless and odourless gas.
  - It is also known as marsh gas or methyl hydride.
  - The molecular formula is **CH_4**.
  - It is an alkane with single-bonded carbon atoms.
- **Ethylene**:
  - It is the colourless flammable gas.
  - It is the simplest alkene with carbon-carbon double bonds.
  - It is used for artificially ripening of fruit.
  - The molecular formula is **C_2H_4**.

Que. 9 Which city is also known as Scotland of India?

1. Coorg
2. Ahemdabad
3. Srinagar
4. Darjiling

Solution Correct Option **- 1**

- **Coorg** is known as Scotland of India.
- It is called so because of the beautiful landscape as Scotland.
- **Coorg** is situated in **Karnataka.**
- It is also the largest **Coffee producer** district of India.
- Another name of **Coorg** is **Kodagu.**

Note:

- **Shillong** is known as **"Scotland of the east".**

Que. 10 Pipe A and B can fill a tank in 10 hours and 20 hours respectively, if an outlet pipe C is left open which can empty the tank in 40 hours then in how much time will the tank be filled if they are opened together?

1. 10 hours
2. 40/7 hours
3. 8 hours
4. 7 hours

Solution Correct Option **- 3 Given:**

A can fill a tank in 10 hours

B can fill a tank in 20 hours

C can empty a tank in 40 hours

Concept used:

If a tap can fill or empty a tank in x hours then the tank filled or emptied by the tap in 1 hour = 1/x of the total tank.

Calculation:

A can fill a tank in 10 hours

Tank filled by P in 1 hour = 1/10

B can fill a tank in 20 hours

Tank filled by Q in 1 hour = 1/20

C can empty a tank in 40 hours

Tank emptied by R in 1 hour = 1/40

Tank filled in 1 hour = 1/10 + 1/20 - 1/40

Tank filled in 1 hour = 5/40

Tank filled in 1 hour = 1/8

The tank will be filled in 1/(1/8) hours

∴ **The tank will be filled in 8 hours**

Que. 11 In the question, statements are given, followed by two conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

Statement: Suman has an appointment with the doctor today.

Conclusions:

I: Suman's kid is not feeling well.

II: Suman will travel by car.

1. Only conclusion I follows
2. Only conclusion II follows
3. Neither I or II follows
4. Both I and II follow

Solution Correct Option **- 3**

From the information above, we cannot conclude who is ill in Suman's family.
Therefore, conclusion I does not follow.

Similarly, the information above is not sufficient for us to conclude Suman's mode of transport.
Therefore, conclusion II does not follow.

Hence, Neither I or II follows.

Que. 12 Jellyfish are an example of which type of phylum?

1. Phylum - Protozoa
2. Phylum - Cnidaria
3. Phylum - Porifera

4. Phylum - Ctenophora

Solution Correct Option **- 2**
Option **2** is the correct answer: The Jellyfish are an example of **Phylum - Cnidaria**.

- Jellyfish are actually an **Invertebrates** (without spinal cord) and not fish.
- These free-swimming sea creatures **move in the direction of ocean currents** and are found in almost all parts of the oceans.
- Some of the jellyfish are immobile also and are bound to seabeds.
- Mostly the Jellyfish have an umbrella or bell-shaped body and are clearly transparent (some of them can have fascinating colours).
- They have an opening inside through which they eat their prey and discard the waste through the same opening.
- Their fossils confirm their existence in **pre dinosaurs periods** also.

Phylum	Details
Phylum - Protozoa	• Unicellular microorganisms. • Protoplasmic (functions many performed by protoplasm). • Respiration is aerobic. • Reproduction is asexual (binary fission). • Example: Amoeba, Paramecium, Euglena etc
Phylum - Cnidaria	• Sac-like animals having a radially symmetrical body. • A gastrovascular cavity is present having the same inlet and outlet. • Asexual Reproduction. • Example: Hydra, Corals, Jellyfish.
Phylum - Porifera	• Popularly known as sponges because the pores all over their surface called Ostia. • Aquatic habitat. • First and simplest multicellular organisms. • Are hermaphrodite, reproduce asexually (through budding). • Example: Sycon, Spoongiila.
Phylum - Ctenophora	• Ciliary plates present on their body that help in swimming. • Marine habitat. • Bioluminescent. • The complete digestive tract is present that includes mouth, pharynx, stomach, anal canals and anal pores. • Example: Comb Jellies, Sea gooseberries etc.

Que. 13 Which of the following National Park is in Jammu and Kashmir state ?

1. Panna National Park
2. Gir National Park
3. Salim Ali National Park
4. Sariska National Park

Solution Correct Option **- 3**

Park	Details
Panna National Park	• It located in the **Panna and Chhatarpur districts** of **Madhya Pradesh** in India. • It was declared as **"Tiger Reserve"** in 1993.
Gir National Park	• It located about 65 Kilometers **southeast of the Junagarh district** of Gujarat state in India. • It is famous for the population of the **'Asiatic lion'** and established in **1965.**
Salim Ali National Park	• It is located in the **Srinagar district of Jammu and Kashmir state**.
Sariska National Park	• It is located in the **Alwar district of Rajasthan,** India. • It is a **'Tiger Reserve'** declared in **1978.**

Que. 14 If the mode of the an observation is 3 and the mean is 6. Then what is the median of an observation?

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

Solution Given: Correct Option **- 4**

Mode = 3

Mean = 6

Formula used:

Mean – Mode = 3(Mean – Median)

Calculation:

⇒ 6 – 3 = 3(6 – median)

⇒ 3 = 18 – 3 × Median

⇒ -15 = -3 × Median

⇒ 15/3 = Median

⇒ 5 = Median

∴ **The median of observation is 5**

Que. 15 Three of the following four words are alike in a certain way and one is different. Pick the odd word out.

1. Addition
2. Subtraction
3. Division
4. Geometry

Solution Correct Option **- 4**

All options except “Geometry” are mathematical operations, while “Geometry” is a topic under mathematics.

Hence, “Geometry” is the correct answer.

Que. 16 What is the phenomenon of organisms in which female gamete develops to form new creatures without fertilization?

1. Genome
2. Parthenogenesis
3. Monogamy
4. Syngamy

Solution Correct Option **- 2**

Option **2** is the correct answer: When embryo formation takes place without fertilisation it is called **Parthenogenesis**.

- Parthenogenesis is a kind of **asexual reproduction**.
- The female eggs develop into an embryo without being fertilised by a male gamete.
- Parthenogenesis can be of two types:
  - **Apomictic**
  - **Automictic**
- Whiptail lizards, Fishes and some amphibians produce offsprings through Parthenogenesis.

Term	Definition
Genome	Agenetic material which consists of a complete set of DNA of an organism
Monogamy	Having only one mating partner.
Syngamy	Fertilization; Fusion of male and female gametes

Que. 17 Who is the author of 'Panchatantra'?

1. Kalidas
2. Valmiki
3. Vishnu Sharma
4. Sri Harhsa

Solution Correct Option **- 3**
The correct answer is **Vishnu Sharma**.

Key-Points

- Vishnu Sharma is the author of '**Panchatantra**'.
- Panchatantra refers to the **ancient Indian collection of interrelated animal fables** and was **originally written in the Sanskrit language**.
- It was written around **200 BCE** and is one of the oldest surviving texts.
- Panchatantra was translated into other languages like **Persian, Syrian, and Arabic** languages.
- **Vishnu Sharma** was an Indian scholar.

Additional Information

- **Kalidas** was a Sanskrit writer whose famous works include **Abhijnanasakuntalam, Meghaduta, Raghuvamsa**, etc.
- **Valmiki** was one of the most celebrated writers and his most famous works include **Ramayana**.
- **Sri Harsha** was a Sanskrit poet and philosopher of the 12th century and his famous works include **Naishadha Charita**, etc.

Que. 18 2, 3, 5, 8, 2, 0, 8, 5, 4, 3, p, 2, 8
If the mode of given data is 8, then find the value of p:

1. 3
2. 8
3. 2
4. 5

Solution Given: Correct Option **- 2**
0, 2, 2, 2, 3, 3, 4, 5, 5, 8, 8, 8, p
Mode = 8
Concept used:
The mode is the value that appears most frequently in a data set
Calculation:
Mode = 8
Frequency of 2 = 3
Frequency of 8 = 3
If Mode is 8, then:
Frequency of 8 > Frequency of 2
So, p = 8
∴ The value of p is 8.

Que. 19 If '+' is interchanged with '×', and '-' is interchanged with '÷', then which of the following equation is correct ?

1. 18 ÷ 6 + 24 - 4 × 64 = 50

2. 18 + 6 ÷ 24 - 4 × 64 = 50
3. 18 + 6 × 24 - 4 ÷ 64 = 50
4. 18 - 6 × 24 + 4 ÷ 64 = 50

Solution Correct Option **- 3**

Symbol	Denotation
+	×
-	÷

(i) 18 ÷ 6 + 24 - 4 × 64 = 50

Interchanging signs as per given and using **BODMAS** rule,

18 - 6 × 24 ÷ 4 - 64 = 50

18 - 6 × 6 - 64 = 50

18 - 36 - 64 = 50

18 - 100 = 50

- 82 ≠ 50.

(ii) 18 + 6 ÷ 24 - 4 × 64 = 50

Interchanging signs as per given and using **BODMAS** rule,

18 × 6 - 24 ÷ 4 + 64 = 50

18 × 6 - 6 + 64 = 50

108 - 6 + 64 = 50

108 + 58 = 50

166 ≠ 50.

(iii) 18 + 6 × 24 - 4 ÷ 64 = 50

Interchanging signs as per given and using BODMAS rule,

18 × 6 + 24 ÷ 4 - 64 = 50

18 × 6 + 6 - 64 = 50

108 + 6 - 64 = 50

108 - 58 = 50

50 = 50.

(iv) 18 - 6 × 24 + 4 ÷ 64 = 50

Interchanging signs as per given and using **BODMAS** rule,

18 ÷ 6 + 24 × 4 - 64 = 50

3 + 24 × 4 - 64 = 50

3 + 96 - 64 = 50

3 + 32 = 50

35 ≠ 50.

