CUET (UG) Question Paper - 2023

National Testing Agency

15th JUNE 2023 – SHIFT 2

Section - III (General Test)

1. Ministry of Health and Family Welfare has launched 'Nikshay Poshan Yojana' related to eradication of which of the following disease?

(A) Dengue   **(B)** Malaria

(C) Tuberculosis   **(D)** Kala-Azar

Ans. Option (C) is correct.

> *Explanation:* The Ministry of Health and Family Welfare (MoHFW) launched 'Nikshay Poshan Yojana' related to eradication of tuberculosis in the country. Under this scheme, an amount of ₹500 per month is provided to the Tuberculosis patients to buy food.

2. Match **List - I** with **List - II**.

	List - I (Important Days)		List - II (Date)
(1)	National Youth Day	**(I)**	28th February
(2)	Army Day	**(II)**	12th January
(3)	National Science Day	**(III)**	15th March
(4)	National Safety Day	**(IV)**	4th March

Choose the **correct** answer from the options given below:

(A) (1)-(II), (2)-(III), (3)-(IV), (4)-(I)

(B) (1)-(II), (2)-(III), (3)-(I), (4)-(IV)

(C) (1)-(III), (2)-(II), (2)-(I), (4)-(IV)

(D) (1)-(IV), (2)-(III), (3)-(I), (4)-(II)

Ans. Option (B) is correct.

> *Explanation:*
>
> | Important Days | Date |
> |---|---|
> | National Youth Day | 12th January |
> | Army Day | 15th January |
> | National Science Day | 28th February |
> | National Safety Day | 4th March |

3. If P (E) = 0.05, what is the probability of ' not E'?

(A) 0.05   **(B)** 0.45   **(C)** 0.95   **(D)** 0.55

Ans. Option (C) is correct.

> *Explanation:*
> Given that: P(E) = 0.05 then Probability of not E will be:
>
> $$P(\bar{E}) = 1 - 0.05 = 0.95$$

4. Find the next term in the alpha-numeric series: Z1A, W8C, T27E, Q64G, N1251, __?__

(A) K216L   **(B)** K216K   **(C)** L343K   **(D)** L343L

Ans. Option (B) is correct.

> *Explanation:*
> Given series: Z1A, W8C, T27E, Q64G, N1251, ?
>
> **Logic:-**
>
> $$Z \xrightarrow{-3} W \xrightarrow{-3} T \xrightarrow{-3} Q \xrightarrow{-3} N \xrightarrow{-3} K$$
>
> $$1^3 \underline{\quad} 2^3 \underline{\quad} 3^3 \underline{\quad} 4^3 \underline{\quad} 5^3 \underline{\quad} 6^3 = 216$$
>
> $$A \xrightarrow{+2} C \xrightarrow{+2} E \xrightarrow{+2} G \xrightarrow{+2} I \xrightarrow{+2} K$$
>
> So, the missing term is k216K.

5. Which of the following statements are in**correct**?

(a) Volume of a cone = $\frac{1}{3}\pi r^3 h$.

(b) Volume of a cone = $\frac{1}{3}\pi r^2 h$

(c) Volume of a hemisphere = $\frac{2}{3}\pi r^2$

(d) Volume of a hemisphere = $\frac{2}{3}\pi r^3$

(e) Volume of a cylinder = $\frac{1}{3}\pi r^3 h$

Choose the **correct** answer from the options given below:

(A) (a), (b) and (d) only   **(B)** (a), (b) and (c) only

(C) (a), (c) and (e) only   **(D)** (c), (d) and (e) only

Ans. **Option (C) is correct.**

> *Explanation:*
> We know, volume of cone $= \dfrac{1}{3}\pi r^2 h$
>
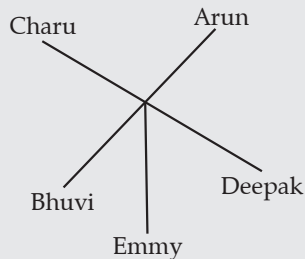> volume of hemisphere $= \dfrac{2}{3}\pi r^3$
>
> Volume of cylinder $= \pi r^2 h$

6. Five children Arun, Bhuvi, Charu, Deepak and Emmy are sitting along the corners of a pentagonal table facing the centre. Bhuvi is between Emmy and Charu. Deepak is to the right of Emmy. Who is to the left of Charu?
   (A) Bhuvi   (B) Arun
   (C) Charu   (D) Deepak

Ans. **Option (B) is correct.**

> *Explanation:*
>
>
>
> So, Arun is to the left of Charu.

7. A man standing on the bank of a river observes that the angle subtended by a tree standing on the opposite bank is 60° on his side of bank. When he moved away 24m from the bank, he finds the angle to be 30°. Find the breadth of the river:
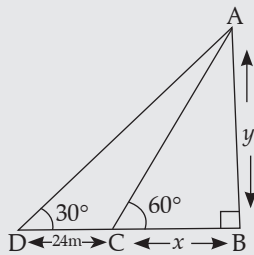   (A) 12   (B) 18   (C) 26   (D) 20

Ans. **Option (A) is correct.**

> *Explanation:*
> Let the length of tree is y metre.
> And breadth of river is x metre.
>
>
>
> In $\triangle ABC$, $\tan 60° = \dfrac{y}{x} \Rightarrow x = \dfrac{y}{\sqrt{3}}$ \hspace{1em} (1)
>
> In $\triangle ABD$, $\tan 30° = \dfrac{y}{x+24}$ \hspace{1em} (2)
>
> By equation (1) and (2)
>
> $\Rightarrow \dfrac{1}{\sqrt{3}} = \dfrac{x\sqrt{3}}{x+24} \Rightarrow x = 12$
>
> So, breadth of the river = 12 m

8. The first satellite in space was launched by:
   (A) U.S.A   (B) United Kingdom
   (C) U.S.S.R   (D) France

Ans. **Option (C) is correct.**

> *Explanation:* The world's first artificial satellite was launched by the USSR on 4th October 1957 by the name Sputnik I. It was a spherical satellite with a diameter of 58 cm and weighed approx. 83.6 kgs. It was launched from the Baikonur Cosmodrome in Kazakhstan. It had four antennas to broadcast radio signals that allowed scientists and radio operators around the world to track the satellite's orbit and position. It completed an orbit around the Earth roughly every 96 minutes while traveling at a speed of about 28,000 kilometers per hour and reached altitudes of around 215 kilometers at its highest point. The satellite gradually decayed on 4th January 1958 and its debris fell in the Pacific Ocean.

9. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).
   Assertion (A): Polar areas have high atmospheric pressure.
   Reason (R): These areas receive minimum sunshine throughout the year.
   In the light of the above statements, choose the most appropriate answer from the options given below:
   (A) Both **(A)** and **(R)** are **correct** and **(R)** is the **correct** explanation of **(A)**
   (B) Both **(A)** and **(R)** are true but **(R)** is not the **correct** explanation of **(A)**
   (C) **(A)** is true but **(R)** is false
   (D) **(A)** is false but **(R)** is true

Ans. **Option (C) is correct.**

> *Explanation:* Polar areas have extremely cold temperatures which means the air will be also cold. Cold air is denser and heavier than warm air as there is a higher concentration of air molecules in a given volume. This higher air density contributes to higher atmospheric pressure.

10. Which one of the following numbers is not a prime number?
   (A) 241   (B) 337   (C) 391   (D) 571

Ans. **Option (C) is correct.**

> *Explanation:* A number that can be divided exactly only by itself and 1 is called a prime number.
> Here, 391 is not a prime number as it is divisible by 1, 17, 23 and 391.

11. If the mean of 5 observations x, $x + 2$, $x + 4$, $x + 6$ and $x + 8$ is 11, then value of x:
   (A) 7   (B) 43   (C) 51   (D) 8

Ans. **Option (A) is correct.**

> *Explanation:*
> We have,
> Mean of x, $x + 2$, $x + 4$, $x + 6$ and $x + 8 = 11$
>
> $\therefore \dfrac{x+x+2+x+4+x+6+x+8}{5} = 11$
>
> $\Rightarrow 5x + 20 = 55 \Rightarrow x = 7$

12. Amar is 16th from the left end in a row of boys and Vishal is 18th from the right end. Satish is 11th towards the right of Amar and 3rd towards the right of Vishal side end. How many boys are there is a row?

(A) 45   **(B)** 26   **(C)** 39   **(D)** 41

Ans. Option (D) is correct.

> *Explanation:*
>
> | Amar | Vishal |
> |------|--------|
> | 16 | 18 |
>
> Position of Satish from the left end of the row
> = 16 + 11 = 27
>
> Position of Satish from right end = 18 – 3 = 15
>
> The number of boys in the row = 27 + 15 – 1
> = 41

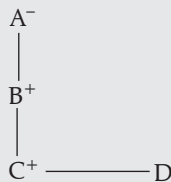**13.** Following question is based on the information given below:

(I) 'R × S' means 'R is father of S'

(II) 'R – S' means 'R is sister of S'

(III) 'R + S' means 'R is mother of S'

(IV) 'R ÷ S' means 'R is brother of S'

In the expression A + B × C ÷ D how is C related to A?

(A) Son   **(B)** Grandson

(C) Granddaughter   **(D)** Grandmother

Ans. Option (B) is correct.

> *Explanation:*
>
> A^-
> |
> B^+
> |
> C^+ ———— D
>
> So, C is the grandson of A.

14. Given below are two statements:

Statement (I): Right to information has been granted to every citizen of India under Right to information Act, 2005 which came into force on 12th October, 2005.

Statement (II): Right to information is a fundamental Right.

In the light of the above statements, choose the **most appropriate** answer from the options given below:

(A) Both **Statement I** and **Statement II** are true

(B) Both **Statement I** and **Statement II** are false

(C) **Statement I** is true but **Statement II** is false

(D) **Statement I** is false but **Statement II** is true

Ans. Option (C) is correct.

> *Explanation:* The RTI Act was enacted by the Indian Parliament on 15th June 2005, and it came into effect on 12th October 2005. It ensures that citizens have the right to access information held by public authorities and government departments, which in turn promote transparency and reduce corruption. However, there are some government organisations that are not in the ambit of RTI due to the nature of information they are handling.

> According to the Constitution of India, RTI is not included as a Fundamental Right. However, it protects and is implicit in Freedom of Expression and Speech under Article 19(1)(a) and Right to Life and Personal Liberty under Article 21 of the Constitution. This makes it an implicit fundamental right.
>
> The fundamental rights in India are mentioned in Article 12–35 of Part III of the Indian constitution. These are the basic civil liberties for the citizens to lead a good life. There are six fundamental rights:
>
> I. Right to equality (Article 14–18)
>
> II. Right to freedom (Article 19–22)
>
> III. Right against exploitation (Article 23–24)
>
> IV. Right to freedom of religion (Article 25–28)
>
> V. Cultural and educational rights (Article 29–30)
>
> VI. Right to constitutional remedies (Article 32–35)

15. Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as Reason (R).

Assertion (A): The 73rd Amendment granted constitutional states to the Gram Sabha.

Reason (R): The Balawant Rai Mehta committee mentioned the Gram Sabha.

In the light of the above statements, choose the **most appropriate** answer from the options given below:

(A) Both **(A)** and **(R)** are **correct** and **(R)** is the **correct** explanation of **(A)**

(B) Both **(A)** and **(R)** are **correct** but **(R)** is not the **correct** explanation of **(A)**

(C) **(A)** is true but **(R)** is not false

(D) **(A)** is false but **(R)** is true

Ans. Option (B) is correct.

