

RRB NTPC Exam 20 Jan, 2021 Shift 1 Solution

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

Ans. 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 earned a profit of 20%. Find the cost price of the article.

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

Ans. Given: Correct Option - 3

Marked price = Rs. 1500

Discount = 10%

Profit = 20%

Formula used:

$$SP = MP \times [(100 - \text{Discount\%})/100]$$

$$CP = SP \times [100/(100 + \text{Gain\%})]$$

Calculation:

$$SP = \text{Rs. } 1500 \times [(100 - 10)/100]$$

$$\Rightarrow \text{Rs. } 1500 \times (90/100)$$

$$\Rightarrow \text{Rs. } 1350$$

$$CP = \text{Rs. } 1350 \times [100/(100 + 20)]$$

$$\Rightarrow \text{Rs. } 1350 \times (100/120)$$

$$\Rightarrow \text{Rs. } 1125$$

∴ 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 choices 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.

Ans. 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

Ans. Correct Option - 3

Vinegar is a natural source of Acetic acid.

Que. 5

When did India conduct its First Nuclear explosion?

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

Ans. Correct Option - 2

India conducted its First Nuclear explosion on 18 May 1974.

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%

Ans. 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 choices 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.**

Ans. 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 being 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. CH₄**
- 2. MH₄**
- 3. M₂H₄**
- 4. C₂H₄**

Ans. Correct Option - 1

The correct answer is option 1, i.e. CH₄.

Methane: Methane (CH₄), is a gas produced by a group of colonic anaerobes, absorbed from the colon and excreted in expired air. The molecular formula is CH₄.

Que. 9

Which city is also known as Scotland of India?

- 1. Coorg**
- 2. Ahmedabad**
- 3. Srinagar**
- 4. Darjeeling**

Ans. Correct Option - 1

Coorg is known as Scotland of India.

It is called so because of the beautiful landscape as Scotland.

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**

Ans. 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**

Ans. Correct Option - 3

From the information above, we cannot conclude who is ill in Suman's family.

Therefore, conclusion I do 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 nor 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**

Ans. 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.

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**

Ans. Salim Ali National Park is located in the Srinagar district of Jammu and Kashmir state.

Que. 14 If the mode of 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

Ans. Given:

Correct Option - 4

Mode = 3

Mean = 6

Formula used:

Mean – Mode = 3(Mean – Median)

Calculation:

$$\Rightarrow 6 - 3 = 3(6 - \text{median})$$

$$\Rightarrow 3 = 18 - 3 \times \text{Median}$$

$$\Rightarrow -15 = -3 \times \text{Median}$$

$$\Rightarrow 15/3 = \text{Median}$$

$$\Rightarrow 5 = \text{Median}$$

∴ 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

Ans. 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 gametes develop to form new creatures without fertilization?

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

Ans. Correct Option - 2

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

Parthenogenesis is a kind of asexual reproduction.

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

1. Kalidas

2. Valmiki

3. Vishnu Sharma

4. Sri Harhsa

Ans. Correct Option - 3

The correct answer is Vishnu Sharma.

Vishnu Sharma is the author of 'Panchatantra'.

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

Ans. 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 equations is correct ?

1. $18 \div 6 + 24 - 4 \times 64 = 50$

2. $18 + 6 \div 24 - 4 \times 64 = 50$

3. $18 + 6 \times 24 - 4 \div 64 = 50$

4. $18 - 6 \times 24 + 4 \div 64 = 50$

Ans. Correct Option - 3

(i) $18 \div 6 + 24 - 4 \times 64 = 50$

Interchanging signs as per given and using BODMAS rule,

$$18 - 6 \times 24 \div 4 - 64 = 50$$

$$18 - 6 \times 6 - 64 = 50$$

$$18 - 36 - 64 = 50$$

$$18 - 100 = 50$$

$$-82 \neq 50.$$

(ii) $18 + 6 \div 24 - 4 \times 64 = 50$

Interchanging signs as per given and using BODMAS rule,

$$18 \times 6 - 24 \div 4 + 64 = 50$$

$$18 \times 6 - 6 + 64 = 50$$

$$108 - 6 + 64 = 50$$

$$108 + 58 = 50$$

$$166 \neq 50.$$

(iii) $18 + 6 \times 24 - 4 \div 64 = 50$

Interchanging signs as per given and using BODMAS rule,

$$18 \times 6 + 24 \div 4 - 64 = 50$$

$$18 \times 6 + 6 - 64 = 50$$

$$108 + 6 - 64 = 50$$

$$108 - 58 = 50$$

$$50 = 50.$$

(iv) $18 - 6 \times 24 + 4 \div 64 = 50$

Interchanging signs as per given and using BODMAS rule,

$$18 \div 6 + 24 \times 4 - 64 = 50$$

$$3 + 24 \times 4 - 64 = 50$$

$$3 + 96 - 64 = 50$$

$$3 + 32 = 50$$

$$35 \neq 50.$$

Hence, the correct answer is " $18 + 6 \times 24 - 4 \div 64 = 50$ ".