Hence, the correct answer is **"18 + 6 × 24 - 4 ÷ 64 = 50".**

Que. 20 In adult human beings, where does the formation of blood corpuscles takes place mostly?

1. Liver
2. Spleen
3. Heart

4. Bone marrow

Solution Correct Option **- 4**

- The correct answer is **Option 4** i.e **Bone Marrow**.
- In **adult human beings**, the formation of blood corpuscles largely takes place in bone marrow.
- In **frog**, blood corpuscle formation generally takes place in organs such as **Spleen**, **Liver** and **Lymph nodes**.
- In **mammalian embryo**, the site for blood corpuscle formation are **Yolk sac**, **Liver**, **Bone marrow**, **Lymph nodes**, **Spleen** and **Thymus**.
- **The heart** is the organ responsible for the pumping of blood.

Que. 21 The scheme 'Beti Bachao Beti Padhao' is related with

1. Solution to declining child sex ratio and empowerment of girl child.
2. To better the position at women at international level.
3. Arrange compulsory primary education for all girl child in India.
4. To stop child marriage by providing compulsory education.

Solution Correct Option **- 1**

The correct answer is **Solution to declining child sex ratio and empowerment of girl child.**

- The **'Beti Bachao Beti Padhao' scheme is related** to the solution of falling child sex ratio in India and empowering girls.

- It is noteworthy that this scheme was started by the Central Government on 22 January 2015.
- The benefit of this scheme is to keep the sex ratio of boys and girls in balance.
- Madhuri Dixit has been made the brand ambassador to promote the propagation of this scheme.
- Beti Bachao, Beti Padhao is a campaign of the Government of India that aims to generate awareness and improve the efficiency of welfare services intended for girls in India.
- The scheme was launched with initial funding of ₹100 crores (US$14 million).

Que. 22 The data of an observation as follows:

16, 9, 12, 10, 8

Find the average of its mean and median?

1. 10
2. 11
3. 10.5
4. 11.5

Solution Given: Correct Option **- 3**

8, 9, 10, 12, 16

Concept used:

Mean = (Sum of observation)/(Total number of observation)

Median of odd terms = [(n + 1)/2]th term

Calculation:

Arrange all terms in ascending order,

8, 9, 10, 12, 16

Mean = (Sum of observation)/(Total number of observation)

⇒ Mean = (8 + 9 + 10 + 12 + 16)/5

⇒ Mean = 55/5

⇒ Mean = 11

Median = [(n + 1)/2]th term

⇒ Median = [(5 + 1)/2]th term

⇒ Median = (6/2)th term

⇒ Median = 3rd term

⇒ Median = 10

Required average = (Mean + Median)/2

⇒ Required average = (11 + 10)/2

⇒ Required average = 21/2

⇒ Required average = 10.5

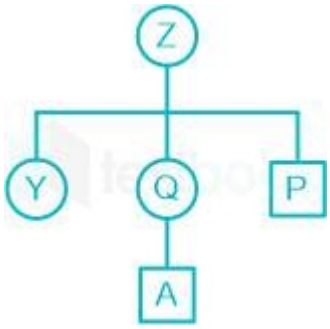
∴ The average of mean and median is 10.5.

Que. 23 If A is the son of Q, Q and Y are sisters, Z, is the mother of Y, P is the son of Z, then which of the following statements is correct?

1. P is maternal uncle of A;
2. P and Y are sisters;
3. A and P are cousins:
4. None of the above;

Solution Correct Option **- 1**

Symbol in Diagram	Meaning
○	Female
□	Male
=	Married couple
—	Siblings
|	Difference of a generation



1) P is maternal uncle of A; → True

2) P and Y are sisters; → False (P is brother of Y, Y is sister of P)

3) A and P are cousins: → False (A is nephew of P, P is uncle of A)

4) None of the above; → False (AS, option 1 is true)

Hence, P is maternal uncle of A.

Que. 24 _____law states that electric current is proportional to voltage and inversely proportional to resistance

1. Kirchhoff's Current law
2. Ohms law
3. Guass Law
4. Lenz Law

Solution Correct Option **- 2**

- Ohms law states that electric current is proportional to voltage and inversely proportional to resistance.
- i.e. I=V/R
- ⇒V=IR.
- where ,V = Voltage, I = current and R = Resistance

Que. 25 Which of the following was the first site where Indus Valley Civilization was discovered?

1. Amri
2. Kotdiji
3. Harappa
4. Mohenjodaro

Solution Correct Option **- 3**

The correct answer is **Harappa**.

- **Harappa**:
  - Harappan culture planned its towns with their chessboard system, streets, drainage pipes, and chess pits.
  - Rectangular houses with brick-line bathrooms and wells together with their stairways are found in all Harappan sites.
  - Harappans have well connected central drainage system.
  - Harappa is known as the city of granaries.
  - **The civilization was first identified in 1921 at Harappa (Punjab) and then in 1922 at Mohenjodaro (Sindh, Pakistan)**.
- Major findings in Kot Diji (Pakistan) of Harappan site are a tar, statues of bull and mother goddess.

- Major findings of Mohenjodaro are the Great bath, Great granary, Assembly hall, Steatite image of bearded man, and Seal of Pashupati.

Que. 26 The cost of an article is Rs. 500 and on selling it, the shopkeeper got 6.4% profit. Find the selling price of article.

1. Rs. 522
2. Rs. 532
3. Rs. 544
4. Rs. 514

Solution Given: Correct Option **- 2**

Cost price of article = Rs. 500

Profit% = 6.4%

Formula used:

SP = CP × [(100 + Profit%)/100]

Calculation:

Selling price = Rs. 500 × [(100 + 6.4)/100]

⇒ Rs. 500 × (106.4/100)

⇒ Rs. 532

∴ **The selling price of article is Rs. 532**

Que. 27 Eight friends A, B, C, D, E, F, G and H are sitting in a straight line, all facing the North. F is sitting between D and G. B is sitting between H and A. E is third to the left of G, who is sitting at one of the corners. H is third to the left of C. Who is sitting between A and E?

1. B
2. G
3. H
4. C

Solution Correct Option **- 4**

Eight friends A, B, C, D, E, F, G, and H are sitting in a straight line facing North.

I) E is third to the left of G, who is sitting at one of the corners (According to this statement G is sitting at the right corner because E is sitting left side of G).

II) F is sitting between D and G.

III) H is third to the left of C (This statement implies that H is at the corner).

IV) B is sitting between H and A.

According to the arrangement, C is sitting between A and E.

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

Que. 28 Marsh gas is :

1. Methane
2. Sulphur dioxide
3. Nitrogen
4. Carbon monoxide

Solution Correct Option **- 1**
The principal component of marsh gas is methane. It is generated by decaying of matter in marshes. Also know as swamp gas or bio gas.

Que. 29 What is the rank of India according to the World Bank's Human Capital Index 2020 released in September 2020?

1. 116
2. 115
3. 114
4. 113

Solution Correct Option **- 1**
The correct answer is **116.**

- The **World Bank** released the annual **Human Capital Index** on September 17, 2020.
- This report presents an update to the **Human Capital Index (HCI)**, using the most recent **health and education data** available as of 2020. It documents examples of success, and new analytical work on the utilization of **human capital, as well as a primer on the COVID-19** (coronavirus) **pandemic** and its potential **impact** on human capital.
- The **HCI 2020** includes data of children for **174 countries up to March 2020**. This includes **98% of the global population.**
- Performance of **India** and other highlights:
  - **India** ranked **116 out of 174 countries** with a score of **0.49.** Last year, India ranked **115 out of 157** countries with a score of **0.44.**
  - It is interesting to note that **India performed better than Afghanistan** (0.40), **Pakistan** (0.41), **Bangladesh** (0.46), and **Bhutan** (0.48) but performed worse than **Nepal** (0.50), **Sri Lanka** (0.60), and **China** (0.65).
  - The **top-ranking** country in the list is **Singapore** with a score of 0.88, **followed by Hong Kong** (0.81) and **Japan** (0.80).
  - Among the **worst scorers** were the **Central African Republic** (0.29), **Chad** (0.30), and **South Sudan** (0.31).
- Basic Information about the **World Bank:**
  - **Founded: 1944.**
  - **Headquarter: Washington, DC, US.**
  - **Key People: David R. Malpass (President).**
  - Member Countries: 189

Que. 30 A conical vessel has radius 4 cm, and its curved surface area is 20π cm^2. Find the volume of conical vessel?

1. 16π cm^3
2. 14π cm^3
3. 26π cm^3

4. $64\pi/3$ cm^3

Solution Correct Option **- 1 Given:**

Radius = 4 cm

CSA = 20π cm^2

Formula used:

CSA of cone = $\pi \times r \times l$ where, $l \rightarrow$ slant height

Volume of cone = $1/3 \times \pi r^2 h$

Calculation:

CSA = 20π cm^2

$\Rightarrow \pi \times r \times l = 20\pi$

$\Rightarrow 4 \times l = 20$

$\Rightarrow l = 5$ cm

So, h = 3 cm [Using pythagorian triplet]

Volume = $1/3 \times \pi r^2 h$

$\Rightarrow$ Volume = $1/3 \times \pi \times 4 \times 4 \times 3$

$\Rightarrow$ Volume = 16π cm^3

$\therefore$ **Volume of cone is 16π cm^3.**

Que. 31 P, Q, R, S, T, and U are six singers. U is a better singer than S. R cannot sing better than S. Q is a better singer than T. S is a better singer than P. Q cannot sing better than R or P. Who among these six is the worst singer?

1. P
2. R
3. Q
4. T

Solution Correct Option **- 4**

According to the given information,

1) U is a better dancer than S and S is a better singer than P

U > S > P

2) R cannot sing better than S and Q cannot sing better than R or P.

U > S > P > R > Q

3) Q is a better singer than T.

U > S > P > R > Q > T

Final arrangement: **U > S > P > R > Q > T**

According to final arrangement,

Worst singer among all is **T**.

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

Que. 32 Locomotion in_____takes place with the help of a muscular foot.

