SSC CGL 13th August 2021 Shift-3

1. **In which of the following places is a steel plant under SAIL located?**

A Raigarh

B Korba

C Bilaspur

D **Bhilai**

Solution

Steel Authority of India Limited (SAIL):

- It was established in 1954.
- It is a government-owned steel producer.
- It comes under the aegis of the Ministry of Steel.
- Its headquarters is in New Delhi, India.
- Soma Mondal is the current Chairman.

2. **..... National Park is in Ladakh.**

A Namdapha

B **Hemis**

C Gir

D Manas

Solution

Hemis National Park:

- It is the largest national park in India.
- The park has the highest density of snow leopards in any protected area in the world.
- The species found in the park are Snow leopards, Argali (Great Tibetan Sheep), Bharal (Blue Sheep), Shapu (Ladakhi Urial), Asiatic ibex, The Tibetan wolf, Eurasian brown bear, Red fox, Marmot, Mountain weasel.

3. **In which of the following years was the All-India Harijan Sevak Sangh founded?**

A 1928

B 1932

C 1942

D 1919

Solution

All-India Harijan Sevak Sangh:

- It was founded by Mahatma Gandhi in the year 1932.
- It was founded in Delhi.
- It is an independent not for profit voluntary Organisation.
- It is also known as the All India Anti-Untouchability League.
- The main aim of the Sangh was to combat untouchability.

4. **The concept of 'Reservation of seats for Scheduled Castes and Scheduled Tribes in the House of the People' is highlighted in Article ..... of the Constitution of India.**

A 345

B 326

C **330**

D 361

Solution

- Article 330 of the Indian Constitution deals with the Reservation of seats for Scheduled Castes and Scheduled Tribes in the House of the People from the:
- The Scheduled Castes.
- The Scheduled Tribes except for the Scheduled Tribes in the autonomous districts of Assam.
- The Scheduled Tribes in the autonomous districts of Assam.

5. **According to National Education Policy 2020, vocational education will start from _ with internships.**

A Class VIII

B Class V

C Class VII

D Class VI

Solution

- The new policy replaced the education policy of 1986.
- The policy will do universalization of education from preschool to secondary level with 100% Gross Enrolment Ratio (GER) in education by 2030.
- It will replace the current 10+2 system with a new 5+3+3+4 curricular structure corresponding to ages 3-8, 8-11, 11-14, and 14-18 years respectively.
- The policy lays emphasis on foundational literacy and numeracy.
- There will be no rigid separation between academic streams, extracurricular, vocational streams in schools.

6. **Which of the following Buddhist sites is located in Uttar Pradesh?**

A **Sarnath**

B Sanchi

C Amaravati

D Karle

Solution

- Sarnath is located near Varanasi in Uttar Pradesh.
- Sarnath is an important Buddhist site because Buddha delivered his first sermon here to his five disciples.
- This is known as Dharmachaka Pravartana (turning of the wheel of law).
- The National Emblem of India is an adaptation of the Buddhist Lion Capital of Ashoka at Sarnath.

7. **Who among the following won the 10th National Ice Hockey Championship trophy in Gulmarg in January 2021?**

A Central Industrial Security Force (CISF)

B Central Reserve Police Force (CRPF)

C National Highway Authority of India (NHAI)

D Indo Tibetan Border Police (ITBP)

Solution

- The tournament was organized by the Ice Hockey Association of India (IHAI).
- It was won by Indo Tibetan Border Police (ITBP).
- ITBP defeated Ladakh.
- The match was held at Gulmarg Ice Rink.
- The championship was held at an altitude of 8,694-feet and temperatures below freezing point.

8. **Viscose fibre is obtained from _.**

A petrochemicals

B cellulose

C oil

D coal

Solution

- Viscose is made from natural cellulose like tree wood pulp, beech, pine, and eucalyptus.
- It is also obtained from bamboo.
- After the processing of viscose, it becomes semi-synthetic by the use of chemicals like sodium hydroxide and carbon disulfide.
- The fibre is absorbent, lightweight, breathable, soft and proves to be an ideal fabric for making clothes.

9. **Which State Assembly passed the resolution on Sarna Code in November 2020?**

A Madhya Pradesh

B Bihar

C Chhattisgarh

D Jharkhand

Solution

- The code of provisions of separate law for the Sarna tribal community.
- It was passed by the Jharkhand State Assembly.
- It empowers tribals to identify themselves as belonging to a distinct religious community.
- Before the code, they were not classified as a separate religious category.

10. **The Ramon Magsaysay Award was established in the year _.**

A 1965

B 1962

C **1957**

D 1982

Solution

- It is an annual award established to preserve former Philippine President Ramon Magsaysay's example of integrity in government, courageous service to the people, and pragmatic idealism within a democratic society.
- The Ramon Magsaysay Award is also considered Asia's Nobel Prize.
- The award was established in the year 1957 by the trustees of the Rockefeller Brothers Fund based in New York City with the concurrence of the Philippines government. *

11. **Which of the following is NOT an outcome of endogenic forces?**

A Landslides

B Volcanic eruptions

C **Sea waves**

D Earthquakes

Solution

Endogenic forces:

- These forces are also called Internal Forces.
- The forces originating in the interior of the earth are called the internal or the endogenic forces.
- Volcanic eruptions, Earthquakes, and Landslides are examples of internal forces. **Exogenic Forces:**
- These forces are also called External Forces.
- The forces affecting the surface of the earth from outside are called the external or exogenic forces.

Sea waves are the outcomes of wind and gravitational energy.

12. **'Aaluyattu' is a folk-dance form from the state of _.**

A **Nagaland**

B Kerala

C Haryana

D Goa

Solution

- The folk dances of Kerala are Kaikottikali, Mudiyett, Sangha Kali, Brahmanippattu, Dappu Kali, Kolkali and Vattakkali.
- The folk dances of Haryana are Ras Leela, Phag Dance, Loor, Daph dance.
- The folk dances of Goa are Dekhni, fugdi, Dashavatara, Dhalo, Goff and Kunbi.

13. **How many arteries are there in an umbilical cord?**

A Three

B One

C **Two**

D Four

Solution

*** The umbilical cord:**

- During pregnancy, it is a flexible, tube-like structure that connects the fetus to the mother.
- The cord transports nutrients to the baby and also carries away the waste products of the baby.
- The cord is made up of two arteries and one vein.
- Arteries carry pure blood from the heart to other parts of the body.
- Veins carry impure blood to the heart.

14. **For a wave, wavelength divided by the time period is equal to:**

A phase difference

B amplitude

C **wave velocity**

D frequency

Solution

- Wavelength is the distance between any two nearest particles of the medium, vibrating in the same phase.
- It is denoted by the Greek letter lambda.
- In a transverse wave distance between two consecutive crests or troughs, and in a longitudinal wave, the distance between two consecutive compressions or refractions is equal to the wavelength.
- Wave velocity is the distance traversed by a periodic motion (time period) per unit time.

15. **Which of the following Articles of the Constitution of India provides power to the President for promulgating ordinances?**

A **Article 123**

B Article 143

C Article 77

D Article 111

Solution

- The oath of the President is administered by the Chief Justice of India and in his absence, the seniormost Judge of the Supreme Court.
- According to Article 56, the President shall hold office for a term of five years from the date on which he enters his office.
- Article 123 of the Constitution of India provides power to the President for promulgating ordinances.

16. **Carbon and energy requirements of an autotrophic organism are fulfilled by ..... .**

A respiration

B locomotion

C glycogenation

D **photosynthesis**

Solution

- Water enters into cells of the leaves through osmosis and CO2 through diffusion from the atmosphere or released during respiration.
- The green colour of the plants is due to the presence of chlorophyll.
- There is an atom of magnesium in the center of chlorophyll.
- Chlorophyll absorbs the violet, blue, and red colour of light.
- The rate of photosynthesis is maximum in red light and is minimum in violet light.

17. **Chandernagore (Chandannagar) was a _ colony captured by the British Navy on 23 March 1757.**

A French

B Danish

C Portuguese

D **Dutch**

Solution

- he French Company was formed in 1664 AD by Colbert under state patronage during the reign of Louis XIV.
- The first French factory was established at Surat by Francois Caron in 1668 AD and the second at Masulipatnam in 1669 AD.
- They occupied Mahe, Yanam and Karaikal.
- The foundation of Pondicherry was laid in 1673 AD, which afterward became its capital.
- They also developed a factory at Chandernagar.