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**

Ans. 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.

Que. 21

The scheme 'Beti Bachao Beti Padhao' is related with

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

Ans. Correct Option - 1

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

The 'Beti Bachao Beti Padhao' scheme is related to the Ans. to the falling child sex ratio in India And Empowering girls.

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**

Ans. 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)

$$\Rightarrow \text{Mean} = (8 + 9 + 10 + 12 + 16)/5$$

$$\Rightarrow \text{Mean} = 55/5$$

$$\Rightarrow \text{Mean} = 11$$

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

$$\Rightarrow \text{Median} = [(5 + 1)/2]\text{th term}$$

$$\Rightarrow \text{Median} = (6/2)\text{th term}$$

$$\Rightarrow \text{Median} = 3\text{rd term}$$

$$\Rightarrow \text{Median} = 10$$

Required average = (Mean + Median)/2

$$\Rightarrow \text{Required average} = (11 + 10)/2$$

$$\Rightarrow \text{Required average} = 21/2$$

$$\Rightarrow \text{Required average} = 10.5$$

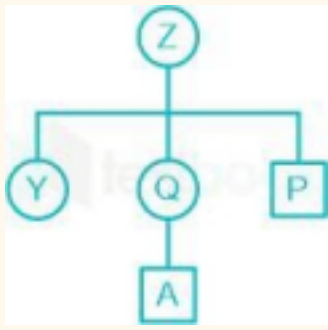
\therefore The average of mean and median is 10.5.

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;

Ans. 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 the 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. Ohm's law
3. Gauss Law
4. Lenz Law

Ans. Correct Option - 2

Ohm's law states that electric current is proportional to voltage and inversely proportional to resistance. i.e. $I=V/R$

$$\Rightarrow V=IR.$$

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

Ans. Correct Option - 3

The correct answer is Harappa.

Harappa was the first site where Indus Valley Civilization was discovered.

The civilization was first identified in 1921 at Harappa (Punjab) and then in 1922 at Mohenjodaro (Sindh, Pakistan).

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

Ans. Given: Correct Option - 2

Cost price of article = Rs. 500

Profit% = 6.4%

Formula used:

$$SP = CP \times [(100 + \text{Profit}\%)/100]$$

Calculation:

$$\text{Selling price} = \text{Rs. } 500 \times [(100 + 6.4)/100]$$

$$\Rightarrow \text{Rs. } 500 \times (106.4/100)$$

$$\Rightarrow \text{Rs. } 532$$

∴ 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

Ans. 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 on the 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

Ans. Correct Option - 1

The principal component of marsh gas is methane. It is generated by decaying matter in marshes. Also known as swamp gas or biogas.

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

Ans. 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.

Que 30. A conical vessel has radius 4 cm, and its curved surface area is $20\pi \text{ cm}^2$

Find the volume of a conical vessel?

1. $16\pi \text{ cm}^3$
2. $14\pi \text{ cm}^3$
3. $26\pi \text{ cm}^3$
4. $64\pi/3 \text{ cm}^3$

Ans. Correct Option - 1 Given:

$$\text{Radius} = 4 \text{ cm}$$

$$\text{CSA} = 20\pi \text{ cm}^2$$

Formula used:

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

$$\text{Volume of cone} = \frac{1}{3} \times \pi r^2 h$$

Calculation:

2

$$\text{CSA} = 20\pi \text{ cm}$$

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

$$\Rightarrow 4 \times l = 20$$

$$\Rightarrow l = 5 \text{ cm}$$

So, $h = 3 \text{ cm}$ [Using pythagorean triplet]

²h

$$\text{Volume} = \frac{1}{3} \times \pi r^2 h$$

$$\Rightarrow \text{Volume} = \frac{1}{3} \times \pi \times 4 \times 4 \times 3$$

$$\Rightarrow \text{Volume} = 16\pi \text{ cm}^3$$

\therefore Volume of cone is $16\pi \text{ cm}^3$.

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

Ans. Correct Option - 4

According to the given information,

1) U is a better singer 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**

Ans. Correct Option - 1

The correct answer is Snails.

Locomotion in snails takes place with the help of a muscular foot.

The snail is a very slow-moving animal.

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.