1. snails

2. jellyfish
3. sea urchins
4. earthworms

Solution Correct Option **- 1**
The correct answer is **Snails.**

Key-Points

- The snail is a very **slow-moving animal.**
- Like an **earthworm**, a snail too has a **liquid skeleton.**
- Snails have a **shell**, inside which they can hide to protect themselves from the heat of the sun and enemies.
- The shell is the **outer skeleton**, but it is **not made of bones**.
- For movement, **a thick structure and the head of the snail** come out of an opening in the shell.
- The thick structure is its **foot**, made of **strong muscles.**
- The **muscular foot produces wave-like movements** that push the **snail's body forward.**
- A **trail of mucous** is left behind when the snail crawls.

Additional Information

Jellyfish	Jellyfish are animals of the phylum Cnidaria. They have no brain, heart, bones or eyes. They are made up of a smooth, bag-like body and tentacles armed with tiny, stinging cells.
Sea urchins	Sea urchins are the Class Echinoidea of the Phylum Echinodermata. These creatures are typically small, spiny, and round. They live in all the earth's oceans, at depths ranging from the tide line to 15,000 feet.
Earthworms	Earthworms are classified in the phylum Annelida or Annelids. They are the main contributors to enriching and improving soil for plants, animals and even humans.

Que. 33 Pradhan Mantri Jan-Dhan Yojana is related to_____.

1. Poverty removal
2. Financial Service
3. Rural Development
4. Housing for the poor

Solution Correct Option **- 2**

- Pradhan Mantri Jan-Dhan Yojana is related to Financial Service.
- It was launched by Prime Minister of India, Narendra Modi on 28 August 2014.
- It helps to access the Financial Services such as bank accounts, payments, credit, insurance and pensions.
- The Bank account open under this scheme does not necessitate minimum balance.

Que. 34 The length of a train is 500 m and it is running at the speed of 216 km/hr. Find the time taken by train to cross a platform if the length of platform is 1300 m.

1. 25 seconds
2. 27 seconds
3. 33 seconds
4. 30 seconds

Solution Correct Option **- 4 Given:**

Length of train = 500 m

Length of platform = 1300 m

Speed of train = 216 km/hr = 216 × (5/18) m/s

⇒ 60 m/s

Formula used:

Time taken = Total distance to be covered/Speed of train

Calculation:

Total distance to be covered = (500 + 1300) m

⇒ 1800 m

Time taken to cross the platform = 1800/60 seconds

⇒ 30 seconds

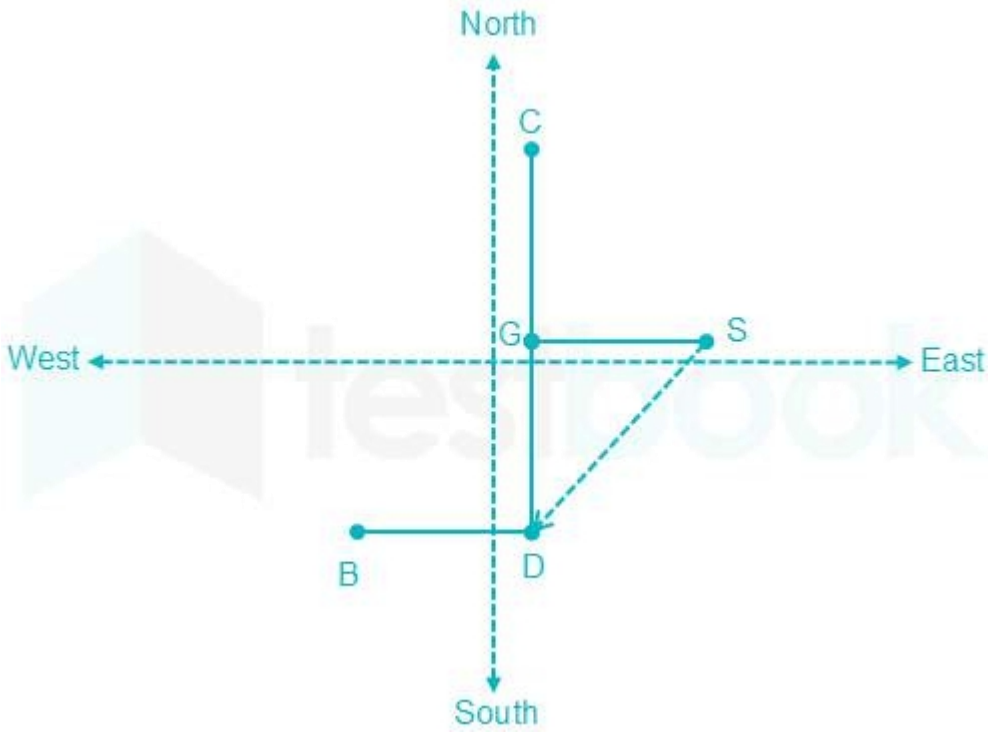
∴ **The time taken to cross the platform is 30 seconds**

Que. 35 B is in the West of D which is in the South of G. If S is in the East of G which is in the South of C. In which direction is D with reference to S?

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

Solution Correct Option **- 3**

According to the given information,



Hence, D is to the **"South-West"** of S.

Que. 36 Name the physicist who is credited with the discovery of the Neutron. This 1932 discovery led to his winning the Nobel Prize.

1. J.S. Fleming
2. Enrico Fermi
3. Max Plank
4. James Chadwick

Solution Correct Option **- 4**
The correct answer is option **4**: **James Chadwick** is accredited with the discovery of Neutron.

- James Chadwick had discovered some new neutral particles **in 1930** which were emitted out by the Beryllium nucleus after it was bombarded by alpha particles.
- Research was carried on and finally, the new neutral particle was **confirmed in 1932**.

Neutron:

- It is a constituent particle of the nucleus.
- It is a **neutra**l particle i.e. it carries no charge.
- **Symbol:** 'n' or ${}_0n^1$.

Scientist	Life/discoveries/achievements
J.S. Fleming 1.	• English Physicist. • Student of JC Maxwell. • Invented **Vacuum Tubes**. • Gave **right-hand rule**.
2Enrico 3.Fermi	• Italian American Physicist.

Que. 37 Who is the Union Minister of State for Social Justice and Empowerment ?

Thawar Chand Gehlot
Vijay Sampla
Krishan Pal Gurjar

4.	Established statistical laws nowadays known as **Fermi-Dirac Statistics**. Particles obeying F-D statistics are known as **Fermions** after the name of Enrico Fermi. Won Nobel Prize in 1938 for his research in radioactivity and Nuclear reactions.
1. 2. Max 3. Plank 4.	Gave **Quantum Theory of Modern Physics**. Received Nobel Prize in 1918 for his contribution to the study of **Blackbody Radiation**.
James Chadwick	British physicist. Student of Ernest Rutherford. Known for **discovery of Neutron**. Was given Nobel Prize in 1935.

Average speed when the distance is same = 2xy(x + y)

Where, x = Speed while going

y = Speed while returning

Calculation:

Speed while returning = 50 × [(100 – 40)/100] km/hr

⇒ 50 × (60/100) km/hr

⇒ 30 km/hr

Now, average speed = (2 × 50 × 30)/(50 + 30) km/hr

⇒ (100 × 30)/80 km/hr

⇒ 37.5 km/hr

∴ **The average speed of whole journey is 37.5 km/hr**

Sanjeev Kumar Balyan

Solution Correct Option **- 1**

Thanwarchand Gehlot is the Union Minister of State for Social Justice and Empowerment.

Que. 38 Speed of ram while travelling from point A to point B is 50 km/hr and while returning he decreased his speed by 40%. Find his average speed of whole journey.

33.33 km/hr

35.75 km/hr

42.55 km/hr

37.5 km/hr

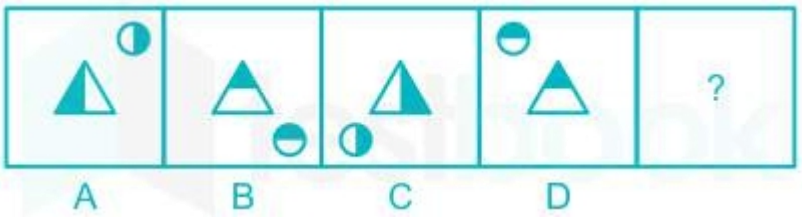
Solution Correct Option **- 4 Given:**

Speed of Ram while travelling from point A to point B = 50 km/hr

Speed decreased by 40% while returning

Formula used:

Que. 39 Select the figure that will come next in the following series.



1.

2. 
3. 
4. 

Solution Correct Option **- 1**

The triangle figure is being coloured vertically (Left → right) alternate and horizontally at alternate steps.

The circle figure is shifted to the next step in clockwise direction and is being coloured vertically and horizontally at alternate steps.

Hence, “option 1” is the correct answer.

Que. 40 Zero hardness of water is achieved by

1. using lime soda process
2. excess lime treatment
3. ion exchange method
4. using excess alum dosage

Solution <u>Concept:</u> Correct Option **- 3**

Water softening: It is the process of hardness removal from the water. It is caused by multivalent cation and affects water quality.

Lime soda method: It is a water softening method in which lime and soda ash are added to the water, which causes the precipitation of multivalent cation as $CaCO_3$.

Precipitation of $CaCO_3$ occurs only when the **pH of water is greater than 9**, so in case of less pH alkalinity is added to the water. In this process small amount of Ca^{2+} and Mg^{2+} precipitates very late, which will create incrustation in the pipe, so to avoid this recarbonation is done to dissolve back this small amount of cation.

Due to this, the method does not give zero hardness.

Ion Exchange Process: Ion-exchange resin, (zeolite) exchanges one ion from the water being treated for another ion that is in the resin (sodium is one component of softening salt, with chlorine being the other). Zeolite resin exchanges sodium for calcium and magnesium. **It can produce water with zero hardness.**

Que. 41 The full form of DRDO is:-

1. Development Research and Defence Organisation
2. Defence Research and Development Organisation

3. Defence Research Dynamic Organisation
4. Drone Research Defence Organisation

Solution Correct Option **- 2**

Defence Research and Development Organisation (DRDO):

- DRDO was formed in **1958** from the amalgamation of the then already functioning Technical Development Establishment (TDEs) of the Indian Army and the Directorate of Technical Development & Production (DTDP) with the Defence Science Organisation (DSO).
- DRDO is the R&D wing of Ministry of Defence, Govt of India, with a vision to empower India with cutting-edge defence technologies.
- The vision is empowering the nation with state-of-the-art indigenous Defence technologies and systems.
- DRDO is a network of more than 50 laboratories which are deeply engaged in developing defence technologies covering various disciplines, like aeronautics, armaments, electronics, combat vehicles, engineering systems, instrumentation, missiles, advanced computing and simulation, special materials, naval systems, life sciences, training, information systems and agriculture.
- DRDO's pursuit of self-reliance and successful indigenous development and production of strategic systems and platforms such as Agni and Prithvi series of missiles; light combat aircraft, Tejas; multi-barrel rocket launcher, Pinaka; air defence system, Akash; a wide range of radars and electronic warfare systems; etc., have given quantum jump to India's military might, generating effective deterrence and providing crucial leverage.