18. **Who among the following economist coined the terminology 'Hindu Rate of Growth'?**

A Vijay Kelkar

B Bimal Jalan

C **Raj Krishna**

D Amiya Kumar Bagchi

Solution

- The country's annual population growth rate was over 2% in the 1980s.
- The per-capita GDP growth rate, with 3.5% GDP growth, was a meager 1 % characterizing the Hindu rate of growth.
- The term “Hindu” was used by some early economists to indicate that the Hindu outlook of acceptance and contentedness was responsible for the slow growth.

19. **In cricket which of the following fielding positions is behind the batsman?**

A Mid-wicket

B **First slip**

C Mid off

D Cover

Solution

- The first official cricket test match was played in the year 1877 between Australia and England in Melbourne.
- The First One Day International cricket match was played in the year 1971 between England and Australia in Melbourne.
- The first World Cup of one-day matches was played in 1975 in London.
- The apex institution of world cricket is the International Cricket Council (ICC) and its headquarters are now in Dubai.

20. **The Sun Temple of Odisha was built in the 12th Century AD by which of the following emperors?**

A **Narasimha Deva I**

B Vijaya Sena

C Kharavela

D Dharmapala

Solution

Sun Temple:

- It was built by Narasimha Deva I in the 13th century.
- True to its name, the temple is dedicated to Surya or the Sun God.
- The temple reflects the Kalinga architecture.
- Kama Konark means the sun and the four corners.

21. **The ICTP Ramanujan Prize is awarded annually for excellence in _.**

A Physics

B Chemistry

C **Mathematics**

D Biology

Solution

- The Prize is given to young mathematicians from developing countries.
- It is named after the mathematician Srinivasa Ramanujan.
- It was founded in 2004 and was first given in the year 2005.
- It was instituted by organizations ICTP, the Niels Henrik Abel Memorial Fund, and the International Mathematical Union (IMU).
- The participation of the Niels Henrik Abel Memorial Fund ended in 2012.
- The Department of Science and Technology of the Government of India (DST) started funding the prize in 2014.

22. **Where is the famous pilgrim spot of Sikhs, Sri Harmandir Sahib located?**

A Manali

B Patna

C **Amritsar**

D JalandharJalandhar

Solution

- Sri Harmandir Sahib/Golden Temple of Amritsar
- It is the holy shrine of the Sikhs.
- It is also known as The Golden Temple of Amritsar.
- The Golden Temple complex includes the Akal Takht, Sikh history museum, the Amrit Sarovar and Guru Ram Das Langar (a large dining hall).

23. **In 2020, the United Nations passed a resolution to remove cannabis and cannabis resin from the category of 'most dangerous substances'. Which of the following countries was absent from the voting?**

A The US

B Russia

C **Ukraine**

D India

Solution

- The United Nations has passed a resolution to remove hemp and cannabis resin from the category of 'most dangerous substances'.
- India and 25 other countries including China, Pakistan, and Russia voted in favor of the resolution.
- Ukraine remained absent during the voting process.
- Cannabis and its resin were omitted from Schedule IV of the Single Convention on Narcotic Drugs, 1961.
- Two drugs were classified as "least dangerous" substances under the Schedule 1 list.

24. **Which of the following is a tributary of the river Brahmaputra that flows through Bhutan?**

A Ayeyarwady River

B Sittaung River

C Chindwin River

D **Wang Chhu River**

Solution

- The Raidak river is also known as the Wang Chhu River.
- It flows through Bhutan, India, and Bangladesh.
- Chukha hydel plant and Tala Hydroelectric Power Station are located on the river.

25. **Lymph is a light clear fluid made up of white blood cells that attack harmful _ in the blood.**

A **bacteria**

B fungi

C protozoa

D viruses

Solution

Diseases caused by bacteria:

Diphtheria, pneumonia, cholera, tetanus, tuberculosis, plague, and gonorrhea.

Diseases caused by fungi:

Ringworm and athlete's foot.

Diseases caused by protozoa: Malaria, Dysentery, Diarrhea, Kala Azari.

26. **A train is to cover 370 km at a uniform speed. After running 100 km, the train could run at a speed 5 km/h less than its normal speed due to some technical fault. The train got delayed by 36 minutes. What is the normal speed of the train, in km/h?**

A 40

B 45

C **50**

D 48

Solution

By Hit and Trial Method:

\([100 / x+270 /(x-5)]-370 / x=36 / 60\)

Option 1: \([100 / 40+270 /(35)]-370 / 40 \neq 36 / 60\)

Option 2: \([100 / 45+270 /(40)]-370 / 45 \neq 36 / 60\)

Option 3: \([100 / 50+270 /(45)]-370 / 50=36 / 60\)

Option 4: \([100 / 48+270 /(43)]-370 / 48 \neq 36 / 60\)

27. **If \(3 \tan \theta=2 \sqrt{3} \sin \theta, 0^{\circ}<\theta<90^{\circ}\), then find the value of \(2 \sin ^{2} 2 \theta-3 \cos ^{2} 3 \theta\).**

A **\(\frac{3}{2}\)**

B \(\frac{1}{2}\)

C \(-\frac{3}{2}\)

D 1

Solution

By value Putting Method

At \(\theta=30^{\circ}, 3 \tan \theta=2 \sqrt{3} \sin \theta\)

At \(\theta=45^{\circ}, 3 \tan \theta \neq 2 \sqrt{3} \sin \theta\)

At \(\theta=60^{\circ}, 3 \tan \theta \neq 2 \sqrt{3} \sin \theta\)

So, at \(\theta=30^{\circ}\)

\(\Rightarrow 2 \sin ^{2} 2 \theta-3 \cos ^{2} 3 \theta\)

\(\Rightarrow 2 \sin ^{2} 2 \times 30^{\circ}-3 \cos ^{2} 3 \times 30^{\circ}\)

\(\Rightarrow 2 \sin ^{2} 60^{\circ}-3 \cos ^{2} 90^{\circ}\)

$\Rightarrow 2 \times(\sqrt{3} / 2)^{2}-3 \times 0$

$\Rightarrow 2 \times 3 / 4-0$

$\Rightarrow 3 / 2$

28. **A shopkeeper marks his goods 30% higher than the cost price and allows a discount of 10% on the marked price. In order to earn 6.5% more profit, what discount percent should he allow on the marked price?**

A **5%**

B 4%

C 6%

D 5.5%

Solution

Let the cost price be = 100a

Marked price = 100a + 100a × 30/100 = 130a

Selling price after discount = 130a - 130a × 10/100

⇒ 117a

Selling price for 6.5% more profit = 117a + 100a × 6.5/100

⇒ 117a + 6.5a = 123.5a

∴ New Discount percent = (130a -123.5a)/130 × 100

⇒ 5%

29. **A circle touches all the four sides of a quadrilateral ABCD whose sides are AB = 8.4 cm, BC = 9.8 cm and CD = 5.6 cm. The length of side AD, in cm, is:**

A 4.9

B 3.8

C **4.2**

D 2.8

Solution

Let the circle touches the sides AB, BC, CD and DA of quadrilateral ABCD at P, Q, R and S.

∵ The tangents drawn from external points are equal.

∴ DR = DS

⇒ CR = CQ

⇒BP = BQ

⇒AP = AS

By adding all these equations, we get CD + AB = AD + BC

$5.6 + 8.4 = 9.8 + BC$

$\Rightarrow 14 - 9.8 = 4.2 = BC$

$\therefore BC = 4.2$ cm

30. **$\triangle \mathrm{ABC} \sim \triangle \mathrm{DEF}$ and the area of $\triangle \mathrm{ABC}$ is $13.5 \mathrm{~cm}^{2}$ and the area of $\triangle \mathrm{DEF}$ is $24 \mathrm{~cm}^{2}$. If $\mathrm{BC}=3.15 \mathrm{~cm}$, then the length (in cm)) of EF is:**

A 4.2

B 3.9

C 4.8

D 5.1

Solution

$13.5 / 24=(3.15)^{2} /(\mathrm{EF})^{2}$

$\Rightarrow 3.15 / \mathrm{EF}=\sqrt{13.5 / 24}$

$\Rightarrow 3.15 / \mathrm{EF}=\sqrt{9 / 16}$

$\Rightarrow 3.15 / \mathrm{EF}=3 / 4$

$\therefore \mathrm{EF}=3.15 \times 4 / 3$

$\Rightarrow \mathrm{EF}=4.2 \mathrm{~cm}$

31. **A trader bought 640 kg of rice. He sold a part of rice at 20% profit and the rest at 5% loss. He earned a profit of 15% in the entire transaction. What is the quantity (in kg) of rice that he sold at 5% loss?**