Que. 33

Pradhan Mantri Jan-Dhan Yojana is related to .

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

Ans. 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**

Ans. Correct Option - 4 Given:

Length of train = 500 m

Length of platform = 1300 m

Speed of train = 216 km/hr = $216 \times (5/18)$ m/s

\Rightarrow 60 m/s

Formula used:

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

Calculation:

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

\Rightarrow 1800 m

Time taken to cross the platform = 1800/60 seconds

\Rightarrow 30 seconds

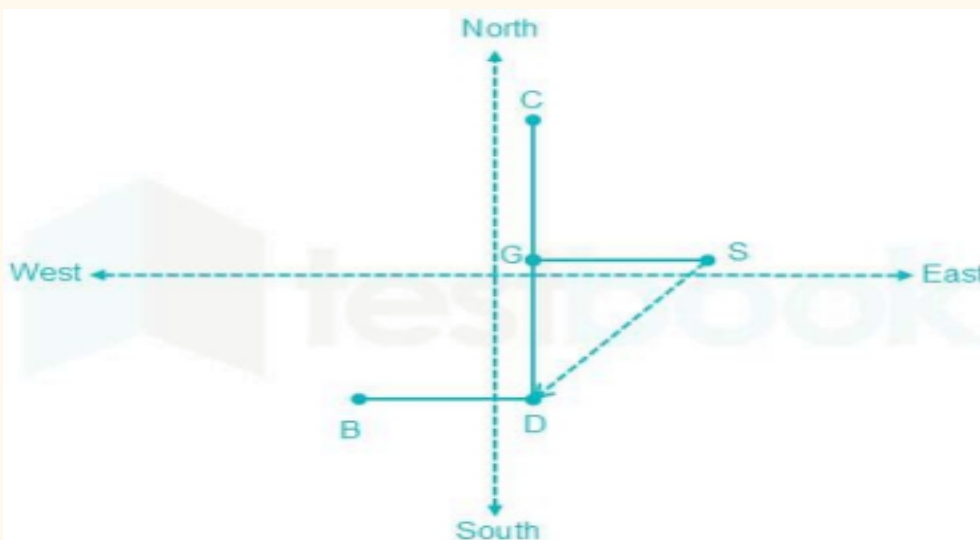
\therefore The time taken to cross the platform is 30 seconds

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

Ans. 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**

Ans. 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 neutral particle i.e. it carries no charge.

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

- 1.Thawar Chand Gehlot**
- 2.Vijay Sampla Krishan**
- 3.Pal Gurjar**
- 4.Sanjeev Kumar Balyan**

Ans. Correct Option - 1

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

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

- 1. 33.33 km/hr**
- 2. 35.75 km/hr**
- 3. 42.55 km/hr**
- 4. 37.5 km/hr**

Ans. Correct Option - 4

Given: Speed of Ram while traveling from point A Point B=50 km/hr Speed decreased by 40% while returning

Formula used:

Average speed when the distance is same = $\frac{2xy}{x + y}$ Where, x = Speed while going

y = Speed while returning

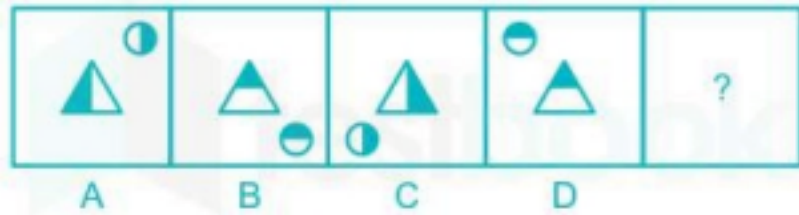
Calculation:

Speed while returning = $50 \times [(100 - 40)/100]$ km/hr $\Rightarrow 50 \times (60/100)$ km/hr
 $\Rightarrow 30$ km/hr

Now, average speed = $(2 \times 50 \times 30)/(50 + 30)$ km/hr $\Rightarrow (100 \times 30)/80$ km/hr
 $\Rightarrow 37.5$ km/hr

\therefore The average speed of whole journey is 37.5 km/hr

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



1.



2.



3.



4.



Ans. Correct Option - 1

The triangle figure is being coloured vertically (Left \rightarrow 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**

Ans. Concept: Correct Option - 3

Water softening: It is the process of hardness removal from the water. It is caused by multivalent cations 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 a 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**

Ans. 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).