> *Explanation:* The Balwant Rai Mehta Committee was formed in the year 1957 in order to examine the working of the community development programme and national extension service. The committee recommended the establishment of a three-tier system of Panchayats in every state, which included:
>
> I. Gram Panchayats at the village level.
>
> II. Panchayat Samitis at the intermediate (block or taluka) level.
>
> III. Zila Parishads at the district level.
>
> It recommended the decentralisation of power and functions at divisional and sub-divisional level.
>
> The 73rd Amendment came into effect from 24th April 1993 and allowed the establishment of a three-tier Panchayati Raj system at village, intermediate block/taluk/mandal and district levels. It stated that Gram Sabhas (villages) and Ward Committees (Municipalities) will be the basic units of democratic system. It also led to the
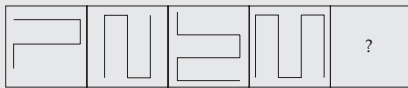
bodies in different territories of the state government. This amendment aimed at strengthening democracy at the grassroots level.

16. Select the figure from the options which will continue the series established by the problem figure:
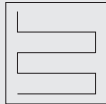

(A)   (B)

(C)   (D)
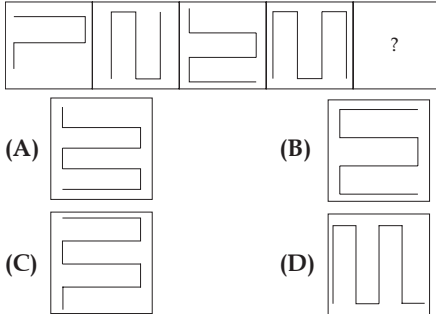
Ans. Option (A) is correct.

> *Explanation:*
>
>
>
> **Logic:**
> Follow the pattern and the symmetry. Hence,
>
>

17. The sum of an Infinite geometric series is 4 and the sum of the cubes of the terms of the same GP is 192. The common ratio of the original geometric series is:

(A) $\dfrac{1}{2}$ (B) $-\dfrac{1}{2}$ (C) $\dfrac{1}{4}$ (D) $-\dfrac{1}{4}$

Ans. Option (B) is correct.

> *Explanation:*
> Let S be the sum of infinite terms of GP, having first term a and common ratio r.
>
> So, $S_1 = \dfrac{a}{1-r} = 4$ \hfill (1)
>
> According to the question,
>
> $S_2 = \dfrac{a^3}{1-r^3} = 192$ \hfill (2)
>
> Putting value of a in equation (2) from (1).
>
> $\Rightarrow \dfrac{64(1-r)^3}{1-r^3} = 192$
>
> $\Rightarrow 2r^2 + 5r + 2 = 0 \Rightarrow r = -2 \text{ or } -\dfrac{1}{2}$
>
> –2 is not possible here.
>
> So, $r = -\dfrac{1}{2}$

18. A clock is started at noon. By 20 minutes past 6, the hand had has turned through:

(A) 175° (B) 180° (C) 185° (D) 190°

Ans. Option (D) is correct.

> *Explanation:*
> Angle traced in 1 hour = 30°
> Hence, the angle traced in 6 hours 20 minutes
> $= 30° \times 6\left(\dfrac{20}{60}\right) = 30° \times \dfrac{19}{3} = 190°$

19. Match **List - I** with **List - II**.

	List - I (World Organization)		List - II (Headquarters)
(1)	BRICS	(I)	Geneva (Switzerland)
(2)	NATO	(II)	Shanghai (China)
(3)	WTO	(III)	Kathmandu (Nepal)
(4)	SAARC	(IV)	Brussels (Belgium)

Choose the **correct** answer from the options given below:

(A) (1)-(III), (2)-(IV), (3)-(I), (4)-(II)
(B) (1)-(IV), (2)-(II), (3)-(I), (4)-(III)
(C) (1)-(II), (2)-(IV), (3)-(I), (4)-(III)
(D) (1)-(II), (2)-(IV), (3)-(III), (4)-(I)

Ans. Option (C) is correct.

> *Explanation:*
>
> | World Organisation | Headquarters |
> |---|---|
> | BRICS (Brazil, Russia, India, China, and South Africa) | Shanghai, China |
> | NATO (North Atlantic Treaty Organization) | Brussels, Belgium |
> | WTO (World Trade Organization) | Geneva, Switzerland |
> | SAARC (South Asian Association for Regional Cooperation) | Kathmandu, Nepal |

20. The credit of inventing soap by using mustard oil and some alkalies goes to which of the following scientist?

(A) Chakrapani (B) Sushruta
(C) Nagarjuna (D) Patayjali

Ans. Option (A) is correct.

> *Explanation:* The credit of inventing soap by using Mustard oil and some alkalies goes to Chakrapani. Oil of Eranda, seeds of Mahua plant and Calcium carbonate were used for making soap. He is also credited for the discovery of Mercury Sulphide.

21. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A): Clothes are not washed properly in hard water.

Reason (R): Hard water contains many minerals.

In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Both **(A)** and **(R)** are **correct** and **(R)** is the **correct** explanation of **(A)**

(B) Both **(A)** and **(R)** are **correct** but **(R)** is not the **correct** explanation of **(A)**

(C) **(A)** is **correct** but (R) is not **correct**

(D) **(A)** is not **correct** but **(R)** is **correct**

Ans. **Option (?) is correct.**

> *Explanation:* The minerals in hard water like calcium and magnesium cause hardness. It interferes with the cleaning action of soaps and detergents. Due to this, larger amounts of soaps and detergents are needed to counteract hard water minerals.