A 154 kg

B 132 kg

C 256 kg

D **128 kg**

Solution

Let the part sold at 5% loss be = a kg

a × - 5% + (640 - a) × 20% = 640 × 15/100

⇒ - 5a + 640 × 20 - 20a = 640 × 15

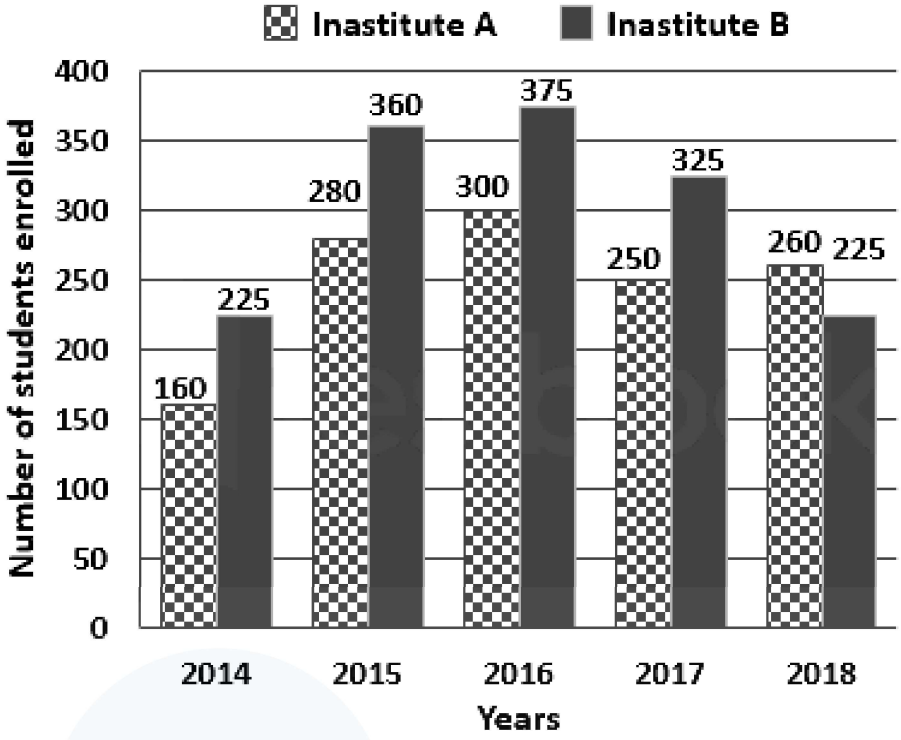
⇒ 640 × 20 - 640 × 15 = 25a

⇒ 640 × (20 -15)/25 = a

⇒ a = 128

∴ The part that was sold at 5% loss is 128 kg.

32. **Bar graph shows the number of students enrolled for a vocational course in institutes A and B during 5 years from 2014 to 2018.**



In which year the number of students enrolled in institute A is x% less, where 25 < x < 30, than the number of students enrolled in institute B in the same year?

A **2014**

B 2017

C 2015

D 2016

Solution

Year 2014:

Percentage difference of the no of students in institute A than that of institute B = (225 - 160)/225 × 100

⇒ 65/225 × 100 = 28.88% Less

Year 2015:

Percentage difference of the no of students in institute A than that of institute B = (350 - 280)/350 × 100

⇒ 70/350 × 100 = 20% Less

Year 2016:

Percentage difference of the no of students in institute A than that of institute B = (375 - 300)/300 × 100

⇒ 75/375 × 100 = 20% Less

Year 2017:

Percentage difference of the no of students in institute A than that of institute B = (325 - 250)/325 × 100

⇒ 75/325 × 100 = 23% Less

∴ For 25 < x < 30, in the year 2014 the number of students enrolled in institute A is 28.88% less, than the number of students enrolled in institute B

33. **The area of a circular park is 12474 m2. There is 3.5 m wide path around the park. What is the area (in m2) of the path? (Take π = 227227)**

A 1435.5

B 1440.5

C **1424.5**

D 1380.5

Solution

Area of the park \(=12474 \mathrm{~m}^{2}\)

\(\begin{aligned} &\Rightarrow \pi r^{2}=12474 \\ &\Rightarrow r^{2}=12474 \times 7 / 22=81 \times 49 \\ &\Rightarrow r=63 \mathrm{~m} \end{aligned}\)

New radius with the width of the park \(=R=63 m+3.5 m=6\)

\(\begin{aligned} &\therefore \text { Area of the path }=\pi R^{2}-\pi r^{2} \\ &\Rightarrow 22 / 7 \times 66.5 \times 66.5-12474 \\ &\Rightarrow 13898.5-12474 \end{aligned}\)

\(\Rightarrow 1424.5 \mathrm{~m}^{2}\)

34. **If \(x^{4}+\frac{1}{x^{4}}=727, x>1\), then what is the value of \(\left(x-\frac{1}{x}\right)\) ?**

A -6

B **5**

C -5

D 6

Solution

\(x^{4}+\frac{1}{x^{4}}=727\)

By adding 2 on both sides \(\begin{aligned} &x^{4}+1 / x^{4}+2=727+2 \\ &\Rightarrow\left(x^{2}+1 / x^{2}\right)^{2}=729 \\ &\Rightarrow\left(x^{2}+1 / x^{2}\right)=\sqrt{729} \\ &\Rightarrow\left(x^{2}+1 / x^{2}\right)=27 \end{aligned}\)

By subtracting 2 from both sides \(\begin{aligned} &\Rightarrow\left(x^{2}+1 / x^{2}\right)-2=27-2 \\ &\Rightarrow(x-1 / x)^{2}=25 \\ &\Rightarrow(x-1 / x)=\sqrt{25} \\ &\therefore(x-1 / x)=5 \end{aligned}\)

35. **In ΔABC, $\angle C = 90°$ and Q is the midpoint of BC. If AB = 10 cm and $AC = 2\sqrt{10}$ cm, then the length of AQ is:**

A $5\sqrt{2}$ cm

B $\sqrt{55}$ cm

C $3\sqrt{5}$ cm

D $5\sqrt{3}$ cm

Solution

\(10^{2}=(2 \sqrt{10})^{2}+B C^{2}\)

\(\Rightarrow B C=100-40=\sqrt{60}\)

\(\therefore C Q=2 \sqrt{15 / 2}=\sqrt{15}\)

In triangle \(A C Q, A Q^{2}=C Q^{2}+B C^{2}\)

\(\Rightarrow 15+4 \times 10=A Q^{2}\) \(\therefore A Q=\sqrt{55} \mathrm{~cm}\)

36. **If \(x-\frac{1}{x}=1\), then what is the value of \(x^{8}+\frac{1}{x^{8}}\) ?**

A 3

B **47**

C 119

D -1

Solution

\((x-1 / x)=1\)

By squaring both sides

\(\begin{aligned} &\Rightarrow x^{2}+1 / x^{2}-2 \times x \times 1 / x=1 \\ &\Rightarrow x^{2}+1 / x^{2}=1+2 \\ &\Rightarrow x^{2}+1 / x^{2}=3 \end{aligned}\)

By squaring both sides again;

\(\begin{aligned} &\Rightarrow x^{4}+1 / x^{4}+2=9 \\ &\Rightarrow x^{4}+1 / x^{4}=9-2=7 \end{aligned}\)

By squaring both sides one more time;

\(\begin{aligned} &\Rightarrow x^{8}+1 x^{8}+2=49 \\ &\Rightarrow x^{8}+1 / x^{8}=49-2=47 \\ &\therefore x^{8}+1 / x^{8}=47 \end{aligned}\)

The following table shows day-wise number of seats occupied of different classes in a train. Numbers in bracket represent the total seats available in a particular class.

37.

Day	2nd Class Non-AC (900)	1st Class Non-AC (500)	AC III Tier (500)	AC II Tier (250)	AC 1st Class (150)
Monday	850	460	480	240	145
Tuesday	840	400	450	230	120
Wednesday	830	390	480	220	130
Thursday	790	480	490	250	125
Friday	840	470	500	210	130

How many seats remained vacant taking all the days together in non-AC classes?