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

Ans. 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

$$= (7x + 11x + 9x)$$

$$\Rightarrow 27x$$

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

$$\Rightarrow 2x$$

Now, according to question

$$27x = \text{Rs. } 8910$$

(23)

$$\Rightarrow 2x = (8910/27x) \times 2x$$

$$\Rightarrow \text{Rs. } (330 \times 2)$$

$$\Rightarrow \text{Rs. } 660$$

\therefore 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

Ans. Correct Option - 3

The pattern followed is:

94 \rightarrow reverse 49 \rightarrow 7

63 \rightarrow reverse 36 \rightarrow 6

35 \rightarrow reverse 53 \rightarrow no square

52 \rightarrow reverse 25 \rightarrow 5

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

Ans. 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.

Ques 45.If the total surface area of a cube is 1944 m², then what is the volume of the cube?

1. 4986 m³
2. 5832 m
3. 5684 m³
4. 4864 m³

Ans.

Correct Option - 2

Total surface area of cube = 1944 cm²

TSA of cube = 6 × edge²

Volume of cube = edge³

Calculation: Let the edge of the cube be x m.

TSA of cube = 6 × edge²

$$\Rightarrow 1944 = 6x^2$$

$$\Rightarrow x^2 = 324$$

$$\Rightarrow x = \sqrt{324}$$

$$\Rightarrow x = 18\text{m Volume of cube} = \text{edge}^3$$

$$\Rightarrow \text{Volume} = x^3$$

$$\Rightarrow \text{Volume} = 18^3$$

$$\Rightarrow \text{Volume} = 5832 \text{ m}^3$$

∴ The volume of cube is 5832 m³.

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

Ans. Correct Option - 1

116 pairs of shoes = 232 shoes

$232 \div 58 = 4$ 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

Ans. Correct Option - 3

Option 3 is the correct answer:

The 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.

Que. 48

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

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

Ans. Given: Correct Option - 3

Inner diameter = 14 cm

Outer diameter = 28 cm

Formula used:

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

where $R \rightarrow$ Outer radius, $r \rightarrow$ Inner radius

Calculation:

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

Inner radius, $r = 14/2$

$\Rightarrow r = 7 \text{ cm}$

Outer radius, $R = 28/2$

$\Rightarrow R = 14 \text{ cm}$

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

$$\Rightarrow \text{Area} = \frac{22}{7} \times (14^2 - 7^2)$$

$$\Rightarrow \text{Area} = \frac{22}{7} \times (196 - 49)$$

$$\Rightarrow \text{Area} = \frac{22}{7} \times 147$$

$$\Rightarrow \text{Area} = 22 \times 21$$

$$\Rightarrow \text{Area} = 462 \text{ cm}^2$$

\therefore 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 12th 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

Ans. 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 nor II are implicit.

Que. 50

Which Mughal Emperor built the Agra Fort?

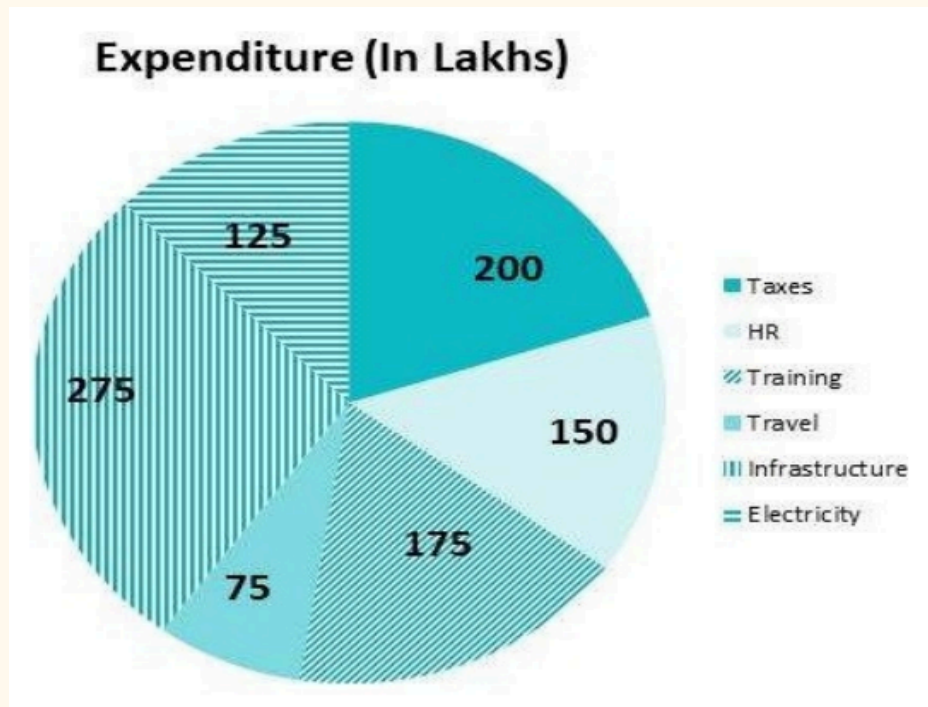
1. Jahangir
2. Akbar
3. Aurangzeb
4. Shahjahan

Ans. Correct Option - 2

The Correct Answer is Option 2 i.e Akbar.