22. How many 3 digit even numbers can be formed from the digits (0 – 9) if repetition of digits are allowed?

(A) 350   (B) 400   (C) 450   (D) 1000

Ans. **Option (C) is correct.**

> *Explanation:*
> Given that the digits are available from 0 to 9.
> Total 3 digit numbers ending with zero
> $= 9 \times 10 \times 1 = 90$
> Total 3 digit numbers ending with even digit
> $= 9 \times 10 \times 4 = 360$
> So, total even number of 3 digit that can be formed by given digits
> $= 90 + 360 = 450$

23. Which of the planet have no satellite?

(A) Mercury   (B) Neptune

(C) Saturn   (D) Venus

Choose the **correct** answer from the options given below:

(A) (b) and (d) only   (B) (a) and (b) only

(C) (b), (c) and (d) only   (D) (a) and (d) only

Ans. **Option (D) is correct.**

> *Explanation:* Mercury and Venus do not have their natural satellites. Satellites are the natural or artificial objects that orbit around the sun. Moon is the natural satellite of our planet Earth. There are eight planets in our solar system- Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.
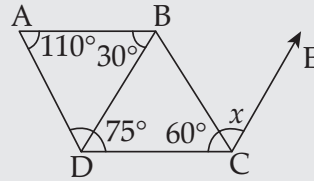
24. If CE || DB, what is the value of x:
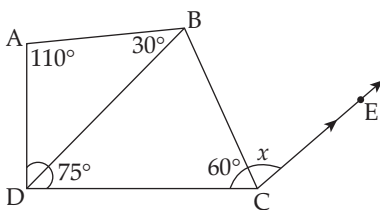
(A) 45°   (B) 30°   (C) 75°   (D) 85°

Ans. **Option (D) is correct.**

> *Explanation:*
>
>
>
> In $\triangle ABD$, $\angle ADB = 180° - (110 + 30°) = 40°$
>
> So, in $\triangle BDC$, $\angle BDC = 75° - 40° = 35°$
> $= 180 - (60° + 35°) = 180 - 95° = 85°$
>
> Hence, by interior alternate angle property of parallel line:
>
> $\angle DBC = \angle BCE = 85°$

25. Who was the Chief Justice of India when public interest litigation (PIL) was introduced to the Indian Judicial system?

(A) M. Hidayatullah

(B) A.M. Ahmadi

(C) P.N. Bhagwati

(D) A.S. Anand

Ans. **Option (C) is correct.**

> *Explanation:* PIL is a legal mechanism that allows citizens to seek judicial intervention in cases where public interest or the interests of disadvantaged and marginalized groups are at stake. It is often used to address issues related to human rights violations, environmental protection, corruption, discrimination, and other matters of public concern. It can be filed by any person or organization acting in the public interest. PIL cases can be filed in both High Courts and the Supreme Court of India. Justice PN Bhagwati was the CJI when the concept of PIL was introduced in the Judicial system.
>
> He was the 17th CJI and is the longest-served supreme court judge (including Chief Justice to tenure) in India.
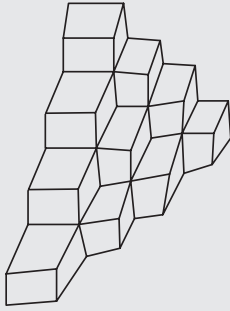
26. How many cubes are there in a group?
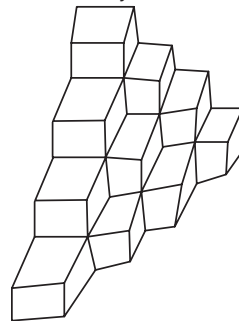
(A) 10   (B) 16   (C) 18   (D) 20

Ans. **Option (D) is correct.**

> *Explanation:*
>
>
>
> So, Number of cubes = 10 + 6 + 3 + 1 = 20

27. The only continent through which Tropic of Cancer, Equator and Tropic of Capricorn passes?

(A) Asia (B) Australia

(C) Antarctica (D) Africa

Ans. **Option (4) is correct.**

> *Explanation:* Africa is the only continent through which the Equator, Tropic of Cancer and Tropic of Capricorn passes. Africa is the second largest continent after Asia with an area of 30.3 million kilometre square.
>
> Equator is the imaginary 0 degree latitude that divides the Earth into Northern and Southern Hemispheres. It is the longest latitude on the Earth.
>
> The Tropic of Cancer is 23 degrees 27 minutes latitude that lies in the Northern Hemisphere. It is the northernmost point where the Sun can be directly overhead at noon during the summer solstice in the Northern Hemisphere.
>
> The Tropic of Capricorn is 23 degrees 27 minutes latitude that lies in the Southern Hemisphere. It is the southernmost point where the Sun can be directly overhead at noon during the summer solstice in the Southern Hemisphere.
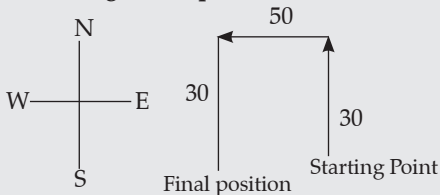
28. Facing towards North, Ravi walks 30 m. He then turns left and walks 50 m. He again turns left and walks 30 m. How far is he from his original position and towards which direction?

(A) 30 m, North (B) 20 m, East

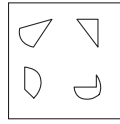(C) 20 m, South (D) 50 m, West

Ans. **Option (D) is correct.**

> *Explanation:*
> According to the question:
>
>
>
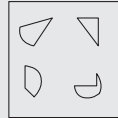> So, he is 50 m away and in the west direction from his original position.