A 715

B **650**

C 600

D 585

Solution

No of vacant seats in 2nd non-AC class & 1st class non-AC class on Monday = (900 - 850) + (500 - 460) = 90

No of vacant seats in 2nd non-AC class & 1st class non-AC class on Tuesday = (900 - 840) + (500 - 400) = 160

No of vacant seats in 2nd non-AC class & 1st class non-AC class on Wednesday = (900 - 830) + (500 - 390) = 180

No of vacant seats in 2nd non-AC class & 1st class non-AC class on Thursday = (900 - 790) + (500 - 480) = 130

No of vacant seats in 2nd non-AC class & 1st class non-AC class on Monday = (900 - 840) + (500 - 470) = 90

∴ No of seats remained vacant taking all the days together in non-AC classes = 90 + 160 + 180 + 130 + 90

⇒ 650

38. **The value of \(90 \div 20\) of \(6 \times[11 \div 4\) of \(\{3 \times 2-(3-8)\}] \div(9 \div 3 \times 2)\) is:**

A \(\frac{9}{8}\)

B \(\frac{1}{36}\)

C **\(\frac{1}{32}\)**

D \(\frac{3}{8}\)

Solution

\(90 \div 20\) of \(6 \times[11 \div 4\) of \(\{3 \times 2-(3-8)\}] \div(9 \div 3 \times 2)\)

\(\Rightarrow 90 / 120 \times[11 \div 4 \times\{6+5\}] \div 6\)

\(\Rightarrow 3 / 4 \times[11 \div 4 \times 11] \div 6\)

\(\Rightarrow 3 / 4 \times[11 \div 44] \div 6\)

\(\Rightarrow 3 / 4 \times 1 / 4 \times 1 / 6\)

\(\Rightarrow 1 / 32\)

\(\therefore 90 \div 20\) of \(6 \times[11 \div 4\) of \(\{3 \times 2-(3-8)\}] \div(9 \div 3 \times 2)=1 / 32\)

39. **The radii of two concentric circles are 12 cm and 13 cm. AB is a diameter of the bigger circle. BD is a tangent to a smaller circle touching it at D. Find the length (in cm) of AD? (correct to one decimal place)**

A **24.5**

B 17.6

C 23.5

D 25.5

Solution

By Pythagoras Theorem; in triangle ODB

$\Rightarrow \mathrm{OB}^{2}=\mathrm{OD}^{2}+\mathrm{BD}^{2}$

$\Rightarrow 169=144+\mathrm{BD}^{2}$

$\Rightarrow \mathrm{BD}=5 \mathrm{~cm}$

$\mathrm{BD}=\mathrm{DE}=1 / 2 \times \mathrm{BE} \quad \because$ Perpendicular drawn from the centre on a chord bisects it in two

$\Rightarrow \mathrm{DE}=\mathrm{BD}=5 \mathrm{~cm}$

$\Rightarrow \mathrm{BE}=10 \mathrm{~cm}$

In triangle ABE,

$\angle \mathrm{AEB}=90^{\circ} \quad \because[$ Angle made in semicircle $]$

$\Rightarrow \mathrm{AB}^{2}=\mathrm{EB}^{2}+\mathrm{AE}^{2}$

$\Rightarrow 676=100+\mathrm{AE}^{2}$

$\Rightarrow \mathrm{AE}=\sqrt{576}$

$\Rightarrow \mathrm{AE}=24 \mathrm{~cm}$

In triangle ADE $\begin{aligned} &\Rightarrow \mathrm{AD}^{2}=\mathrm{ED}^{2}+\mathrm{AE}^{2} \\ &\Rightarrow \mathrm{AD}^{2}=25+576 \\ &\Rightarrow \mathrm{AD}^{2}=601 \\ &\Rightarrow \mathrm{AD}=\sqrt{601} \\ &\Rightarrow \mathrm{AD}=24.51 \mathrm{~cm} \\ &\therefore \mathrm{AD}=24.5 \text { (Approximately) } \end{aligned}$

The data given in the table shows the number of boys and girls enrolled in three different streams in a school over 5 years.

40.

Years	Arts		Science		Commerce	
	Boys	Girls	Boys	Girls	Boys	Girls
2012	48	36	40	35	35	45
2014	42	43	42	32	32	42
2016	45	42	38	30	36	38
2018	39	46	41	23	28	34
2020	36	43	39	30	39	41

The number of boys in Science stream in the years 2012 and 2016 taken together is what percent of the number of girls for all the years in the Commerce stream?

A 45.5

B 39

C 35

D 32.5

Solution

The number of boys in Science stream in the years 2012 and 2016 = 40 + 38 = 78

The number of girls for all the years in the Commerce stream = 45 + 42 + 38 + 34 + 41 = 200

∴ The required percentage = 78/200 × 100 = 39%

41. **The average of eleven numbers is 56. The average of first three numbers is 52 and that of next five numbers is 60. The 9th and 10th number are 3 and 1 more than the 11th number respectively. What is the average of 9th and 11th numbers?**

A 54

B 52.5

C 52

D **53.5**

Solution

Let the 11th number be = a

⇒ 9th number = a + 3

⇒ 10th number = a + 1

Sum of 11 numbers = 11 × 56 = 3 × 52 + 5 × 60 + a + 3 + a + 1 + a

⇒ 616 = 156 + 300 + 3a + 4

⇒ 3a = 156

⇒ a = 52

11th number = 52

⇒ 9th number = 52 + 3 = 55

⇒ 10th number = 52 + 1 = 53

∴ Average of 9th and 11th numbers = (55 + 52)/2 = 53.5

42. **If \(2 x^{2}-8 x-1=0\), then what is the value of \(8 x^{3}-\frac{1}{x^{3}} ?\)**

A 540

B **560**

C 524

D 464

Solution

\(2 x^{2}-8 x-1=0\)

By dividing the above equation by \(x_{1}\)

\(\begin{aligned} &\Rightarrow 2 x-8-1 / x=0 \\ &\Rightarrow 2 x-1 / x=8 \end{aligned}\)

By cubing both sides;

\(\begin{aligned} &\Rightarrow(2 x)^{3}-1 / x^{3}-3 \times 2 x \times 1 / x(2 x-1 / x)=512 \\ &\Rightarrow 8 x^{3}-1 / x^{3}-6 \times 8=512 \\ &\therefore 8 x^{3}-11 x^{3}=560 \end{aligned}\)

43. **Atul purchased Bread costing Rs.20 and gave a 100 rupee note to the shopkeeper. The shopkeeper gave the balance money in coins of denomination Rs.2, Rs.5 and Rs.10. If these coins are in the ratio 5 : 4 : 1, then how many Rs.5 coins did the shopkeeper give?**

A 5

B 6

C **8**

D 4

Solution

Ratio of the coins of denominations of Rs.2, Rs.5 and Rs.10 = 5 : 4 : 1

As per the question;

Ratio of amount = 5 × Rs.2 : 4 × Rs.5 : 1 × Rs.10

⇒ 1 : 2 : 1 = 80

⇒ 4 = Rs.80

⇒ 2 = Rs.40

∴ No of Rs.5 coins = Rs.40/5 = 8

44. **The value of $\frac{\tan \left(45^{\circ}-\alpha\right)}{\cot \left(45^{\circ}+\alpha\right)}-\frac{\left(\cos 19^{\circ}+\sin 71^{\circ}\right)\left(\sec 19^{\circ}+\operatorname{cosec} 71^{\circ}\right)}{\tan 12^{\circ} \tan 24^{\circ} \tan 66^{\circ} \tan 78^{\circ}}$ is:**

A -3

B 2

C 0

D -2

Solution

$\frac{\tan \left(45^{\circ}-\alpha\right)}{\cot \left(45^{\circ}+\alpha\right)}-\frac{\left(\cos 19^{\circ}+\sin 71^{\circ}\right)\left(\sec 19^{\circ}+\operatorname{cosec} 71^{\circ}\right)}{\tan 12^{\circ} \tan 24^{\circ} \tan 66^{\circ} \tan 78^{\circ}}$

$\Rightarrow \tan \left(90^{\circ}-\left(45^{\circ}+\alpha\right)\right) / \cot \left(45^{\circ}+\alpha\right)-\left[\left(\sin 71^{\circ}+\sin 71^{\circ}\right)\left(\operatorname{cosec} 71^{\circ}+\operatorname{cosec} 71^{\circ}\right)\right]+\cot 66^{\circ} \cot 78^{\circ} \tan 66^{\circ} \tan 78^{\circ}$

$\Rightarrow \cot \left(45^{\circ}+\alpha\right) / \cot \left(45^{\circ}+\alpha\right)-\left[2 \sin 71^{\circ} \times 2 \operatorname{cosec} 71^{\circ}\right] \div 1 / \tan 66^{\circ} \times 1 / \cot 78^{\circ} \times \tan 66^{\circ} \times \tan 78^{\circ}$