The mission of DRDO:

- Design, develop and lead to the production of state-of-the-art sensors, weapon systems, platforms and allied equipment for our Defence Services.
- Provide technological solutions to the Services to optimise combat effectiveness and to promote the well-being of the troops.
- Develop infrastructure and committed quality manpower and build strong indigenous technology base.

Que. 42 A man distributed his whole money between his three daughters Sakshi, Priya and Suhani in the ratio of 7 : 11 : 9 respectively. If the total amount the man had was Rs. 8910, then find the difference between the share of Priya and Suhani.

1. Rs. 550
2. Rs. 630
3. Rs. 660
4. Rs. 690

Solution Given: Correct Option **- 3**

Total amount the man had = Rs. 8910

Ratio of shares between his three daughters Sakshi, Priya and Suhani = 7 : 11 : 9

Calculation:

Let the share of Sakshi, Priya and Suhani be 7x, 11x and 9x respectively

Total share of 3 daughters = (7x + 11x + 9x)

⇒ 27x

Now, difference between share of Priya and Suhani = 11x – 9x

⇒ 2x

Now, according to question

27x = Rs. 8910

⇒ 2x = (8910/27x) × 2x

⇒ Rs. (330 × 2)

⇒ Rs. 660

∴ **The difference between share of Priya and Suhani is Rs. 660**

Que. 43 Select the pair of odd numbers from the given alternatives.

1. 94
2. 63
3. 35
4. 52

Solution Correct Option **- 3**

The pattern followed is:

94 → reverse 49 → 7^2

63 → reverse 36 → 6^2

35 → reverse 53 → no square

52 → reverse 25 → 5^2

Hence, the correct answer is 35.

Que. 44 Which of the following city is known as Pittsburgh of India?

1. Delhi
2. Ahmedabad
3. Jamshedpur
4. Bangalore

Solution Correct Option **- 3**

- **Jamshedpur** is known as Pittsburgh of India
- **Pittsburgh** is an important steel city of the **United States of America**, and Jamshedpur is an important steel city of India.
- TISCO was started in **1907 at Sakchi(renamed as Jamshedpur).**
- **Ahmedabad** is referred to as the 'Manchester of India' earlier Kanpur known as Manchester of India.
- **Bangalore** is referred to as the **Silicon Valley of India.**
- **Silicon Valley** is in Central California, famous for the Information technology industry.

Que. 45 If the total surface area of a cube is 1944 m^2, then what is the volume of cube?

1. 4986 m^3
2. 5832 m^3
3. 5684 m^3
4. 4864 m^3

Solution Given: Correct Option **- 2**

Total surface are of cube = 1944 cm^2

Formula used:

TSA of cube = $6 \times \text{edge}^2$

Volume of cube = edge^3

Calculation:

Let the edge of cube be x m.

TSA of cube = $6 \times \text{edge}^2$

$\Rightarrow 1944 = 6x^2$

$\Rightarrow x^2 = 324$

$\Rightarrow x = \sqrt{324}$

$\Rightarrow x = 18$ m

Volume of cube = edge^3

$\Rightarrow$ Volume = x^3

$\Rightarrow$ Volume = 18^3

$\Rightarrow$ Volume = 5832 m^3

$\therefore$ **The volume of cube is 5832 m^3**.

Que. 46 How many cases do you need if you have to pack 116 pairs of shoes into cases such that each hold 58 shoes?

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

Solution Correct Option **- 1**

116 pairs of shoes = 232 shoes

232 ÷ 58 = 4 cases will be needed.

Hence, the answer is 4.

Que. 47 The World Food Program (WFP) is the food assistance branch of the United Nations. Where is it headquartered?

1. Brussels
2. Paris
3. Rome
4. New York

Solution Correct Option **- 3**

Option 3 is the correct answer:

- World Food Programme is a **branch of the United Nations and is based in Rome, Italy**.
- It was established in **1961** and aims at eradicating world hunger aiding people with food assistance during a humanitarian crisis.
- It is a **member of the United Nations Development Programme**.
- **Structure:**
  - It is governed by **representatives from 36 member states of the UN or FAO**.
  - **David Beasley is the current executive director** of WFP and heads it.
  - In addition ...rs.

- It works in partnership with various Governments, NGOs and private entities.

City/ Country	Organisation headquartered there
Brussels	• North Atlantic Treaty Organisation (NATO).
Paris	• United Nations Educational, Scientific and Cultural Organisation (UNESCO). • Organization for Economic Cooperation and Development (OECD). • International Council on Monuments and Sites (ICOMOS). • International Chamber of Commerce.
Rome	• Food and Agricultural Organisation (FAO). • World Food Programme (WFP).
New York	• UNO. • UN Children's Fund (UNICEF). UN Population Fund (UNFPA). UN Women.

Que. 48 The inner and outer diameter of a ring is 14 cm and 28 cm respectively. What is the area of ring?

1. 528 cm^2
2. 484 cm^2
3. 462 cm^2
4. 506 cm^2

Solution Given: Correct Option **- 3**

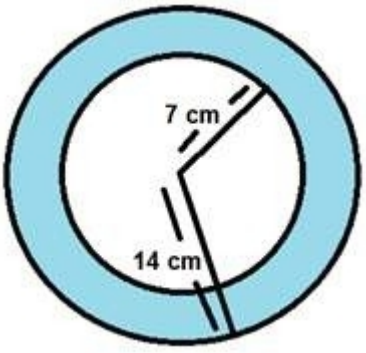
Inner diameter = 14 cm

Outer diameter = 28 cm

Formula used:

Area of ring = $\pi(R^2 - r^2)$, where R → Outer radius, r → Inner radius

Calculation:



Inner radius, r = 14/2

⇒ r = 7 cm

Outer radius, R = 28/2

⇒ R = 14 cm

Area of ring = $\pi(R^2 - r^2)$

⇒ Area = $22/7 \times (14^2 - 7^2)$

⇒ Area = $22/7 \times (196 - 49)$

⇒ Area = $22/7 \times 147$

⇒ Area = 22×21

⇒ Area = 462 cm^2

∴ **The area of ring is 462 cm^2.**

Que. 49 Consider the given statement and decide which of the given assumptions is (are) implicit in the statement.

Statement: Maya passed away 4 years ago.

Assumptions:

I: Maya met with an accident 4 years ago.

II: Maya died on 12^{th} Jan.

1. Only assumption I is implicit
2. Only assumption II is implicit
3. Neither I or II are implicit
4. Both I and II are implicit

Solution Correct Option **- 3**

From this information, we cannot assume the reason of Maya's death.
Therefore, assumption I is not implicit.

Similarly, we cannot assume the date on which she died from the above information.
Therefore, assumption II is also not implicit.

Hence, Neither I or II are implicit.

Que. 50 Which Mughal Emperor built the Agra Fort?

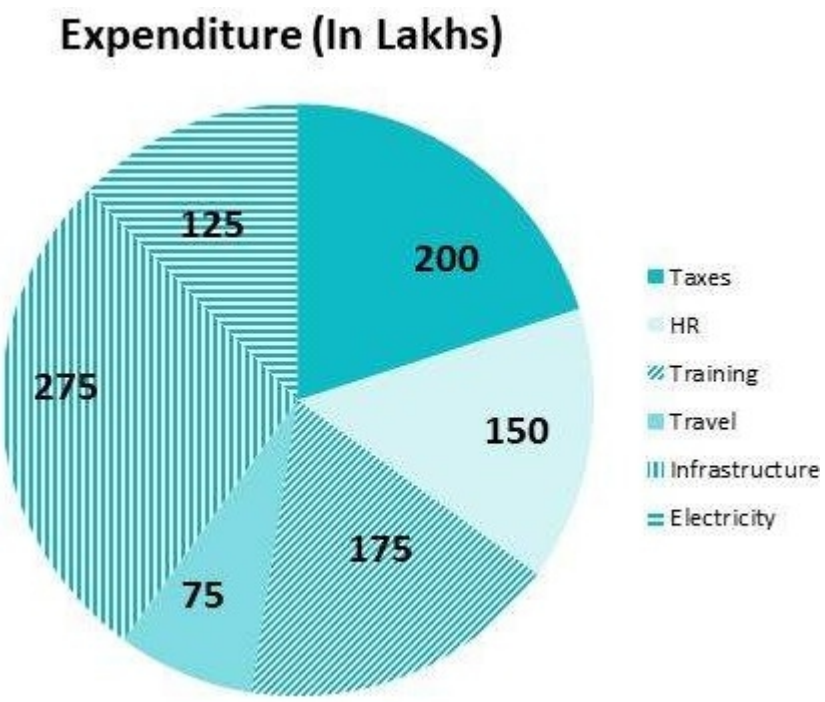
1. Jahangir
2. Akbar
3. Aurangzeb

4. Shahjahan

Solution Correct Option **- 2**
The Correct Answer is <u>Option 2</u> i.e Akbar.