Akbar built the Agra Fort.

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%

Ans. 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

$$\Rightarrow 200 + 150 + 175 + 75 + 275 + 125$$

$$\Rightarrow 1000$$

Infrastructure and Electricity expenditure

$$\Rightarrow 275 + 125$$

$$\Rightarrow 400$$

Percentage of total expenditure

$$\Rightarrow (400/1000) \times 100$$

$$\Rightarrow 40\%$$

∴ The percent value is 40%.

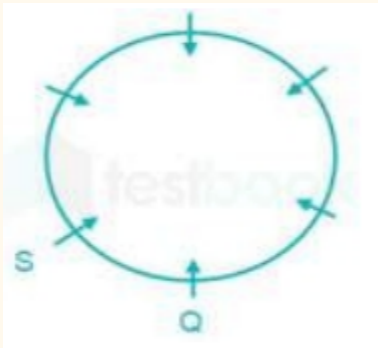
Que. 52

Six family members P, Q, R, S, T and U are sitting around a circular table facing towards the center 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

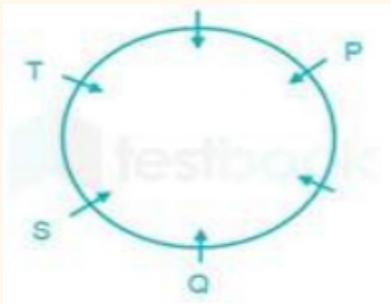
Ans. Correct Option - 2

Q is to the immediate right of S.

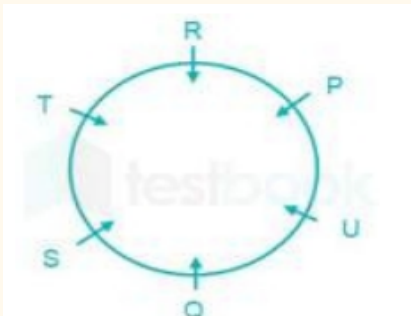


P and S are facing towards each other.

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**

Ans. 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.

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 Sushma can complete the whole work alone?

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

Ans. 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

\Rightarrow Shushma can complete 1 work in $40 \times 8/5 = 64$ days

\therefore Shushma can complete the whole work alone in 64 days

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

ABSOLUTE : ESBLTOTUA :: CALENDER : ?

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

Ans.

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

Ans. 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 are 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 kilometer.

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 will they do the same work?

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

Ans. 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 = $1/(7/60)$

\Rightarrow Time taken to do the work = $60/7$

\therefore 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

Ans. Correct Option - 4

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

Ans. Correct Option - 4

Eratosthenes is considered the Father of Geography.

He was an ancient Greek Astronomer, Mathematician and Geographer.

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

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

Ans. 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

$\Rightarrow 200 + 150 + 175$

$\Rightarrow 525$

(34)

Total expenditure of Travel, Infrastructure and Electricity

$\Rightarrow 75 + 275 + 125$

$\Rightarrow 475$

Difference of expenditures

$\Rightarrow 525 - 475$

$\Rightarrow 50$

All expenditures are in lakhs

$\Rightarrow 50 \times 100000$

$\Rightarrow 50,00,000$

\therefore 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

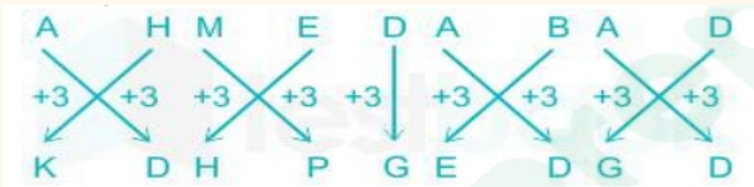
2. KHGUEDGDB

3. BKHUEDGDG

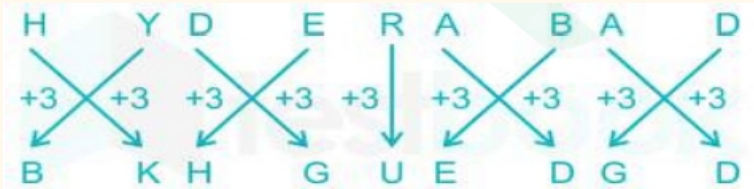
4. KHGUEDBGD

Ans. 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

Ans. Correct Option - 2

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

In 2015, NITI Ayog replaced the old Planning commission of India.