29. Find out the figure that can be formed from the piece given below:

(A)   (B)

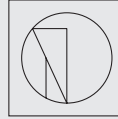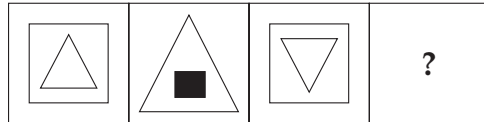(C)   (D)

Ans. **Option (C) is correct.**

> *Explanation:*
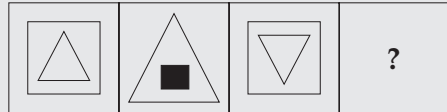>
>
>
> **Logic:**
> Follow the pattern and the symmetry. Hence,
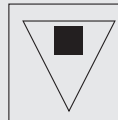>
>

30. Complete the picture series:

(A)   (B)

(C)   (D)

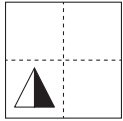**Ans.** **Option (D) is correct.**

> *Explanation:*
>
>
>
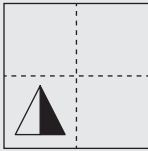> **Logic:**
> Follow the pattern and the symmetry. Hence,
>
>

31. Find from amongst the figure, the one which resembles the pattern formed when the transparent sheet is folded along the dotted line.
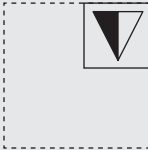
(A) **(B)**

(C) **(D)**

Ans. Option (C) is correct.

Explanation:

Logic:

Follow the pattern and the symmetry. Hence,

32. Who among the following gave the popular slogan "Home Rule is my birthright and I will have it

(A) Annie Besant   (B) Lokamanya Tilak

(C) Dadabhai Naoroji   (D) Aurobindo Ghose

Ans. Option (B) is correct.

Explanation: Bal Gangadhar Tilak, also known as Lokmanya is known for the famous slogan 'Home rule is my birthright and I will have it.' He was an Indian freedom fighter, political activist and teacher. He was also known as 'The father of the Indian unrest' and 'The Maker of Modern India.' He was one of the strongest pioneers of Swaraj. Annie Besant was a British Socialist, women's right activist, theosophist, educationist, and orator. She was the first woman President of the Indian National Congress and headed the Calcutta session of INC in 1917.

Dadabhai Naroji was a political leader, writer, and social reformer. He is fondly referred as the 'Grand Old Man of India' and the 'Father of Indian Economics.' He served as the President of the Indian National Congress three times.

He is widely known for his theory of 'economic drain' in his book 'Poverty and Un-British Rule in India.' He made history by becoming the first Asian to be elected as a Member of Parliament (MP) in the British House of Commons.

33. ₹ 800 becomes ₹ 956 in 3 years at a certain rate of simple interest. If the rate of interest is increased by 4%, what will ₹ 800 amount to in 3 years:

(A) ₹ 1,020,80   (B) ₹ 1,025

(C) ₹ 1,052   (D) ₹ 1,050

Ans. Option(C) is correct.

Given that:

Principal = Rs.800, Amount = Rs.956 and Time = 3 years

Simple Interest = 956 – 800 = Rs.156

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

$$\Rightarrow 156 = \frac{800 \times R \times 3}{100}$$

$$\Rightarrow R = \frac{156}{24}$$

$$\Rightarrow r = 6.5\%$$

New Rate of Interest = 6.5 + 4 = 10.5%

Now, Principal = Rs.800, ROI = 10.5% and Time = 3 year

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

$$SI = \frac{800 \times 10.5 \times 3}{100}$$

$$\Rightarrow SI = 252$$

∴ Amount = 800 + 252 = Rs.1052/-

34. Two statements in the following questions, followed by two conclusions I and II. Read the conclusion and decide most suitable answer.
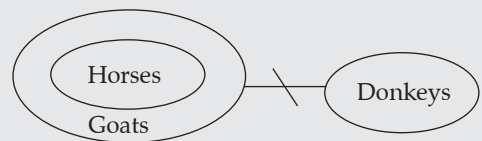
Statements: All horses are goats.

No goat is a donkey.

Conclusions:

(I) No horse is a donkey.

(II) Atleast some goats are horses**.**

(A) If only conclusion I follows.

(B) If only conclusion II follows.

(C) If both conclusion I and II follows.

(D) If none of the conclusion follows.

Ans. Option (C) is correct.

Explanation:

From the Venn diagram conclusion, I and II follow.

35. When did Indian Space Research Organisation (ISRO) launch Chandrayaan-3?

(A) 25th August 2023   (B) 14th July 2023

(C) 23rd August 2023   (D) 2nd September 2023

Ans. Option (C) is correct.

> *Explanation:* ISRO launched the Chandrayaan-3 lunar mission to explore the Moon on 14th July 2023 from the Satish Dhawan Space Centre, Andhra Pradesh on the back of a Geosynchronous Satellite Launch Vehicle Mark III (GSLV-MK III) heavy-lift rocket. It consists of a lander named Vikram and a rover named Pragyan similar to Chandrayaan-2, but does not have an orbiter. The Vikram lander of the mission successfully soft-landed on the surface of the South Pole region of the Moon on 23rd August making India the first country in the world to reach the South Pole of the moon.
> Ritu Karidhal, a senior scientist at ISRO known as the 'Rocket Woman' of India, is the Mission Director for Chandrayaan-3, India's third lunar exploration mission. P Veeramuthuvel is the Project Director for Chandrayaan-3.

36. A trader sold half of his articles at 60% profit, half of the remaining at 20% loss and the rest was sold at the cost price. In total transaction his gain % or loss % will be:

(A) Gain 20 % (B) Loss 5 %
(C) Gain 40 % (D) Gain 25 %

Ans. Option (D) is correct.