Jahangir (1605-1627 AD)	• **Captain Hawkins and Sir Thomas Roe visited his court** • **Executed Sikh fifth Guru, Guru Arjun Dev.** • Begum Shahi Mosque (Lahore) • Shalimar Bagh (Srinagar)
Akbar (1556-1605)	• He promulgated a new religion "Din – i – Ilahi". • **Founded city Fatehpur Sikri** • Buland Darwaza (Fatehpur Sikri Fort) • Salim Chisti's Tomb (Fatehpur Sikri Fort) • Introduced Mansabdari system • **Agra Fort**
Aurangzeb (1658-1707)	• **Executed ninth Sikh Guru, Guru Tegh Bhadur.** • Pinjore Garden (Lahore)
Shahjahan (1627-1658)	• Built Moti Masjid (Agra) • Taj Mahal at Agra • **Jama Masjid (Delhi)** • Red Fort (Delhi) •

Que. 51 The pie chart shows the expenditure of a company for the year 2020. Study the diagram and answer the following questions. (All expenditures are in Lakhs)



The expenditure of Infrastructure and Electricity is what percent of the total expenditure?

1. 30%
2. 40%
3. 35%
4. 47.5%

Solution Given: Correct Option **- 2**

Total expenditure of company(in lakhs)

Taxes = 200, HR = 150, Training = 175, Travel = 75, Infrastructure = 275, Electricity = 125

Formula used:

Percentage = (Part value/Original value) × 100

Calculation:

Total expenditure

⇒ 200 + 150 + 175 + 75 + 275 + 125

⇒ 1000

Infrastructure and Electricity expenditure

⇒ 275 + 125

⇒ 400

Percentage of total expenditure

⇒ (400/1000) × 100

⇒ 40%

∴ The percent value is 40%.

Que. 52

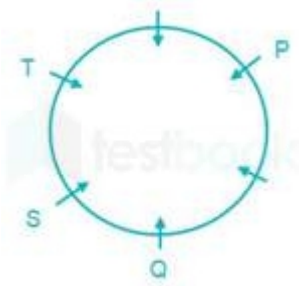
Six family members P, Q, R, S, T and U are sitting around a circular table facing towards the centre and at equal distance from each other (not necessarily in the same order). Q is to the immediate right of S. P and S are facing towards each other. T is not the neighbour of P. R is to the immediate right of P.
Who are the neighbours of U?

1. R and Q
2. Q and P
3. P and R
4. S and T

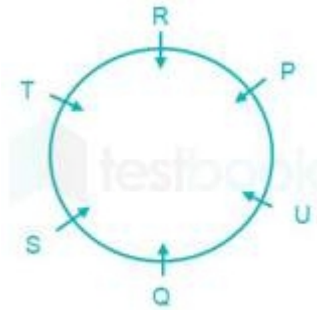
Solution Correct Option **- 2**
Q is to the immediate right of S.

P and S are facing towards each other.

T is not the neighbour of P.



R is to the immediate right of P.



Hence, Q and P are the neighbours of U

Que. 53 Indica was written by:

1. Strabo
2. Megasthenes
3. Justin
4. Pliny

Solution Correct Option **- 2**
The correct answer is **Megasthenes.**

- **Indica** is a book on Mauryan India.
- It provides details about the Mauryan administration & military organization in the Indian subcontinent.
- **It was written by Megasthenes.**
  - Megasthenes was the Greek ambassador of **Seleucus Nikator.**
  - He visited India during the reign of **Chandragupta Maurya.**
- The book 'Indica' is now lost but has been partially reconstructed from literary fragments found in later authors.
- Scottish classical philologist **John Watson McCrindle** published a reconstructed version of Indica in 1887.
- **Strabo** was a Greek philosopher who lived in Asia Minor during the transitional period of the Roman Republic into the Roman Empire.
  - Geographica is a famous book written by Strabo.
- **Pliny** was an author of Ancient Rome.
  - He is better known as Pliny the Younger

Que. 54 If Jaya and Shushma together can complete a given task together in 40 days, if Jaya left the job after working for 15 days, and the remaining job was done by Shushma in 40 days, then in how many days Shushma can complete the whole work alone?

1. 64 days
2. 72 days
3. 80 days
4. 56 days

Solution Given: Correct Option **- 1**

Jaya and Shushma can complete the work together in 40 days

Jaya worked for 15 days with Sushma and left afterward

The remaining work is done by Shushma in 40 days

Concept used

If a person does the work in x days then work done by the person in 1 day = 1/x of total work.

Calculation:

Work completed by Jaya and Shushma together in 1 day = 1/40

Work completed by them in 15 days = 15/40 = 3/8

Remaining work = 1 – 3/8 = 5/8

According to the question, Shushma can complete 5/8 work in 40 days

⇒ Shushma can complete 1 work in 40 × 8/5 = 64 days

∴ **Shushma can complete the whole work alone in 64 days**

Que. 55 Select the related letters from the given alternatives.

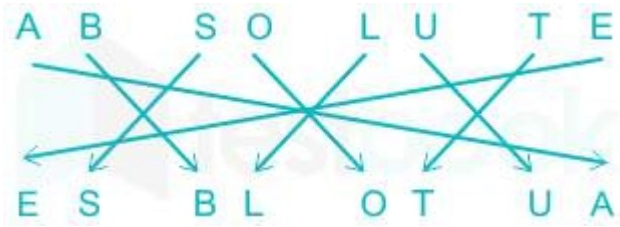
ABSOLUTE : ESBLOTUA :: CALENDER : ?

1. LARNEEDC
2. RLANEEDC
3. RLEANDCE
4. ERNEADCL

Solution Correct Option **- 2**

The logic is as,

ABSOLUTE : ESBLOTUA



Similarly,

CALENDER : ?

Hence, **CALENDER : RLANEEDC**.

Que. 56 Which of the following states has the lowest density of population according to census 2011?

1. Arunachal Pradesh
2. Nagaland
3. Mizoram
4. Manipur

Solution Correct Option **- 1**

The Correct Answer is **Arunachal Pradesh**.

- **The state with the lowest population density is Arunachal Pradesh** and **the Union Territories with the lowest population density is Andaman and Nicobar Islands.**
- The population density of Arunachal Pradesh according to census 2011 is 17.
- India's 2011 population density record reveals that the 2011 density has risen from 324 to 382 per square kilometre.
- Bihar is the most heavily populated state (1106 inhabitants per square kilometre) followed by West Bengal-1028 and Kerala 860.
- Population growth rose from 2001 to 2011, at a rate of 17.54.

Important Point

- The Population density of Nagaland is 119.
- The Population density of Mizoram is 52.
- The Population density of Manipur is 115.

Que. 57 If A, B, and C can do a piece of work in 15, 30, and 60 days respectively. In how many days together they will do the same work?

1. 10 days
2. 12 days
3. 60/11 days
4. 60/7 days

Solution Given: Correct Option **- 4**

A can do the work in 15 days

B can do the work in 30 days

C can do the work in 60 days

Concept used:

If a person does the work in x days then work done by the person in 1 day = 1/x of total work.

Calculation:

Part of work done by A in a day = 1/15

Part of work done by B in a day = 1/30

Part of work done by C in a day = 1/60

Together they will do 1/15 + 1/30 + 1/60 of the total work in a day

Together they will do 7/60 of the total work in a day

Time taken to do the work = 1/(7/60)

⇒ Time taken to do the work = 60/7

∴ **Together they will do the work in 60/7 days**

Que. 58 In certain code language if Pink is called Blue, Blue is called red, Red is called White and White is called Yellow, Then what is the color of Milk?

1. Blue
2. Pink
3. White
4. Yellow

Solution Correct Option **- 4**

Color of Milk is White and here White is called Yellow. Therefore color of Milk is Yellow.

Hence, **color of Milk is Yellow.**

Que. 59 Who among the following is considered the Father of Geography?

1. Herodotus
2. Antoine Lavoisier
3. Adam Smith
4. Eratosthenes

Solution Correct Option **- 4**

- **Eratosthenes** is considered as **Father of Geography**.
- He was an ancient Greek Astronomer, Mathematician and Geographer.

- His most famous work was accurately calculating the circumference of the Earth.

Name	Considered as
Eratosthenes	**Father of Geography**
Adam Smith	Father of Modern Economics
Antoine Lavoisier	Father of Modern Chemistry
Herodotus	Father of History

Que. 60 The pie chart shows the expenditure of a company for the year 2020. Study the diagram and answer the following questions. (All expenditures are in Lakhs)

Find the difference of sum of expenditure of Taxes, HR, and Training to the sum of expenditure of Travel, infrastructure, and Electricity.

1. 650,00,000
2. 150,00,000
3. 50,00,000
4. 75,00,000

Solution Given: Correct Option **- 3**

Total expenditure of company(in lakhs)

Taxes = 200, HR = 150, Training = 175, Travel = 75, Infrastructure = 275, Electricity = 125

Calculation:

Total expenditure of Taxes, HR, and Training

⇒ 200 + 150 + 175

⇒ 525

Total expenditure of Travel, Infrastructure and Electricity

⇒ 75 + 275 + 125

⇒ 475

Difference of expenditures

⇒ 525 - 475

⇒ 50

All expenditures are in lakhs

⇒ 50 × 100000

⇒ 50,00,000

∴ **Difference of expenditures is 50,00,000.**

Que. 61 In a certain language "AHMEDABAD" is coded as "KDHPGEDGD" then how "HYDERABAD" is coded in that language?

1. BKHGUEDGD
2. KHGUEDGDB
3. BKHUEDGDG
4. KHGUEDBGD

Solution Correct Option **- 1**

The logic is as follows,

Similarly,

Hence, HYDERABAD is coded as **BKHGUEDGD.**

Que. 62 What is the full form of NITI?

1. National Internal Trade Information
2. National Institution for Transforming India
3. National Integrated Treaty Institute

4. National Intellectual Training Institute

Solution Correct Option **- 2**

The correct answer is **'National Institution for Transforming India'**.

Key-Points

- In 2015, NITI Ayog replaced the old Planning commission of India.
- Prime Minister is the chairperson of NITI Ayog and it has Regional and Governing Councils.
- The composition of NITI Ayog has the following components-

1. **Governing Council** - CMs and Lt Governors
2. **Regional Councils**- Formed on a need basis
3. **Members**- the full-time basis
4. **Part-time** basis- Maximum 2
5. **Ex Officio member**s- Maximum 4 from Council of Ministers, nominated by PM
6. **Special Invitees**-Expert, specialists, practitioners with domain knowledge
7. **Chief Executive Officer-** Appointed by PM for a fixed tenure
8. **Secretariat-** as deemed necessary

Que. 63 The expenditure of Electricity and the Training in 2020 is decreased by 40% from previous year expenditure of Electricity and the Training expenditures. Find the expenditure of Electricity and the training in 2019.