$\Rightarrow 1-\left[2 \sin 71^{\circ} \times 2 / \sin 71^{\circ}\right] \div 1$

$\Rightarrow 1-4$

$\Rightarrow-3$ $\therefore$ The required result $=-3$

45. **A, B and C divide a certain sum of money among themselves. The average of the amount with them is Rs.4520. Share of A is \(10 \frac{2}{3} \%\) more than share of \(B\) and \(33 \frac{1}{3} \%\) less than share of \(C\). What is the share of \(B\) (in Rs.)?**

A 5976

B 3500

C 3984

D **3600**

Solution

Share of \(A=10 \frac{2}{3} \%\) more than that of \(B\)

\(\begin{aligned} &10 \frac{2}{3} \%=32 / 300=8 / 75 \\ &\Rightarrow B=75, A=75+8=83 \end{aligned}\)

\(\therefore\) Ratio of amount with \(\mathrm{A}\) and \(\mathrm{B}=83: 75\) Share of \(A=33 \frac{1}{3} \%\) less than that of \(C\)

\(\begin{aligned} &33 \frac{1}{3} \%=1 / 3 \\ &\Rightarrow C=3, A=2 \end{aligned}\)

\(\therefore\) Ratio of amount with \(\mathrm{A}\) and \(\mathrm{C}=2: 3\)

Now, by equalising the value of ratio of \(A\) with \(B\) and \(C_{i}\)

\(\Rightarrow \mathrm{A}: \mathrm{B}: \mathrm{C}=166: 150: 249\)

As per the question:

Sum of the amount with A, B and $\mathrm{C}=4520 \times 3=13560$

$\Rightarrow 166+150+249=565$

$\Rightarrow 565=$ Rs. 13560

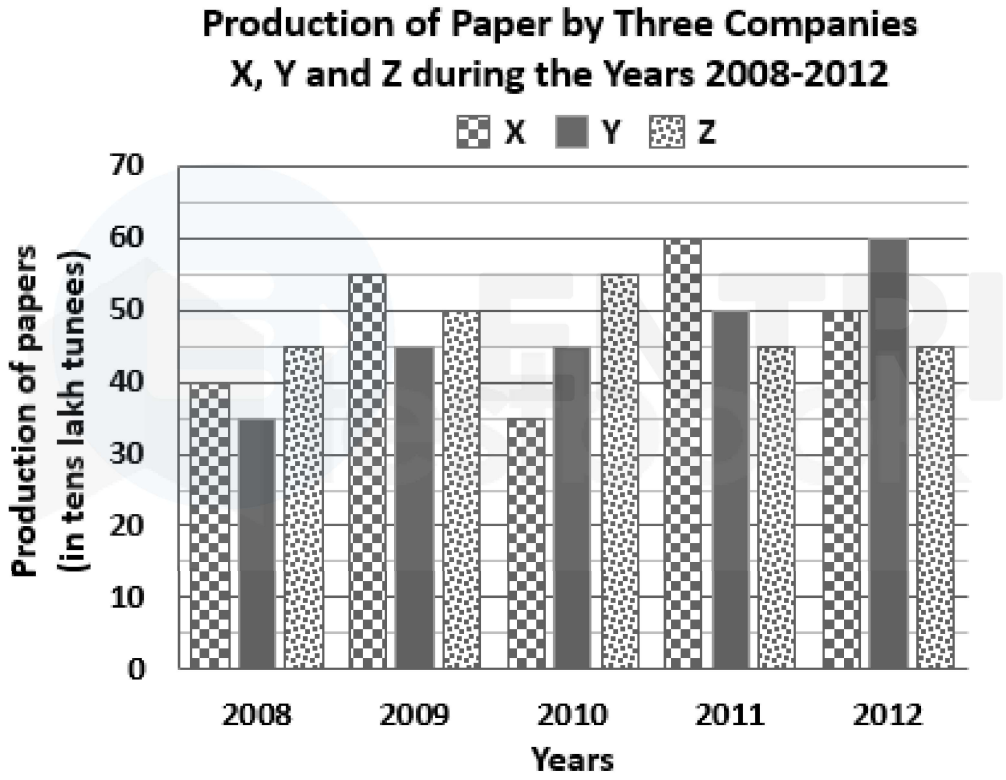
$\Rightarrow$ Share of $\mathrm{B}(150)=13560 \times 150 / 565$

$\therefore$ Share of $\mathrm{B}=$ Rs. 3600

Study the given bar graph and answer the question.

46. **The bar graph given below represents the data of the Production of Paper (in ten lakh tonnes) by three different companies X, Y and Z during the years 2008 to 2012. The x-axis shows the Years and the y-axis represents the Production of Paper (in ten lakh tonnes).**

(Note: The data shown below is only for mathematical exercise. They do not represent the actual figures.)



Which company/companies had the maximum average production for the given five years period?

A **X and Z both**

B Y

C X

D Y and Z both

Solution

Average production of company X = (40 + 55 + 35 + 60 + 50)/5 = 48 (ten lakh tonnes)

Average production of company Y = (35 + 45 + 45 + 50 + 60)/5 = 47 (ten lakh tonnes)

Average production of company Z = (45 + 50 + 55 + 45 + 45)/5 = 48 (ten lakh tonnes)

∴ X and Z both have the maximum average production for the 5 years.

47. **A man and a woman, working together can do a work in 66 days. The ratio of their working efficiencies is 3 : 2. In how many days 6 men and 2 women together can do the same work?**

A **15 days**

B 14 days

C 12 days

D 18 days

Solution

Total work = 66 × (3 + 2) = 66 × 5

∴ Time taken by 6 men and 2 women to do the same job = (66 × 5)/(6 × 3 + 2 × 2)

⇒ (66 × 5)/22

⇒ 15 days

48. **If $3 \sec \theta + 4 \cos \theta - 4\sqrt{3} = 0$ where θ is an acute angle then the value of θ is:**

A **30°**

B 20°

C 60°

D 45°

Solution

$3 \sec \theta + 4 \cos \theta - 4\sqrt{3} = 0$

$\Rightarrow 3 \times 1/\cos \theta + 4\cos \theta = 4\sqrt{3}$

$\Rightarrow 3 + 4 \cos 2\theta = 4\sqrt{3} \times \cos \theta$

$\Rightarrow 4 \cos 2\theta - 2\sqrt{3}\cos \theta - 2\sqrt{3}\cos \theta + 3 = 0$

$\Rightarrow 2\cos \theta(2\cos \theta - \sqrt{3}) - \sqrt{3}(2\cos \theta - \sqrt{3}) = 0$

$\Rightarrow (2\cos \theta - \sqrt{3})2 = 0$

$\Rightarrow \cos \theta = \sqrt{3}/2$

$\Rightarrow \cos \theta = \cos 30°$

$\therefore \theta = 30°$

49. **Two equal sums were lent on simple interest at 6% and 10% per annum respectively. The first sum was recovered two years later than the second sum and the amount in each case was Rs.1105. What was the sum (in Rs.) lent in each scheme?**

A 891

B 850

C 936

D 900

Solution

Let year be t and principal be P

As per the question;

$(t + 2) \times 6\% = t \times 10\%$

$\Rightarrow 6\% t + 12\% = 10\% t$

$\Rightarrow 12\% = 4\% t$

$\Rightarrow t = 3$

Amount = Principal + Simple Interest

$\Rightarrow P + P \times 6/100 \times 5 = 1105$

$\Rightarrow P + 3/10 \times P = 1105$

$\Rightarrow 13P/10 = 1105$

$\Rightarrow P = 1105 \times 10/13$

$\therefore P = Rs.850$

50. **Find the greatest value of b so that 30a68b (a > b) is divisible by 11.**

A 4

B **3**

C 6

D 9

Solution

(3 + a + 8) - (0 + 6 + b) = 0 or 11

⇒ 11 + a - 6 - b = 0 or 11

⇒ 5 + a - b = 0 or 11

⇒ 5 + a - b ≠ 0 [a > b]

Let 5 + a - b = 11

⇒ a - b = 6

⇒ For a = 9, b = 3 ∵ [a > b]

⇒ 9 - 3 = 6

∴ The greatest value of b is 3, when 30a68b (a > b) is divisible by 11.

Directions: Select the most appropriate synonym of the given word.