> *Explanation:*
> Given, Half of his article sold at 60% profit.
> Half of the remaining at 20% loss.
> And rest at cost price only.
> Let there was total 4 articles.
> Using weighted average,
> $$\text{Total Profit} = \frac{(2 \times 60) + (1 \times (-20)) + (1 \times 0)}{2 + 1 + 1}$$
> $$= \frac{120 - 20}{4} = 25\%$$
> Hence, the total profit = 25%

37. Match **List - I** with **List - II**.

	List - I (Name of City)		List - II (Famous for production of)
(1)	Ahmedabad	(I)	Machine tools
(2)	Bangalore	(II)	Aluminium
(3)	Bhilai	(III)	Textiles
(4)	Renukoot	(IV)	Steel

Choose the **correct** answer from the options given below:

(A) (1)-(I), (2)-(II), (3)-(III), (4)-(IV)
(B) (1)-(II), (2)-(III), (3)-(IV), (4)-(I)
(C) (1)-(III), (2)-(I), (3)-(IV), (4)-(II)
(D) (1)-(IV), (2)-(III), (3)-(II), (4)-(I)

Ans. Option (C) is correct.

Name of the city	Famous for production of
Ahmedabad	Cotton textiles
Bengaluru	Machine tools
Bhilai	Steel
Renukoot	Aluminium

38. Which of the following was the mascot of the third edition of Khelo India University Games 2023?

(A) Ritu (B) Jitu (C) Minku (D) Kitu

Ans. Option (B) is correct.

> *Explanation:* The mascot of the third edition of Khelo India University Games was named Jitu, which represents Swamp Deer (Barasingha) - the state animal of Uttar Pradesh. The first edition was Khelo India University Games held in Odisha in 2020, the second edition was held in Bangalore, Karnataka in 2022. KIUG 2023 was held in Uttar Pradesh with participation of over 4750 athletes from more than 200 Universities competing in 21 sports categories.

39. Find out the wrong number in the sequence:

40960, 10240, 2560, 640, 200, 40, 10

(A) 40 (B) 640 (C) 200 (D) 2560

Ans. Option (C) is correct.

> *Explanation:*
> **Given series:** 40960, 10240, 2560, 640, 200, 40, 10
> **Logic:**
> Go on dividing by 4 to get the next number. Hence, 200 is wrong in the series.

40. The constitution authorises the president to make provisions for discharge of duties of Governor in extraordinary circumstances under the _____.

(A) Article 160 (B) Article 162
(C) Article 165 (D) Article 310

Ans. Option (A) is correct.

> *Explanation:* The Constitution authorizes the President to make provisions for the discharge of duties of governor in extraordinary circumstances under Article 160.
> Article 162 states that the powers of the State executive extend to those matters upon which the State has the power or the authority to legislate/make laws, and are thereby not confined to those matters over which the States have already legislated upon.
> Article 165 states that the Governor of each State shall appoint a person who is qualified to be appointed as a Judge of a High Court to be Advocate General for the State.
> Article 310 of the Indian Constitution states that every person in the defence or civil service of the Union holds office during the pleasure of the President, and every member of the civil service in the States holds office during the pleasure of the Governor.

41. The fibre crop which is known as the Golden Fibre?
(A) Cotton (B) Hump
(C) Natural Silk (D) Jute

Ans. Option (D) is correct.

> *Explanation:* Jute is also known as Golden Fibre as it is golden brown in color and has high cash value. It is a natural fibre grown mostly in West Bengal and Assam. India along with Bangladesh is one of the major producers of Jute. It is a rain-fed crop with little need for fertilizer or pesticides. Owing to its tensile strength and affordability, jute is extensively used for manufacturing sacks, ropes, twine, mats, and coarse fabrics. It is also used for packaging. Besides, it is used in manufacturing of carpets, rugs, textiles, and handicrafts etc. It is an eco-friendly option while being biodegradable and renewable.

42. The first person to use crystal for radio wave detection was:
(A) J.C. Bose (B) H.C. Verma
(C) S.N. Bose (D) C.V. Raman

Ans. Option (A) is correct.

> *Explanation:* The first person to use crystal for radio wave detection was Jagadish Chandra Bose in his microwave experiments in the year 1894. JC Bose was an Indian physicist and plant physiologist. He is considered as the 'father of Bengali science fiction.' He is known for the invention of the crescograph, a device for measuring the growth of plants.
>
> HC Verma is an Indian physicist and is widely known for his undergraduate and graduate level Physics textbooks. He was honoured with Padma Shri by the Government of India and Maulana Abul Kalam Azad Shiksha Puruska by the government of Bihar.
>
> Satyendra Nath Bose was an Indian Physicist and mathematician. He is known for his significant contribution to the field of Quantum and statistical mechanics. He collaborated with Albert Einstein in the development of the theory of Bose-Einstein statistics.
>
> CV Raman was an Indian Physicist. He is known for the discovery of the Raman effect for which he was awarded with the Nobel Prize in Physics in the year 1930.

43. The surface area (in m^2) of a sphere of radius 7 cm is:
$$\left(\text{Use } \pi = \frac{22}{7} \right)$$
(A) 0.0616 (B) 6.16 (C) 61.6 (D) 0.616

Ans. Option (A) is correct.

> *Explanation:*
> Given that radius of sphere = 7 cm
> Using, surface area = $4\pi r^2$
> $$= 4 \times \frac{22}{7} \times 7 \times 7 = 616 \text{ cm}^2$$
> or 0.0616 m^2

44. By selling on book for ₹250 , loss percentage is 10 %. What is the cost price?
(A) 277.7 (B) 250 (C) 285 (D) 315

Ans. Option (A) is correct.

> *Explanation:*
> **Given that:**
> S.P. of book = ₹ 250
> loss % = 10%
> Using, $\text{C.P.} \times \left(\dfrac{100 - \text{loss}\%}{100} \right) = \text{S.P.}$
> $$\text{C.P.} \times \left(\frac{100 - 10\,\%}{100} \right) = \text{S.P.} = 250$$
> $$\text{C.P.} = \frac{250 \times 100}{90} = 277.7$$

45. If $\dfrac{x}{(b+c)(b+c-2a)} = \dfrac{y}{(c-a)(c+a-2b)} = \dfrac{z}{(a-b)(a+b-2c)}$
then value of $x + y + z$ is:
(A) $a + b + c$ (B) $a^2 + b^2 + c^2$
(C) 0 (D) 1

Ans. Option (C) is correct.