The Prime Minister is the chairperson of NITI Ayog and it has Regional and Governing Councils.

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 Training in 2019.

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

Ans. 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 in 2019 be 'P'

Expenditure in 2020

$$\Rightarrow 175 + 125$$

$$\Rightarrow 300$$

Expenditure in 2020 is decreased by 40%

$$\Rightarrow P \times (60/100) = 300$$

$$\Rightarrow P = 500$$

Expenditure is in lakhs

$$\Rightarrow P = 500 \times 100000$$

$$\Rightarrow P = 500,00,000$$

\therefore The expenditure in 2019 is 500,00,000.

(36)

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

Ans.

Correct Option - 1

The logic is as,

Letters of given words are arranged in alphabetical order.

Therefore TABLE = ABELT

Similarly,

APPLE = AELPP.

Hence, the 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

Ans. Correct Option - 4

Henrietta H. Fore is the Head of UNICEF.

Head Organizations

Henrietta H. Fore UNICEF (United Nations International Children's Emergency Fund)

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

Ans. Given: Correct Option - 1

Expenditure of company(in lakhs)

Taxes = 200, Infrastructure = 275, Electricity = 125

(37)

Formula used:

Average = (Sum of values)/Number of values

Calculation:

Expenditure of company

$\Rightarrow 200 + 275 + 125$

$\Rightarrow 600$

Average of Taxes, Infrastructure, and Electricity expenditure

$\Rightarrow 600/3$

$\Rightarrow 200$

All expenditures are in lakhs

$\Rightarrow 200 \times 100000$

$\Rightarrow 200,00,000$

\therefore Average of Taxes, Infrastructure, and Electricity expenditure is 200,00,000.

Que. 67 How many triangles in the following figure?

1. 4

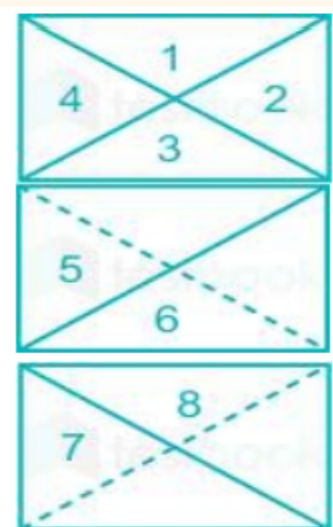
2. 6

3. 8

4. 9

Ans. Correct Option - 3

Number of triangles are,



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

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

1. Fredrick Soddy
2. Piere Curie
3. Henri Becquerel
4. Marie Curie

Ans. 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.

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

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

Ans. 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 \times Number of persons

Calculation:

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

$\Rightarrow 75$ years

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

$\Rightarrow 16$

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

(39)

$\Rightarrow 96$ years

Age of new student = $(96 - 75)$ years

$\Rightarrow 21$ years

\therefore 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

Ans. 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

Ans. 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.

The deficiency of Vitamin - A leads to Xerophthalmia.

Que. 72 If $A + B = 90^\circ$ and $\sin A = 3/5$ find the value of $\tan B$

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

Ans. Given: Correct Option - 2

$$A + B = 90^\circ \text{ and } \sin A = 3/5$$

Concept Used:

$$\sin \theta = \text{Perpendicular/Hypotenuse}$$

$$\tan \theta = \text{Perpendicular/Base}$$

$$\text{Hypotenuse}^2 = \text{Perpendicular}^2 + \text{Base}^2$$

$$\tan(90^\circ - \theta) = \cot \theta$$

Calculation:

$$\sin A = 3/5 = \text{Perpendicular/Hypotenuse}$$

$$\Rightarrow \text{Perpendicular} = 3k \text{ and Hypotenuse} = 5k \text{ [Where, } k \text{ is a constant]}^2 - \text{Perpendicular}$$

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

$$\Rightarrow \text{Base} = \sqrt{(5k)^2 - (3k)^2}$$

$$(4k)$$

$$\Rightarrow \text{Base} = 4k$$

$$\tan A = \text{Perpendicular/Base}$$

$$\Rightarrow \tan A = 3k/4k = 3/4$$

$$\Rightarrow \tan(90^\circ - B) = 3/4$$

$$\Rightarrow \cot B = 3/4$$

$$\Rightarrow \tan B = 4/3$$

$$\therefore \tan B = 4/3$$

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

Ans. Correct Option - 1

The logic is as follows,

58,

$$58 \times 0.5 = 29$$

$$29 \times 1 = 29$$

$$29 \times 1.5 = 43.5$$

$$43.5 \times 2 = 87$$

$$87 \times 2.5 = 217.5$$

$$217.5 \times 3 = 652.5$$

Hence, the 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

Ans. Correct Option - 4

The correct answer is J. Chadwick.