51. **Iota**

A Bag

B Lot

C Box

D Bit

Solution

- 'Bag' means a lot of something; plenty of something. (भरपूर, काफ़ी)
- 'Lot' means a large number or amount. (एक बड़ी संख्या या राशि)
- 'Box' means a container with a flat base and sides, typically square or rectangular, and having a lid. (डिब्बा, चौखटा)
- 'Bit' means a small piece, amount, or part of something. (किसी वस्तु आदि का छोटा टुकड़ा, मात्रा या अंश)

Directions: Select the most appropriate option to substitute the italics segment in the given sentence. If no substitution is required, select 'No substitution'.

52. **Many of the apples *was rotten*.**

A **were rotten**

B No substitution

C was being rotten

D is rotten

Solution

- In the underlined part of the sentence, the singular form of the verb 'was' is incorrect.
- The subject of the sentence is composed of the plural noun 'apples'.
- We know that a plural subject always takes a plural verb.
- Therefore, the plural form of the verb 'were' should be used in place of the singular form 'was'.

Directions: Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.

53. **A. When he reached his town, he went to his house and knocked at the door.**

B. A man went away from his home.

C. Disappointed, he decided to take it himself.

D. One day he wrote a letter to his family, but could not find anyone to take the letter to his town.

A ABCD

B DACB

C CBAD

D **BDCA**

Solution

- The sentence 'B' is independent of any other sentence as it is giving general information about "a man". Hence, 'B' is the first part.
- Sentence D will come after B because it explains what the man decided to do after he went away from home and whether he succeeded in it or not.

- Sentence C will come after D because it explains how the man reacted after he failed to send the letter to his family.
- The sentence 'A' is the concluding part because it explains what the man finally decided to do.

54. **Directions: Select the most appropriate ANTONYM of the given word.**

Pompous

A Showy

B Boastful

C Flaunting

D **Humble**

Solution

- The antonyms of the word 'Humble' are "pompous, lordly, impudent".
- The synonyms of the word 'Humble' are "modest, submissive, meek".

55. **Directions: Select the most appropriate meaning of the given idiom.**

Want to curl up and die

A Too tired from physical labour

B Want to die comfortably

C **Feel terribly ashamed and sorry**

D Unable to sleep well

Solution

- Given Idiom: Want to curl up and die means to feel very ashamed and sorry. (बहुत शर्म और खेद महसूस करना)
- Example: I just wanted to curl up and die when I spilled coffee on her new dress!
- From the given options, the third option is the most appropriate meaning of the given idiom.

56. **Directions: Select the INCORRECTLY spelt word.**

A Friend

B Fiery

C Scenic

D Neice

Solution

- 'Friend' means a person with whom one has a bond of mutual affection. (मित्र, दोस्त)
- 'Fiery' means quick to become angry. (गुस्सैल; तुरंत क्रोधित हो जाने वाला)
- 'Scenic' means having beautiful scenery. (सुंदर दृश्यों वाला)
- 'Neice': There is no such word in English or we can say that there is some spelling mistake in this word

57. **Directions: Select the most appropriate option to fill in the blank.**

The advanced nations face no population problem since they were already settling down to zero growth _ in the population.

A frequency

B rate

C scale

D degree

Solution

- The given sentence is saying something about why there is no population problem in the advanced nations. (दिया गया वाक्य इस बारे में कुछ कह रहा है कि विकसित देशों में जनसंख्या की समस्या क्यों नहीं है)
- Rate means a measurement of the speed at which something happens or the number of times something happens or exists during a particular period. (दर)

58. **Directions: Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select 'No substitution'.**

Although the children studied hard, but they could not understand the topic without the help of the teacher.

A **Although the children studied hard, they**

B Although the children had study hard, but they

C Although the children have studied hard, but they

D No substitution

Solution

- In the underlined part of the sentence, the use of the conjunction 'but' is superfluous or not required.
- 'Although' as subordinating conjunction implies or introduces a contrasting idea and 'but' as coordinating conjunction contrasts an idea.
- When we use 'although' as subordinate conjunction to introduce a subordinate clause, there must be the main clause to complete the sentence.
- If we use 'although' as a subordinate conjunction in one clause and 'but' as coordinate conjunction in the other clause, the sentence will

be incorrect grammatically.

59. **Directions: Select the most appropriate synonym of the given word.**

Yield (n)

A Garden

B Orchard

C **Harvest**

D Plantation

Solution

- 'Garden' means a piece of land next to a house where flowers and vegetables can be grown. (बग़ीचा)
- 'Orchard' means a piece of land on which fruit trees are grown. (फलों का बाग़, फलोद्यान)
- 'Harvest' means the amount of grain, fruit, etc. that is collected. (फ़सल काटने और इकट्ठी करने की क्रिया)
- 'Plantation' means an area of land where trees are grown to produce wood. (अरण्य भूमि, वनस्थली)

60. **Directions: The following sentence has been divided into parts. One of them contains an error. Select the part that contains the error from the given options.**

Lack of required / vitamins and minerals / lead against / several complications / in the human body.

A **lead against**

B Lack of required

C several complications

D in the human body

Solution

- In the given sentence, the use of the phrasal verb 'lead against' is incorrect.
- The phrasal verb 'lead against' means to lead someone or something in attack, opposition, or competition against someone or something else.
- The phrasal verb 'leads to' means to result in something.
- Therefore, the phrasal verb 'leads to' should be used in place of the phrasal verb 'lead against'.

61. **Directions: Select the most appropriate ANTONYM of the given word.**

Widespread

A Famous

B Limited

C General

D Overall

Solution

- 'Famous' means well known to many people. (प्रख्यात; जिन्हें लोग अच्छे कार्यों के लिए जानें)
- 'Limited' means restricted in size, amount, or extent; few, small, or short. (आकार, राशि या सीमा में प्रतिबंधित; कुछ, छोटा)
- 'General' means affecting all or most people, places, things, etc. (सभी या अधिकतम लोगों, स्थानों, वस्तुओं आदि से संबंधित; सर्वसामान्य)
- 'Overall' means including everything; total. (कुल मिलाकर; समग्र)

62. **Directions: Select the most appropriate option to fill in the blank.**

The door _ in the strong wind.

A slapped

B hooted

C sizzled

D **slammed**

Solution

- The given sentence is saying something happening with the door due to the strong wind. (दिया गया वाक्य कह रहा है कि तेज हवा के कारण दरवाजे के साथ कुछ हो रहा है)
- Slammed means to shut or make something shut very loudly and with great force. (ऊँची आवाज़ के साथ ज़ोर से दरवाज़ा बंद हो जाना या उसे बंद कर देना)

63. **Directions: Select the INCORRECTLY spelt word.**

A **Inershia**

B Indolence

C Insolence

D Idleness

Solution

- Inershia': There is no such word in English or we can say that there is some spelling mistake in this word.
- The correct spelling is 'Inertia' and it means a lack of energy; an inability to move or change. (शक्तिहीनता; निष्क्रियता)
- 'Indolence' means avoidance of activity or exertion; laziness. (निष्क्रियता; आलस्य)
- 'Insolence' means rude and disrespectful behavior. (बदतमीजी)
- 'Idleness' means laziness; inactivity. (ख़ालीपन, सुस्ती)

Directions: The following sentence has been divided into parts. One of them contains an error. Select the part that contains the error from the given options.

64. **The Dussehra celebrations / in Mysore / this year / are grandest than / in any other part / of the state.**

A any other part

B The Dussehra celebrations

C **are grandest than**

D in Mysore

Solution

- In the given sentence, the use of the superlative adjective 'grandest' is incorrect.
- A superlative adjective expresses the extreme or highest degree of quality.
- We use a superlative adjective to describe the extreme quality of one thing in a group of things.
- In the given sentence, the word 'than' is used, we use 'than' with a comparative adjective when comparing two things or people.
- A comparative adjective is an adjective used to compare two people or things.

Directions: Select the option that can be used as a one-word substitute for the given group of words.

65. **One who does not take any alcoholic drink**

A Perfectionist

B Astrologer

C Vegetarian

D Teetotaller

Solution

- 'Perfectionist' is a person who always does things as well as he/she possibly can and who expects others to do the same. (ऐसा व्यक्ति जो अपना काम उत्तम रीति से करे तथा दूसरों से भी वैसी ही आशा करे; पूर्णतावादी)
- For example - She's such a perfectionist that she notices even the tiniest mistakes.
- 'Astrologer' is a person who is an expert in astrology. (ज्योतिषी)
- For example - An astrologer advised building the shrine to counter the negative influences.
- 'Vegetarian' is a person who does not eat meat or fish. (शाकाहारी व्यक्ति)

- For example - I got used gradually to the vegetarian diet.

Directions: Select the option that expresses the given sentence in indirect speech.