1. 400,00,000
2. 300,00,000
3. 500,00,000
4. 550,00,000

Solution Given: Correct Option **- 3**

Expenditure of company in 2020(in lakhs)

Training = 175, Electricity = 125

Formula used:

Percentage = (Part value/Original value) × 100

Calculation:

Let the expenditure is 2019 be 'P'

Expenditure in 2020

⇒ 175 + 125

⇒ 300

Expenditure in 2020 is decreased by 40%

⇒ P × (60/100) = 300

⇒ P = 500

Expenditures is in lakhs

⇒ P = 500 × 100000

⇒ P = 500,00,000

∴ The expenditure in 2019 is 500,00,000.

Que. 64 In a certain language "TABLE" is coded as "ABELT" then how "APPLE" is coded in that language?

1. AELPP
2. APPEL
3. PPLEA
4. LPPEA

Solution Correct Option **- 1**

The logic is as,

Letters of given words are arranged in alphabetical order.

Therefore TABLE = ABELT

Similarly,

APPLE = AELPP.

Hence, code for APPLE is **AELPP.**

Que. 65 Who is the Head of UNICEF?

1. Tedros Adhanom
2. Guy Ryder
3. Jose Graziano da Silva
4. Henrietta H. Fore

Solution Correct Option **- 4**

Henrietta H. Fore is the Head of UNICEF.

Head	Organizations
Henrietta H. Fore	UNICEF (United Nations International Children's Emergency Fund)
Tedros Adhanom	WHO (World Health Organization)
Guy Ryder	ILO (International Labour Organization)
Jose Graziano da Silva	FAO (Food and Agriculture Organization)

Que. 66 Find the average expenditure of Taxes, Infrastructure, and the Electricity of company.

1. 200,00,000
2. 300,00,000
3. 250,00,000
4. 150,00,000

Solution Given: Correct Option **- 1**

Expenditure of company(in lakhs)

Taxes = 200, Infrastructure = 275, Electricity = 125

Formula used:

Average = (Sum of values)/Number of values

Calculation:

Expenditure of company

⇒ 200 + 275 + 125

⇒ 600

Average of Taxes, Infrastructure, and Electricity expenditure

⇒ 600/3

⇒ 200

All expenditures are in lakhs

⇒ 200 × 100000

⇒ 200,00,000

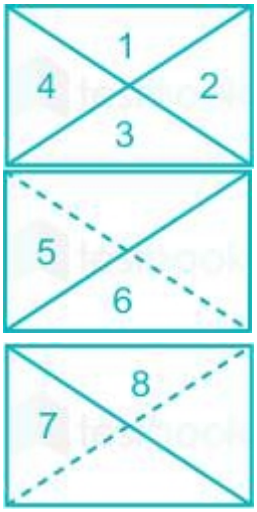
∴ **Average of Taxes, Infrastructure, and Electricity expenditure is 200,00,000.**

Que. 67 How many triangles in the following figure?

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

Solution Correct Option **- 3**

Number of triangles are,



Hence, number of triangles in the figure is **8.**

Que. 68 Which one of the following scientists has won Nobel Prize twice and Played important role in discovering radioactivity?

1. Fredrick Soddy

2. Piere Curie
3. Henri Becquerel
4. Marie Curie

Solution Correct Option **- 4**
Option **4** is correct, i.e. **Marie Curie.**

- **Marie Curie in 1903 was awarded half of the Nobel Prize for Physics for her study into the spontaneous radiation** discovered by Becquerel, who was awarded the other half of the Prize. In 1911, she was awarded her second Nobel Prize, in Chemistry, as a recognition of her work in radioactivity.
- **Henri Becquerel** (1852-1908) observed that there are certain elements that emit radiation on their own and named this phenomenon as radioactivity and the elements known as radioactive elements.
- This field was developed by Marie Curie, Piere Curie, Rutherford, and Fredrick Soddy.
- It was observed that three kinds of rays i.e., α, β- and γ-rays are emitted.
- For this property, spontaneous radiation happens in an unstable high atomic number element; for example:- Uranium, Polonium, etc.
- The SI unit of Radioactivity is **Becquerel(Bq)** and another unit of it is **Curie(Ci)**.
- 1 Becquerel is equal to 1 decay per second.

Note:

- **Rutherford** found that **α-rays** consists of high-energy particles carrying two units of positive charge and four-unit of atomic mass.
- He concluded that α- particles are **helium nuclei** as when α- particles combined with two electrons yielded helium gas.
- Beta rays(**β-rays**) are negatively charged particles similar to electrons.
- Gamma rays(**γ-rays**) are high-energy radiations like X-rays, are neutral in nature, and do not consist of particles.

Que. 69 If the average age of group of 5 students is 15. One new student joined the group, then average is increased by 1. Find the age of new student.

1. 16
2. 15
3. 21
4. 20

Solution Given: Correct Option **- 3**

Average age of 5 students = 15

The average increase by 1 when one new student join the group

Formula used:

Sum of ages = Average × Number of persons

Calculation:

Sum of ages of 5 students = (15 × 5) years

⇒ 75 years

New average after a new student joined the group = (15 + 1)

⇒ 16

Sum of ages of 6 students including new joinee = (16 × 6) years

⇒ 96 years

Age of new student = (96 – 75) years

⇒ 21 years

∴ **The age of new student is 21 years**

Que. 70 Select the missing number from the given series.

1, 8, 27, 64, ?

1. 64
2. 125
3. 90
4. 56

Solution Correct Option **- 2**

The logic is as follows,

$1^2 = 1$

$2^3 = 8$

$3^3 = 27$

$4^3 = 64$

$5^3 =$ **125**

Hence, the missing term is **125**.

Que. 71 The deficiency of which vitamin leads to Xerophthalmia?

1. Vitamin - A
2. Vitamin - D
3. Vitamin - E
4. Vitamin - K

Solution Correct Option **- 1**

The correct answer is **1** i.e. **Vitamin - A.**

Explanation:

- **Vitamin:** They are the compounds essential for the **metabolic activities of our body** but in very small quantities.
- These **do not provide energy** but control energy-yielding **reactions of our body.**
- The term 'vitamin' was coined by **Casimir Flunk.**
- Based on solubility vitamins are of two types:
  - **Fat-soluble vitamin:** Vitamin A, D, E, and K.
  - **Water-soluble vitamin:** Vitamin B complex and C.
- Our body can **synthesize** vitamin - D and K.

Vitamins	Their importance
Vitamin-A	◦ **Steenbock (1919)** discovered the vitamin-A and **Karrear (1931)** determined the structure of vitamin-A.

	◦ It is also called as the **anti-infective vitamin.** ◦ It is necessary for healthy **eyesight (normal vision).** ◦ It is destroyed by **strong light.** ◦ The main sources are yellow or green leafy vegetables, carrot, papaya, ripe, mango, milk, etc. ◦ Deficiency causes **night blindness** (patient cannot see the object in dim light) and **xerophthalmia or keratomalacia** (dryness and wrinkles of the outer layer of the eyeball). ◦ Its other name is **Retinol.**
Vitamin-D	◦ It is called the **poor man's vitamin** and is a sterol derivative. ◦ Its formation takes place under the skin in the presence of sunlight that's why also called **sunshine vitamin or anti-racket vitamin.** It is needed for **strong bones and teeth,** helps in DNA synthesis, absorption of calcium and phosphorus. ◦ Some **main sources** are egg, milk, fish liver oil, etc. ◦ It affects the bones and causes **rickets and osteomalacia** in children and adults, respectively. ◦ Its other name is **Calciferol.**
Vitamin-E	◦ It is also known as **beauty or anti-sterility vitamin.** ◦ It acts as **an oxidant,** helpful in making RBSs and is necessary for normal functioning of the reproductive system in males and females both. ◦ The **most important sources** are vegetable oils, wheat, cottonseed, and animal food. ◦ It is also found in **green vegetables** like alfalfa

	lettuce i.e. salad etc. ○ Its deficiency destroys the **muscles** and causes abnormal functioning of the **reproductive system in males as well as women.** ○ Its other name is **Tocopherol.**
Vitamin-K	○ It was discovered by **Henrik Dam (1935).** ○ It is also called a **naphthoquinone** and is synthesized in the body by some bacteria. ○ It is a **coagulation vitamin,** that is why it helps in the clotting of blood. ○ The **main sources** are cauliflower, spinach, tomato, soybean, etc. ○ Its deficiency delays the clotting of blood and causes haemorrhage that is why also called an **anti-hemorrhagic vitamin.** Its other name is **Phylloquinone.**

Que. 72 If A + B = 90° and SinA = 3/5 fid the value of tanB

1. 3/4
2. 4/3
3. - 3/4
4. - 4/3

Solution Given: Correct Option **- 2**

A + B = 90° and SinA = 3/5

Concept Used:

Sinθ = Perpendicular/Hypotenuse

tanθ = Perpendicular/Base

$Hypotenuse^2 = Perpendicular^2 + Base^2$

tan(90° - θ) = cotθ

Calculation:

SinA = 3/5 = Perpendicular/Hypotenuse

⇒ Perpendicular = 3k and Hypotenuse = 5k [Where, k is a constant]

Base = $\sqrt{(Hypotenuse^2 - Perpendicular)}$

⇒ Base = $\sqrt{(5k)^2 - (3k)^2}$

⇒ Base = 4k

tanA = Perpendicular/Base

⇒ tanA = 3k/4k = 3/4

⇒ tan(90° - B) = 3/4

⇒ cotB = 3/4

⇒ tanB = 4/3

∴ **tanB = 4/3**

Que. 73 In the given series, one number is missing. Select the correct alternative from the given ones that will complete the series.

58, 29, 29, 43.5, ?, 217.5, 652.5

1. 87
2. 87.5
3. 88
4. 90

Solution Correct Option **- 1**

The logic is as follows,

58,

58 x 0.5 = 29

29 x 1 = 29

29 x 1.5 = 43.5

43.5 x 2 = **87**

87 x 2.5 = 217.5

217.5 x 3 = 652.5

Hence, missing term is **87**.