In 1932, J. Chadwick discovered another subatomic particle and was named neutron. Neutrons are present in the nucleus of all atoms, except hydrogen.

Que. 75 Find the value: $1 + \tan 15^\circ \tan 75^\circ$

1. $\text{Sec}^2 15^\circ$

2. $\text{Sec}^2 75^\circ$

3. 2

4. $1 + \frac{1+\sqrt{3}}{2}$

Ans. Correct Option - 3

Formula used:

$$\tan \theta = \cot(90^\circ - \theta)$$

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

Calculation:

$$\tan 75^\circ = \cot(90^\circ - 75^\circ)$$

$$\Rightarrow \tan 75^\circ = \cot 15^\circ$$

$$\cot 15^\circ = 1/\tan 15^\circ$$

We have to find the value of $1 + \tan 15^\circ \tan 75^\circ$

$$\Rightarrow 1 + \tan 15^\circ \times \cot 15^\circ$$

$$\Rightarrow 1 + \tan 15^\circ / \tan 15^\circ$$

$$\Rightarrow 1 + 1 = 2$$

∴ The value of the given expression is 2

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

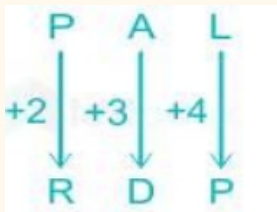
PAL : RDP :: MRF : ?

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

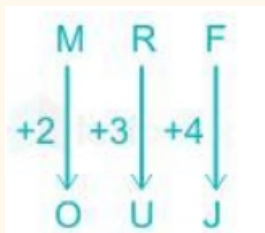
Ans. Correct Option - 3

The logic is as follows,

PAL : RDP



MRF : ?



Hence, MRF : OUJ.

Que. 77 Hertz is the SI unit of .

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

Ans. Correct Option - 3 The correct answer is Frequency.

Hertz is the SI unit of frequency and it is represented by symbol Hz -1

Also 1 Hz = 1 sec

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

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

Ans. 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

$$\Rightarrow x + x + 2 + x + 4 + x + 6 + x + 8$$

$$\Rightarrow 5x + 20$$

Sum of values

$$\Rightarrow 31 \times 5$$

$$\Rightarrow 155$$

$$\Rightarrow 5x + 20 = 155$$

$$\Rightarrow 5x = 135$$

$$\Rightarrow x = 27$$

Largest number = x + 8

$$\Rightarrow 27 + 8$$

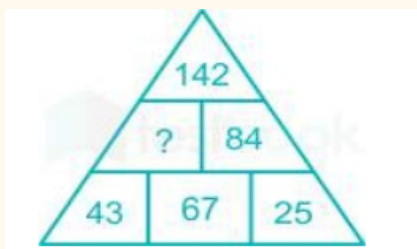
$$\Rightarrow 35$$

Square of largest number = (35) ²

$$\Rightarrow 1225$$

∴ 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

Ans. 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, the 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

Ans. 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.

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. $3/4$

Ans. 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

$$a^2 + b^2 + 2ab = 25 \text{----- (1)}$$

We have

$$a^3 + b^3 = 105$$

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

$$z \Rightarrow 5 \times (a^2 + b^2 - ab) = 105$$

$$\Rightarrow a^2 + b^2 - ab = 21 \text{-----} (2)$$

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

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

$$\Rightarrow 3ab = 4$$

$$\Rightarrow ab = 4/3$$

\therefore 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. AEEEEE

2. AEEEEEE

3. AEEA

4. AEAE

Ans. Correct Option - 1

Here, in the given series,

A \rightarrow 0 times E

AE \rightarrow 1 times E

AEE \rightarrow 2 times E

AEEE \rightarrow 3 times E

AEEEEE \rightarrow 4 times E

Hence, AEEEEE 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

Ans. Correct Option - 2

Quicklime (CaO) reacts with water to form slaked lime $\{Ca(OH)_2\}$.

The addition of a limited amount of water to quicklime is called slaking of lime.