66. **“Read the instructions before you start making the dish,” Deepa's mother said to her.**

A

Deepa's mother told her to read the instructions before she started making the dish.

B

Deepa's mother told to her to read the instructions before you start making the dish.

C

Deepa's mother said her to read the instructions before she start making the dish.

D

Deepa's mother told her to read the instructions before you had made the dish.

Solution

The basic rules for changing or converting direct speech into indirect speech:

- The commas, inverted commas are removed.
- In indirect speech, we need to always use 'told' - when there is an object (here, 'her').
- Many reporting verbs can be followed by another verb in either an infinitive (here, to read) or an -ing form.

- The second-person pronoun 'you' becomes the third-person pronoun 'she'.
- The present simple tense format 'Subject + V1 (start) + Object' will be changed into the past simple tense format 'Subject + V2 (started) + Object'.

Directions: Select the option that expresses the given sentence in passive voice.

67. **Close all the windows.**

A. All the windows be closed.

B. Will you close all the windows?

C. **Let all the windows be closed.**

D. Can you close all the windows?

Solution

- In Active voice, a sentence emphasizes the subject, performing an action.
- In Passive voice, a sentence emphasizes the action or the object of the sentence.
- The given sentence is an imperative sentence in the active voice.
- In imperative sentences (which contains an order) where there is no object, 'Let' is used.

Directions: Select the most appropriate meaning of the given idiom.

68. **Be at a loss for words**

A **Not know what to say**

B Habituated to using difficult words

C Lost the urge to speak

D Not aware of the language

Solution

- Given Idiom: Be at a loss for words means being uncertain of what to say, especially because you are very surprised or shocked. (क्या कहना है, इस बारे में अनिश्चित होना, खासकर इसलिए कि आप बहुत हैरान या चौंक गए हैं)
- Example: She hesitated and briefly appeared at a loss for words.
- From the given options, the first option is the most appropriate meaning of the given idiom.

Directions: Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.

69. **A. At length the olive tree's branches broke with the snow's weight, at once despoiling it of its beauty and killing the tree.**

B. A shower of snow fell upon them and, finding the Olive full of foliage, it settled upon its branches.

C. Finding the fig tree without leaves, the snow fell through the branches to the ground and did not injure it at all.

D. The olive tree ridiculed the fig tree because, while she was green all year round, the fig tree changed its leaves with the seasons.

A ACBD

B **DBAC**

C ABCD

D DACB

Solution

- The sentence 'D' is independent of any other sentence as it is giving general information about "the olive tree and the fig tree". Hence, 'D' is the first part.

- Sentence B will come after D because it explains what happens when a shower of snow fell upon the branches of the olive tree.
- Sentence A will come after B because it explains what happens to the branches of the olive tree due to the weight of the snow.
- The sentence 'C' is the concluding part because it explains on the other hand what happens with the fig tree when the snow fell upon it.

Directions: Select the option that can be used as a one-word substitute for the given group of words.

70. **A person who is trained to travel in a spacecraft**

A **Astronaut**

B Anchor

C Chauffeur

D Choreographer

Solution

- Let us explore the marked option:
- 'Astronaut' is a person who travels in a spacecraft. (अंतरिक्ष यात्री)
- For example - The rocket boosts the astronaut into space.

71.

Directions: In the following passage, some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

Man-made fiber is fiber whose chemical composition, structure, and properties are significantly modified during the manufacturing process. Man-made fibers ***(1)*** spun and woven into a large ***(2)*** of consumer and industrial products, ***(3)*** garments such as shirts, scarves, and hosiery; home furnishings ***(4)*** as upholstery, carpets, and drapes; and ***(5)*** parts such as tire cord, flame-proof linings, and drive belts.

A. **Select the most appropriate option to fill in blank 5.**

A industrialist

B industrial

C industrialised

D industry

Solution

- The given sentence "...home furnishings such as upholstery, carpets, and drapes; and ***(5)*** parts such as tire cord, flame-proof linings, and drive belts..." is indicating the production of various mechanical parts.

- The use of the word 'parts' in the sentence indicates some, but not all of something.
- Therefore, the most appropriate word to be filled in the blank is 'industrial'.

B. Select the most appropriate option to fill in blank 4.

A much

B such

C more

D so

Solution

- The given sentence "...home furnishings ***(4)*** as upholstery, carpets, and drapes..." is indicating the home furnishing items.
- The phrase 'such as' means for example.
- Therefore, the most appropriate word to be filled in the blank is 'such'.

C. Select the most appropriate option to fill in blank 3.

A wrapping

B **including**

C showing

D counting

Solution

- The given sentence "Man-made fibers are spun and woven into a large number of consumer and industrial products, ***(3)*** garments such as shirts, scarves, and hosiery..." is indicating different kinds of fiber products.
- The use of the phrase "such as" in the sentence indicates something of a kind that; like.
- Therefore, the most appropriate word to be filled in the blank is 'including'.

D. **Select the most appropriate option to fill in blank 2.**

A extent

B **number**

C figure

D total

Solution

- The given sentence "Man-made fibers are spun and woven into a large ***(2)*** of consumer and industrial products..." is indicating the production of man-made fibers.
- The use of the word 'large' in the sentence indicates something of considerable or relatively great size, extent, or capacity.

E. **Select the most appropriate option to fill in blank 1.**

A will be

B are

C is

D be

Solution

- The given sentence "Man-made fibers ***(1)*** spun and woven..." is indicating the rotation and creation of man-made fibers.
- The plural noun 'fibers' will take a plural verb, also, the given sentence is in the simple present tense.

- Therefore, the most appropriate word to be filled in the blank is 'are'.

72. **Select the option in which the words share the same relationship as that shared by the given pair of words.**

Handwriting : Graphology

A Earthquake : Pomology

B Fossils : Pedology

C **Matter : Physics**

D Soil : Omithology

Solution

Graphology is the science that deals with handwriting, similarly Physics is related to matter.

Hence, option C is the correct answer.

73. **Four words have been given, out of which three are alike in some manner and one is different. Select the word that is different.**

A Raipur

B Mumbai

C **Ahmedabad**

D Ranchi

Solution

Except Ahmedabad all other are capital of state.

Hence, option C is the correct answer.

74. **‘A + B’ means ‘A is the husband of B’. ‘A % B’ means ‘A is the father of B’.**

‘A $ B’ means ‘A is the mother of B’.

If ‘Y + Z $ H% C $ D + S’, then which of the following statements is INCORRECT?

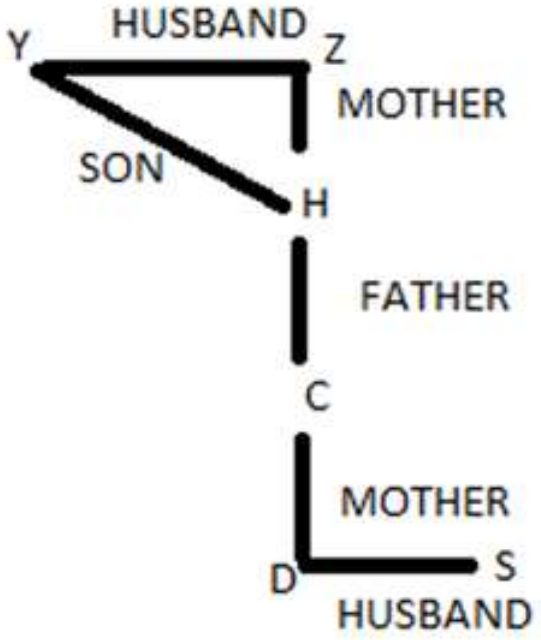
A **Z is the maternal grandmother of C**

B C is the mother-in-law of S.

C H is the son of Y.

D H is the maternal grandfather of D

Solution



Statement

A) Z is the maternal grandmother of C -false

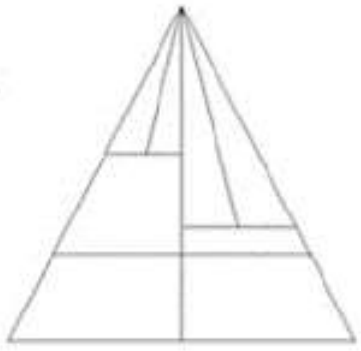
B) C is the mother-in-law of S. -true

C) H is the son of Y.-true

D) H is the maternal grandfather of D- true

Hence, option A is the correct answer.