> *Explanation:*
> Given:
> $$\frac{x}{(b-c)(b+c-2a)} = \frac{y}{(c-a)(c+a-2b)}$$
> $$= \frac{z}{(a-b)(a+b-2c)} = k$$
> So, $x = (b-c)(b+c-2a)k$
> $= k(b^2 - c^2 - 2ab + 2ac)$
> Similarly $y = k(c-a)(c+a-2b)$
> $= k(c^2 - a^2 + 2ab - 2bc)$
> and $z = k(a-b)(a+b-2c)$
> $= k\,(a^2 - b^2 + 2bc - 2ac)$
> Now $x + y + z = k[b^2 - c^2 - 2ab + 2ac + c^2 - a^2 + 2ab - 2bc + a^2 - b^2 + 2bc - 2ac]$
> $= \text{k} \times 0 = 0$

46. A completes $\dfrac{7}{20}$ of a work in 10 days. Then he completes the remaining work with the help of B in 5 days. The time required for A and B together to complete the entire work is:
(A) $\dfrac{100}{29}$ days (B) $\dfrac{100}{13}$ days
(C) $\dfrac{100}{17}$ days (D) $\dfrac{200}{13}$ days

Ans. Option (B) is correct.

Explanation:

Given: A can do $\dfrac{7}{20}$ of work in = 10 days

So, remaining work = $1 - \dfrac{7}{20} = \dfrac{13}{20}$ part.

Also given $\dfrac{13}{20}$ of the work, A and B can do in = 5 days.

So, total time taken by them together to finish the complete work = $\dfrac{5}{13/20}$

$= \dfrac{5 \times 20}{13} = \dfrac{100}{13}$ days.

47. Look at the statement and mark the **correct** answer on the conclusions that follows:

Statements: A. Shubham is my cousin.

B. A cousin may be a aunt's son, uncle's son or son of parent's step-siblings.

Conclusions:

(I) Shubham is my sisters son.

(II) Shubham is my uncle's son.

(A) Only conclusion I follows.

(B) Only conclusion II follows.

(C) Both conclusion I and II follows.

(D) Neither conclusion I nor II follows.

Ans. Option (B) is correct.

Explanation: Shubham is my uncle's son. Hence, only conclusion II follows.

48. If today is Monday, after 62 days, it will be:

(A) Wednesday   (B) Saturday

(C) Sunday   (D) Thursday

Ans. Option (C) is correct.

Explanation:

Number of odd days in 62 days = $\dfrac{62}{7}$ = 6

Monday + 6 $\longrightarrow$ Sunday

49. The price of rice increases by 30%. A family reduced its consumption so that the expenditure of the rice is up only by 10%. If the total consumption of the rice before the price rise was 10 kg per month, then the consumption of rice per month at present (in kg) is:

(A) $7\dfrac{6}{15}$ (B) $8\dfrac{1}{15}$ (C) $8\dfrac{6}{13}$ (D) $8\dfrac{5}{13}$

Ans. Option (D) is correct.

Explanation:

Given price of rice increased by 30%, let the family reduced the consumption by x %

Now percentage increase in expenditure =10%

Using successive percentage change

$= x + \dfrac{xy}{100} + y$

$\Rightarrow \quad 10 = 30 - x - \dfrac{30x}{100}$

$\Rightarrow \dfrac{130x}{100} = 20 \Rightarrow x = \dfrac{200}{13}\%$

According to the question, present

consumption of rice $= 10 \times \left(\dfrac{100 - \dfrac{200}{13}}{100} \right)$

$= \dfrac{110}{13} = 8\dfrac{6}{13}$ kg.

50. The volume of a sphere of radius r is obtained by multiplying its surface area with:

(A) $\dfrac{4}{3}$ (B) $\dfrac{r}{3}$ (C) $\dfrac{4r}{3}$ (D) $3r$

Ans. Option (B) is correct.

Explanation:

Given that the radius of sphere = r

we have, volume of sphere = $\dfrac{4}{3}\pi r^2$

ans surface area of sphere = $4\pi r^2$

So, required multiplier $= \dfrac{\dfrac{4}{3}\pi r^3}{4\pi r^2} = \dfrac{r}{3}$

51. If EFFECTIVE is coded as FEGDDSJUF, then how RELATIVE can be written in that code?

(A) TDNZVHXD   (B) TCNAVGXC

(C) SDMZUHWD   (D) SCMAUGXD

Ans. Option (C) is correct.

Explanation:

Given pattern:	Similarly,
E + 1 = F	R + 1 = S
F – 1 = E	E – 1 = D
F + 1 = G	L + 1 = M
E – 1 = D	A – 1 = Z
C + 1 = D	T + 1 = U
T – 1 = S	I – 1 = H
I + 1 = J	V + 1 = W
V – 1 = U	E – 1 = D
E + 1 = F	

So, the code for 'RELATIVE' = SDMZUHWD

52. A bag contains 6 red, 4 blue and 10 white balls. A ball is picked from the bag at random What is the probability that it is neither white nor blue?