Que. 74 Who among the following is credited with the discovery of neutrons?

1. JJ Thomson
2. James P Joule
3. Ernest Rutherford
4. J Chadwick

Solution Correct Option **- 4**

The correct answer is **J. Chadwick.**

Key-Points

- In 1932, **J. Chadwick** discovered another subatomic particle and was named **neutron.**
- Neutrons are present in the nucleus of all atoms, except hydrogen.
- In general, a neutron is represented as ‘n'.

Important Point

- **J.J. Thomson** was the first one to propose a model for the structure of an atom.
- **The electron** was identified by J.J. Thomson.
- Ernest Rutherford postulated the nuclear structure of the atom.
- **Proton** was discovered by **Ernest Rutherford.**
- **Joule** studied the nature of heat and discovered its relationship to mechanical work.
- This led to the law of conservation of energy.

Que. 75 Find the value: $1 + \tan15°\tan75°$

1. $\sec^2 15°$
2. $\sec^2 75°$
3. 2
4. $1 + \frac{1+\sqrt{3}}{2}$

Solution Formula used: Correct Option **- 3**

$\tan\theta = \cot(90° - \theta)$

$\cot\theta = 1/\tan\theta$

Calculation:

$\tan75° = \cot(90° - 75°)$

$\Rightarrow \tan75° = \cot15°$

$\cot15° = 1/\tan15°$

We have to find the value of $1 + \tan15°\tan75°$

$\Rightarrow 1 + \tan15° \times \cot15°$

$\Rightarrow 1 + \tan15°/\tan15°$

$\Rightarrow 1 + 1 = 2$

∴ The value of the given expresison is 2

Que. 76 Select the related letters from the given alternatives.

PAL : RDP :: MRF : ?

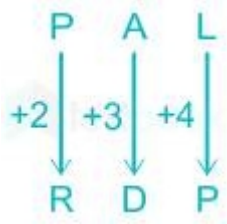
1. OUL
2. JKL
3. OUJ
4. PUJ

Solution Correct Option **- 3**

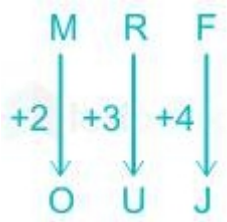
The logic is as follows,

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

PAL : RDP



MRF : ?



Hence, **MRF : OUJ.**

Que. 77 Hertz is the SI unit of_____.

1. Energy
2. Pressure
3. Frequency
4. Force

Solution Correct Option **- 3**

The correct answer is **Frequency**.

Concept:

Physical Quantity	About	SI Unit
Frequency	Number of occurrences of a repeating event per unit of time	**Hertz (Hz)**
Force	Any interaction which when unopposed will change the motion of an object	Newton (N)
Energy	Energy is defined as the ability to do work	Joule (J)
Pressure	The force applied is perpendicular to the surface of objects per unit area	Pascal (Pa)

Explanation:

From the above explanation, we can see that,

Hertz is the SI unit of frequency and it is represented by symbol Hz

Also 1 Hz = 1 sec^{-1}

Que. 78 The average of 5 consecutive odd number is 31. Find the square of largest number.

1. 1089
2. 1225
3. 729
4. 961

Solution Given: Correct Option **- 2**

The average of 5 consecutive odd number is 31

Formula used:

Average = (Sum of values)/number of values

Calculation:

Let the first number be 'x'

All five consecutive odd number is x, x + 2, x + 4, x + 6, x + 8

Sum of five consecutive odd number

⇒ x + x + 2 + x + 4 + x + 6 + x + 8

⇒ 5x + 20

Sum of values

⇒ 31 × 5

⇒ 155

⇒ 5x + 20 = 155

⇒ 5x = 135

⇒ x = 27

Largest number = x + 8

⇒ 27 + 8

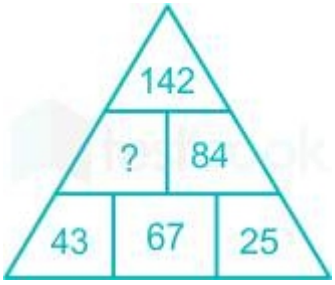
⇒ 35

Square of largest number = $(35)^2$

⇒ 1225

∴ **The Square of largest number is 1225.**

Que. 79 Find the missing number in the given figure?



1. 98
2. 99
3. 103
4. 45

Solution Correct Option **- 1**

The logic is as follows,

Second row:

$43 + (6 * 7) + (6 + 7) = 43 + 42 + 13 =$ **98**

$67 + (2 * 5) + (2 + 5) = 84$

Third row:

$98 + (8 * 4) + (8 + 4) = 98 + 32 + 12 = 142$.

Hence, missing number is **98.**

Que. 80 Which of the following ions are responsible for hardness of water?

1. Sodium and Magnesium ions
2. Sodium and Calcium ions
3. Potassium and Calcium ions
4. Calcium and Magnesium ions

Solution Correct Option **- 4**

The ions of **Calcium and Magnesium** are responsible for the hardness of water where the concentration of certain minerals is what creates the "hardness" of water.

- The hardness of water is developed due to the sufficiency of carbonates and Bi-Carbonates of Calcium and Magnesium.
- There are no serious adverse health problems associated with drinking hard water But, hard water can contribute to dry skin and hair.
- Generally, the hardness of water is measured by the means of TDS meter which measures the hardness on the basis of Electrical Conductivity of the Water.

Que. 81 If $a^3 + b^3 = 105$, and $(a + b) = 5$ then what is the value of ab?

1. 21
2. 4/3
3. 7
4. 3/4

Solution Given: Correct Option **- 2**

$a^3 + b^3 = 105$

$a + b = 5$

Identity used:

$a^3 + b^3 = (a + b) \times (a^2 + b^2 - ab)$

$(a + b)^2 = a^2 + b^2 + 2ab$

Calculation:

$a + b = 5$

Squaring both sides we'll get

$a^2 + b^2 + 2ab = 25$--------- (1)

We have

$a^3 + b^3 = 105$

$\Rightarrow (a + b) \times (a^2 + b^2 - ab) = 105$

z⇒ $5 \times (a^2 + b^2 - ab) = 105$

⇒ $a^2 + b^2 - ab = 21$--------- (2)

By subtracting (2) from (1) we'll get

$a^2 + b^2 + 2ab - (a^2 + b^2 - ab) = 25 - 21$

⇒ $3ab = 4$

⇒ $ab = 4/3$

∴ The value of ab is 4/3

Que. 82 A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

A, AE, AEE, AEEE, ?

1. AEEEE
2. AEEEEE
3. AEEA
4. AEAE

Solution Correct Option **- 1**

Here, in the given series,

A → 0 times E

AE → 1 times E

AEE → 2 times E

AEEE → 3 times E

AEEEE → 4 times E

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

Que. 83 Fill in the blank with the most appropriate option.

Quicklime reacts with water to form_____.

1. limestone
2. slaked lime
3. chloride of lime
4. chalk powder

Solution Correct Option **- 2**

- Quicklime (CaO) reacts with water to form slaked lime $\{Ca(OH)_2\}$.
- The addition of a limited amount of water to quick lime is called slacking of lime.
- When Calcium oxide is mixed with water it forms Calcium Hydroxide.
- The above reaction can be written as

⇒ $CaO + H_2O \rightarrow Ca(OH)_2$

- Calcium Hydroxide is used in the preparation of Mortar.

Common Name	Chemical formula/Compound name
Lime Stone	$CaCO_3$/Calcium Carbonate

Chloride of Lime	$Ca(OCl)_2$/Calcium Hypochlorite
Chalk Powder	$CaCO_3$/Calcium Carbonate

Que. 84 The ratio of present age of father and son is 5 : 2 and before 4 years their age ratio was 3 : 1. Then what will be their age ratio after 6 years?

1. 22 : 13
2. 23 : 11
3. 15 : 8
4. 19 : 13

Solution Given: Correct Option **- 2**

Ratio of present age of father and son = 5 : 2

Ratio of their age before 4 years = 3 : 1

Calculation:

Let the present age of father and son be 5x and 2x respectively

Age of father 4 years ago = 5x – 4

Age of son 4 years ago = 2x – 4

Now, according to question

(5x – 4)/(2x – 4) = 3 : 1

⇒ 5x – 4 = 6x – 12

⇒ x = 8

Age of father after 6 years = 5x + 6

⇒ (5 × 8 + 6) years

⇒ 46 years

Age of son after 6 years = 2x + 6

⇒ (2 × 8 + 6) years

⇒ 22 years

Required ratio = 46 years : 22 years

⇒ 23 : 11

∴ **The ratio of their ages after 6 years is 23 : 11**

Que. 85 If "STATE" is coded as "70" then which word will be coded as 104?

1. FATHER
2. MOTHER
3. PET
4. TOY

Solution Correct Option **- 1**

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

As given in the question,

If we find out opposite letters of each given letter of STATE,

S(19) → H(8), T(20) → G(7), A(1) → Z(26), T(20) → G(7), E(5) → V(22)

When we add values of all the opposite letters it will be 70.

Similarly, checking option 1) (FATHER),

F(6) → U(21), A(1) → Z(26), T(20) → G(7), H(8) → S(19), E(5)→V(22), R(18)→I(9)

Now, when we add values of all the opposite letters,

21 + 26 + 7 + 19 + 22 + 19 = 104

Hence, **FATHER** will be the answer.

Que. 86 Ohms law states that:

1. $R = I \times V$
2. $V = R/I$
3. $I = V/R$
4. $I = V \times R$

Solution Correct Option **- 3**

Ohm's law: Ohm's law states that at a constant temperature, the current through a conductor between two points is directly proportional to the voltage across the two points.

Voltage = Current × Resistance

$V = I \times R$

V = voltage, I = current and R = resistance

The SI unit of resistance is ohms and is denoted by Ω.

It helps to calculate the power, efficiency, current, voltage, and resistance of an element of an electrical circuit.

It an element follows the ohm's law, then the element is known as a linear element.