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

Ans. 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

$$(5x - 4)/(2x - 4) = 3 : 1$$

$$\Rightarrow 5x - 4 = 6x - 12$$

$$\Rightarrow x = 8$$

Age of father after 6 years = $5x + 6$

$$\Rightarrow (5 \times 8 + 6) \text{ years}$$

$$\Rightarrow 46 \text{ years}$$

Age of son after 6 years = $2x + 6$

$$\Rightarrow (2 \times 8 + 6) \text{ years}$$

$$\Rightarrow 22 \text{ years}$$

Required ratio = 46 years : 22 years

$$\Rightarrow 23 : 11$$

\therefore 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

Ans. Correct Option - 1

As given in the question,

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

S(19) \rightarrow H(8), T(20) \rightarrow G(7), A(1) \rightarrow Z(26), T(20) \rightarrow G(7), E(5) \rightarrow 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 Ohm's law states that:

1. $R = I \times V$

2. $V = R/I$

3. $I = V/R$

4. $I = V \times R$

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

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

Ans. 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:

$$\text{LCM} \times \text{HCF} = 1\text{st number} \times 2\text{nd number}$$

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,

$$9 \times 14 \times 14 = 84 \times p$$

$$\Rightarrow p = (9 \times 14 \times 14) / 84$$

$$\Rightarrow p = 21$$

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

Ans. Correct Option - 4

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

Hence, Artery will be the correct answer.

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

1. NaCl
2. CH₄
3. CaO
4. CHCl₃

Ans. Correct Option - 2

The chemical formula of Marsh Gas is CH₄.

The chemical name of Marsh Gas is Methane.

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

Ans. 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:

$$6 = 2 \times 3$$

$$8 = 2 \times 2 \times 2$$

$$12 = 2 \times 2 \times 3$$

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

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 pens are page.

No page are paper.

Conclusions:

I. Some pages are pen.

II. Some pen are paper.

1. Only conclusion I follow.

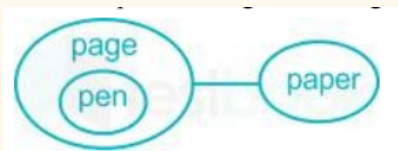
2. Only conclusion II follows

3. Both conclusions I and II follow

4. None follows

Ans. 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 pens are pages, some pages must be pen) II.

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

Hence, the only conclusion I follow.

Que. 92 JellyFish belongs to the phylum .

1. Cnidaria

2. Porifera

3. Mollusca

4. Chordata

Ans. 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

Ans. Given: Correct Option - 4

Principal (P) = Rs. 50,000

Rate of interest (R) = 15%

Time (T) = 2 years

Formula used:

Simple interest (SI) = $(P \times R \times T)/100$

Calculation:

$SI = (P \times R \times T)/100$

$\Rightarrow SI = (50000 \times 15 \times 2)/100$

$\Rightarrow SI = 1500000/100$

$\Rightarrow SI = 15,000$

\therefore 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 phones are mobile.

Some mobiles are wire.

Conclusions:

I. Some wires are mobile.

II. Some wire are not phones.

1. None follows

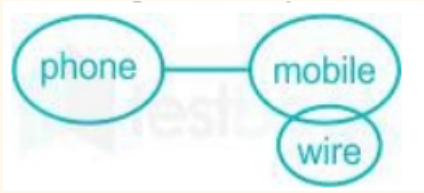
2. Only conclusion II follows.

3. Only conclusion I follow.

4. Both conclusions I and II follow

Ans. 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 mobile which are wire can not be phone.)

Hence, both conclusions I and II follow.

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

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

Ans. Correct Option - 3

'Parthenogenesis' is a type of asexual reproduction in which embryos grow or develop without fertilization.

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 divided, leave the remainder 5, 7 and 11 respectively.

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

Ans. Given: Correct Option - 2

When 29, 43 and 71 are 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,

$$24 = 2 \times 2 \times 2 \times 3$$

$$36 = 2 \times 2 \times 3 \times 3$$

$$60 = 2 \times 2 \times 3 \times 5$$

HCF of 24, 36 and 60 is $2 \times 2 \times 3 = 12$

∴ 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

Ans. 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,

$$a + 3 \rightarrow d, d + 3 \rightarrow g, g + 3 \rightarrow j$$

Similarly,

$$p + 3 \rightarrow s, s + 3 \rightarrow v, v + 3 \rightarrow y$$

Hence, jy is the answer.

Que. 98 The red blood cells are produced in .

1. Heart

2. Lymph Nodes

3. Liver

4. Bone Marrow

Ans. 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.

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

Ans. 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:

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

Calculation:

As the sum is compounded semi-annually

$$R = \text{Rate of interest}/2 = (20/2)\%$$

$$\Rightarrow R = 10\%$$

$$n = \text{Time} \times 2 = (3/2) \times 2$$

$$\Rightarrow n = 3$$

$$\text{Amount} = P \times (1 + R/100)$$

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

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

$$\Rightarrow \text{Amount} = \text{Rs. } 26,620$$

\therefore 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

Ans. 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.