(A) $\dfrac{20}{6}$ (B) $\dfrac{3}{10}$ (C) $\dfrac{2}{5}$ (D) $\dfrac{1}{2}$

Ans. **Option (B) is correct.**

Explanation:

Given that:

Number of balls in bag:

red = 6

blue = 4

white = 10

So, probability of a ball being neither white nor blue = probability of ball being red

$\therefore$ Required probability = $\dfrac{6}{(6+4+10)}$

$= \dfrac{6}{20} = \dfrac{3}{10}$

53. Find the area of an equilateral triangle each of whose sides measures 4 cm:

(A) $4\sqrt{3}\,\text{cm}^2$ (B) $4\sqrt{3}\,\text{m}^2$

(C) $3\sqrt{3}\,\text{cm}^2$ (D) $3\sqrt{3}\,\text{m}^2$

Ans. **Option (A) is correct.**

Explanation:

Given that side of equilateral

Triangle = 4 cm

using, area of equilateral triangle = $\dfrac{\sqrt{3}}{4} \times \text{side}^2$

$= \dfrac{\sqrt{3}}{4} \times 16$

$= 4\sqrt{3}\,\text{cm}^2$

54. The difference between two numbers is 24. If one number is 2 times the second. Then the two numbers will be:
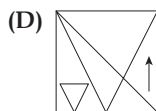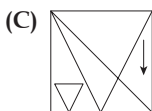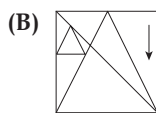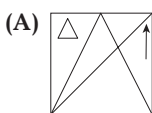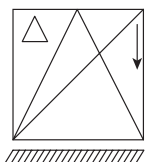
(A) 36, 12 (B) 48, 24 (C) 32, 8 (D) 12, 6
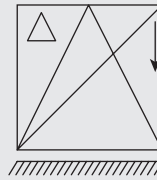
Ans. **Option (B) is correct.**

Explanation:

Given that difference between the numbers = 24 and first number is twice the second.

from the given options,

option (2) : 48 − 24 = 24

and 48 = 2 × 24

So, both conditions are satisfied.
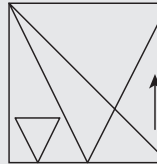
55. Choose the **correct** mirror image:

(A) (B)

(C) (D)

Ans. **Option (D) is correct.**

Explanation:

Logic:

The top becomes the bottom and the bottom becomes the top. Hence,

56. Match **List - I** with **List - II**.

	List - I		List - II
(1)	First speaker of Lok Sabha	(I)	Dr. Amartya Sen
(2)	First Indian to get Bharat Ratna Award	(II)	G.V. Mavalankar
(3)	First Indian recipient of Nobel Prize in Economics	(III)	Dr. S. Radhakrishnan
(4)	First Indian Nobel Laureate	(IV)	Rabindra Nath Tagore

Choose the **correct** answer from the options given below:

(A) (1)-(II), (2)-(III), (3)-(I), (4)-(IV)

(B) (1)-(II), (2)-(III), (3)-(IV), (4)-(I)

(C) (1)-(III), (2)-(II), (3)-(I), (4)-(IV)

(D) (1)-(IV), (2)-(III), (3)-(I), (4)-(II)

Ans. **Option (A) is correct.**

Explanation:

List I	List II
First speaker of Lok Sabha	Ganesh Vasudev Mavalankar
First Indian to get Bharat Ratna	Sarvepalli Radhakrishnan
First Indian recipient of Nobel Prize in Economics	Professor Amartya Sen
First Indian Nobel laureate	Rabindranath Tagore

57. The National Sports Day in India is celebrated in the memory of whom?

(A) Major Dhyan Chand (B) Dhanraj Pillay

(C) Roop Singh (D) Abhinav Bindra

Ans. Option (A) is correct.

> *Explanation:* The National Sports Day of India is celebrated on 29th August as a tribute to Major Dhyan Chand, who is also known as the Hockey Wizard. He played a key role in helping India win three consecutive golds in 1928, 1932, and 1936 Olympics. The day is also known as Rashtriya Khel Divas. The first day was celebrated in 2012. Theme for 2023- 'Sports are an enabler to an inclusive and fit society.'

58. A boy is running at a speed of p km/h to cover a distance of 1 km but due to slippery ground his speed is reduced by q km/h ($p > q$). If he takes r hours to cover the distance, which of the following condition is true:

(A) $\dfrac{1}{r} = (p - q)$ **(B)** $r = (p - q)$

(C) $r = \dfrac{1}{p + q}$ **(D)** $r = p + q$

Ans. Option (A) is correct.

> *Explanation:*
> Given:
> Initial speed of boy = P km/h
> Due to slippery ground, new
> speed = $(p - q)$ km/h
> time taken to cover the distance = r hou8r
> Using: time $= \dfrac{\text{Distance}}{\text{Speed}}$ $r = \dfrac{1}{(p - q)}$
> or $\dfrac{1}{r} = (p - q)$

59. What can be placed at '?' if both side of '::' have same relationship between numbers:

85 : 42 :: 139 : _?_

(A) 68   **(B)** 69   **(C)** 70   **(D)** 67

Ans. Option (B) is correct.

> *Explanation:*
> **Given sequence:**
> 85 : 42 :: 139 : ?
> **Logic:**
> $42 \times 2 + 1 = 85$
> $69 \times 2 + 1 = 139$

60. Commemoration of national days should always be encouraged in schools and colleges. Which of the following statement given below is a strong argument:

(A) This type of commemoration gives opportunity to children and youth to value to contribution of people who built our nation.

(B) There is nothing wrong in celebrating a day and enjoy once is a while.

(C) These events hamper the focus of students from regular study.

(I) Argument (A) and (B) are strong

(II) Only argument (A) is strong

(III) Argument (B) and (C) are strong

(IV) Only argument (C) is strong

Ans. Option (A) is correct.

> *Explanation:*
> Argument (A) highlights the educational value of recognizing national days, emphasizing how it gives children and youth a chance to learn about the contributions of those who helped to create the country. Because it emphasizes the need of education and historical awareness, this is a powerful argument.
>
> Argument (B), there is nothing wrong with occasionally commemorating a day and taking pleasure in it. Although less convincing than Argument (A), it nevertheless offers a valuable viewpoint by recognizing the significance of taking a break and celebrating special occasions, which can improve students' general well-being.
>
> Argument (C, asserts that these incidents divert students' attention from academic work, but it offers no convincing justification for why national days should be observed.
>
> So, Arguments (A) and (B) are strong.

◆◆◆