Ex: Resistor

Limitations of ohms law:

- **Ohm's law is not applicable to unilateral networks**. Unilateral networks allow the current to flow in one direction. Such types of networks consist of elements like a diode, transistor, etc.
- **Ohm's law is also not applicable to non – linear elements**. Non-linear elements are those which do not have current exactly proportional to the applied voltage that means the resistance value of those elements' changes for different values of voltage and current. An example of a non-linear element is thyristor.
- **Ohm's law is also not applicable to vacuum tubes**.

Que. 87 The LCM of two numbers is 9 times their HCF. The HCF of those two numbers are 14 and one of those numbers is 84. What is the ratio of the smaller number to the bigger one?

1. 1 : 4
2. 4 : 1

3. 2 : 3
4. 3 : 2

Solution Correct Option **- 1 Given:**

LCM of two numbers is 9 times their HCF. The HCF of those two numbers are 14 and one of those numbers is 84.

Concept Used:

LCM × HCF = 1st number × 2nd number

Calculation:

The HCF of those two numbers is 14 and the LCM of those two numbers is 9 times their HCF.

⇒ LCM of those two number is 9 × 14

Let, the other number is p Accordingly,

9 × 14 × 14 = 84 × p

⇒ p = (9 × 14 × 14)/84

⇒ p = 21

The ratio of the smaller number to the bigger number is 21 : 84 = 1 : 4

∴ The ratio of the smaller number to the bigger one is 1 : 4.

Que. 88 Select the related word from the given alternatives.

Water : Pipe :: Blood : ?

1. Stomach
2. Liver
3. Kidney
4. Artery

Solution Correct Option **- 4**

As water flows in pipe, similarly blood flows in Artery.

Hence, **Artery** will be the correct answer.

Que. 89 What is the chemical formula of Marsh Gas/Methane?

1. NaCl
2. CH_4
3. CaO
4. $CHCl_3$

Solution Correct Option **- 2**

- The chemical formula of Marsh Gas is **CH_4.**
- The chemical name of Marsh Gas is Methane.
- It is produced when vegetation decomposes naturally within some geographical marshes, swamps, and bogs.
- The main process for the production of methane is anaerobic digestion.

Que. 90 Which least number should be subtracted from the number 6846 so that the number will be completely divisible by 6, 8 and 12?

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

Solution Given: Correct Option **- 2**

After subtraction of a certain number from the number 6846, the result will be completely divisible by 6, 8 and 12. We have to find the certain number.

Concept Used:

Concept of HCF

Calculation:

$6 = 2 \times 3$

$8 = 2 \times 2 \times 2$

$12 = 2 \times 2 \times 3$

LCM of 6, 8 and 12 is $2 \times 2 \times 3 \times 2 = 24$

Now, dividing 6846 by 24 get the quotient = 285 and the remainder = 6

Thus, it is clear that if we subtract 6 from the number 6846 the result will be completely divisible by 24

$\Rightarrow$ (6846 - 6) = 6840 will be completely divisible by 24

$\Rightarrow$ 6840 will be completely divisible by 6, 8 and 12

$\therefore$ **The required least number is 6.**

Que. 91 **Directions:** In the following question below some statements are given followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusions logically follows the given statements.

Statements:

All pen are page.

No page are paper.

Conclusions:

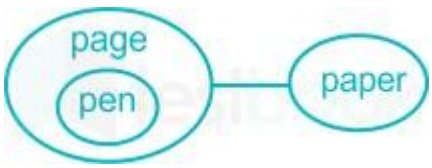
I. Some pages are pen.

II. Some pen are paper.

1. Only conclusion I follows.
2. Only conclusion II follows
3. Both conclusions I and II follow
4. None follows

Solution Correct Option **- 1**

The least possible diagram of the given statements is as follows:



Conclusions:

I. Some pages are pen. True (As it is given that all pen are page, some page pages must be pen)

II. Some pen are paper. : False (It is give that all the pen are page while no page is paper, hence no pen can be paper.)

Hence, only conclusion I follows.

Que. 92 Jelly Fish belongs to the phylum_____.

1. Cnidaria
2. Porifera
3. Mollusca
4. Chordata

Solution Correct Option **- 1**

- All **cnidaria (Coelenterata)** are aquatic, marine animals.
- Their body is made up of two layers of cells - One makes up cells outside the body while other makes the inner lining of the body.
- These animals generally reproduce asexually by budding.
- These sense organs contain receptors that relay information through sensory neurons to the appropriate places within the nervous system.

Que. 93 A sum of Rs. 50,000 is invested at simple interest at a rate of 15% for 2 years, what will be the simple interest on the sum?

1. Rs. 12,000
2. Rs. 7,500
3. Rs. 22,500
4. Rs. 15,000

Solution Given: Correct Option **- 4**

Principal (P) = Rs. 50,000

Rate of interest (R) = 15%

Time (T) = 2 years

Formula used:

Simple interest (SI) = (P × R × T)/100

Calculation:

SI = (P × R × T)/100

⇒ SI = (50000 × 15 × 2)/100

⇒ SI = 1500000/100

⇒ SI = 15,000

∴ **Simple interest is Rs. 15,000**

Que. 94 **Directions:** In the following question below some statements are given followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusions logically follows the given statements.

Statements:

No phone are mobile.

Some mobile are wire.

Conclusions:

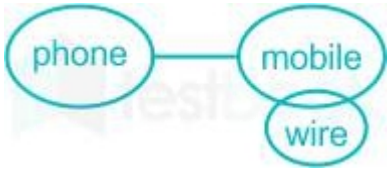
I. Some wire are mobile.

II. Some wire are not phone.

1. None follows
2. Only conclusion II follows.
3. Only conclusion I follow.
4. Both conclusions I and II follow

Solution Correct Option **- 4**

The least possible diagram of the given statements is:



Conclusions:

I. Some wire are mobile. : True (As it is given that mobile are wire, hence vice versa will also be true.)

II. Some wire are not phone. : True (It is given that no phone are mobile and some mobile are wire, hence the mobli which are wire can not be phone.)

Hence, **both conclusion I and II follow.**

Que. 95 The term 'Parthenogenesis' is related to_____.

1. Gamete Formation
2. Puberty
3. Asexual reproduction
4. Hormone regularisation

Solution Correct Option **- 3**

- 'Parthenogenesis' is a type of asexual reproduction in which embryos grow or develop without fertilisation.
- In animals, parthenogenesis is the development of an unfertilised egg into an embryo. In plants, parthenogenesis is a part of apomixis.

Que. 96 Find the greatest number by which the numbers 29, 43 and 71 when divide, leaves remainder 5, 7 and 11 respectively.

1. 6
2. 12
3. 16
4. 18

Solution Given: Correct Option **- 2**

When 29, 43 and 71 divided by the number, it leaves the remainder 5, 7 and 11 respectively.

Concept Used:

Concept of HCF

Calculation:

29 - 5 = 24

43 - 7 = 36

71 - 11 = 60

Now,

24 = 2 × 2 × 2 × 3

36 = 2 × 2 × 3 × 3

60 = 2 × 2 × 3 × 5

HCF of 24, 36 and 60 is 2 × 2 × 3 = 12

∴ **The required greatest number is 12.**

Que. 97 A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

ap, ds, gv, ?

1. jx
2. iy
3. jy
4. iv

Solution Correct Option **- 3**

Here, 2 series are going on,

i) a, d, g, ?

ii) p, s, v, ?

Now, as we can see according to the above table,

a + 3 → d, d + 3 → g, g + 3 → **j**

Similarly,

p + 3 → s, s + 3 → v, v + 3 → **y**

Hence, **jy** is the answer.

Que. 98 The red blood cells are produced in_____.

1. Heart
2. Lymph Nodes
3. Liver
4. Bone Marrow

Solution Correct Option **- 4**

The correct answer is **Bone Marrow.**

- **Bone Marrow:**
  It is the **manufacturing site of Red blood cells.**
  Bone Marrow is the soft tissue present inside the **Medullary cavities of a bone**.
  It is mainly present in the hip and thigh bones.
  Bone marrow **produces immature** cells called Stem cells that can transform into various kinds of cells later on.
  Mesenchymal and Hematopoietic are the two types of stem cells produced by Bone Marrow.
  Mesenchymal transform into fat cartilage and bones whereas Hematopoietic turn into **Blood cells** (RBC, WBC and Platelets).

Additional Information

- **Red Blood Cells (RBC):**
  These are also known as **Erythrocytes**.
  These disc-shaped cells contain **Haemoglobin** and have **no nucleus**.
  RBCs are produced in Bone Marrow and Spleen & Liver (in the foetus).
  The average lifetime of RBCs is **120 days**.
  RBCs, when produced in more amount, leads to **Polycythemia** and if produced in lesser amount leads to **Anaemia**.

Que. 99 Find the amount after one and a half year compounded semi annually at 20% per annum and principal is Rs. 20,000.

1. Rs. 26,400
2. Rs. 28,800
3. Rs. 27,620
4. Rs. 26,620

Solution Given: Correct Option **- 4**

Rate of interest = 20% per annum

Principal = Rs. 20,000

Time = one and a half year = 3/2 years

Formula used:

Amount = $P \times (1 + R/100)^n$

Calculation:

As the sum is compounded semi-annually

R = Rate of interest/2 = (20/2)%

$\Rightarrow$ R = 10%

n = Time × 2 = (3/2) × 2

$\Rightarrow$ n = 3

Amount = $P \times (1 + R/100)^n$

$\Rightarrow$ Amount = $20000 \times (1 + 10/100)^3$

$\Rightarrow$ Amount = $20000 \times (11/10)^3$

$\Rightarrow$ Amount = Rs. 26,620

∴ The total amount after one and a half year is Rs. 26,620

Que. 100 **Directions:** In the following question below some statements are given followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusions logically follows the given statements.

Statements:

All toy are doll.

Some doll are white.

Conclusions:

I. No toy is white.

II. Some doll are toy.

1. Only conclusion II follows.
2. Only conclusion I follows
3. None follows
4. Both conclusions I and II follow

Solution Correct Option **- 1**

The least possible diagram of the given statements is as follows:

Conclusions:

I. No toy is white. : False (It is a possibility but not a definite case as there is no relation given between toy and white.)

II. Some doll are toy. True (As it is given that all toys are doll, this implies that at least some doll must be toy.)

Hence, **only conclusion II follows**.