75. **How many triangles are there in the given figure?**



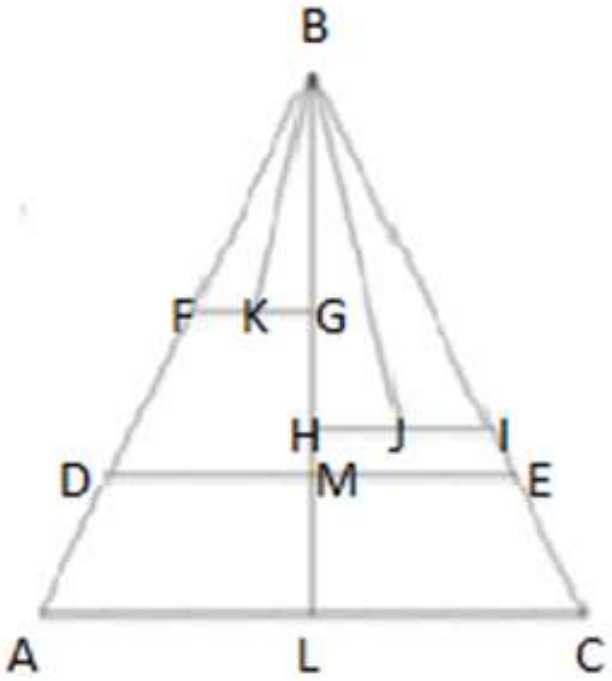
A 11

B 8

C 15

D **12**

Solution



ABC,ABL,LBC,DBM,MBI,DBE,FBG,FBK,KBG,BHI,BHJ,BJI

Hence, Option D is the correct answer.

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

25 64 81

23 41 38

18 33 ?

A **29**

B 17

C 27

D 19

Solution

\(5^{2} 8^{2} 9^{2}\)

25 64 81

23 41 38

18 33 ?

18+5=23

33+8=41

?+9=38

?=29

Hence, option A is the correct answer.

77. **Select the correct combination of mathematical signs that can sequentially replace the * signs and make the equation correct.**

68 *138* 23 *54* 20

A x, +, =, ÷

B =, x, +, ÷

C **+, ÷, -, =**

D x, +, -, =

Solution

68+138÷23-54=20

=68+6-54

=74-54

=20

Hence, option C is the correct answer.

78. **In a certain code language, 'CROW' is coded as '64' and 'EAGLE' is coded as '125'. How will 'PARROT' be coded in that language?**

A 232

B **216**

C 249

D 88

Solution

Code \(=(\text { Number of letter })^{3}\)

CROW \(=4^{3}=64\)

Eagle \(=5^{3}=125\)

Parrot \(=6^{3}=216\)

Hence, option B is the correct answer.

79. **Select the option that is related to the third word in the same way as the second word is related to the first word.**

Nascent : Young : : Adjunct : ?

A Rigid

B **Supportive**

C Functional

D Against

Solution

Nascent is developing or someone just started growing and it is similar to Young.

Adjunct means supplementary which is similar to Supportive.

Hence, option B is the correct answer.

80. **Select the number-pair in which the two numbers share a different relationship from the shared by the two numbers in the rest of the number-pairs.**

A **(178, 308)**

B (215, 338)

C (169, 292)

D (11, 134)

Solution

308-178=130

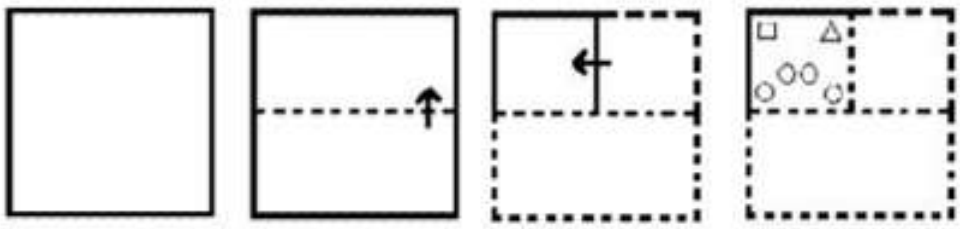
338-215=123

292-169=123

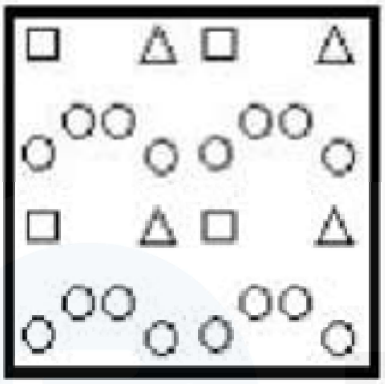
134-11=123

Hence, option A is the correct answer.

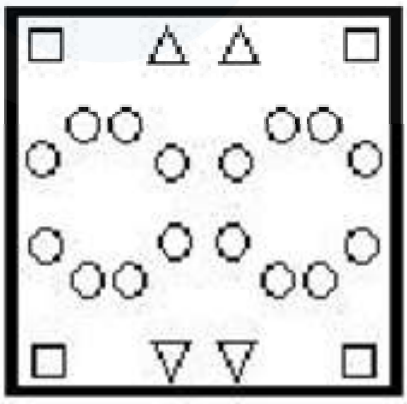
81. **The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look unfolded?**



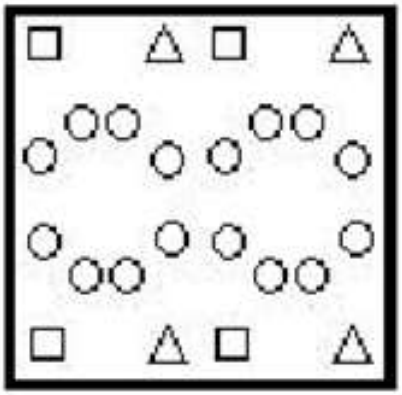
A



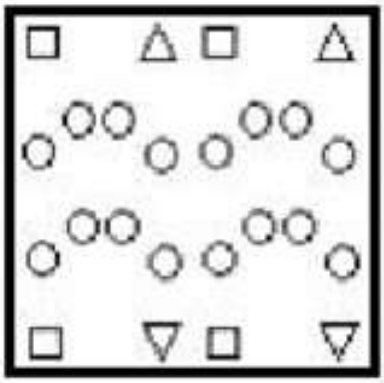
B



C

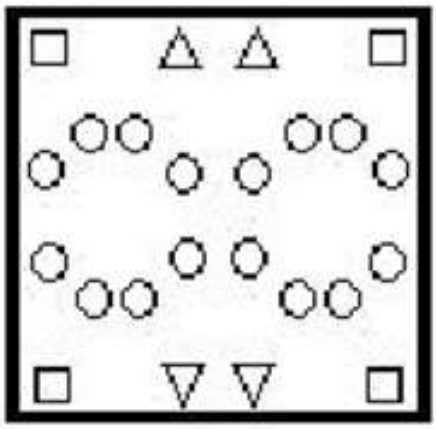


D



Solution

When paper is unfolded according to the given pattern then image shown below formed.



Hence, option B is the correct answer.

82. **In a certain code language, 'COUNTRY' is coded as 'BOWKXLF'. How will 'DESPAIR' be written in that language?**

A ULDSVHG

B UFDMVBG

C GBVMDFU

D GBPSXIO

Solution

C__+3__F
O_-3___L
U__+3__X
N___-3__K
T__+3___W
R___-3__O
Y___+3__B

COUNTRY
BOWKXLF

D_+3__G
E__-3__B
S__+3__V
P__-3__M
A__+3__D
I__-3__F
R__+3__U

DESPAIR
UFDMVBG

Hence, option B is the correct answer.

83. **In a training camp, three types of game hockey, cricket and badminton were taught. 14% of the total students received cricket training. 22% of the remaining students received training for hockey. Half of the remaining students received training for badminton. What percentage of students did NOT receive training in any of the three games?**

A 24 .52%

B **33 .53%**

C 32 .56%

D 67 .52%

Solution

Cricket= 14%

Reaming = 86%

Hockey= 22% of 86%=18.92%

Badminton= 33.54

Percentage of student who had not received any training= 86-18.92-33.54=33.54=33.53

Hence, option B is the correct answer.

84. **Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.**

Q _ AD _ R _ KADP _ QKA _ PRQK _ D _ R

A **K, P, Q, R, D, A, P**

B K, P, R, Q, D, A, P

C K, P, Q, R, A, D, P

D K, P, Q, R, D, A, Q

Solution

Q K A D P R/ Q K A D P R /Q k A D P R/ Q K A D P R

K, P, Q, R, D, A, P fill the blanks

Hence, option A is the correct answer.

85. **Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.**

A TYDI

B **ZEJP**

C HMRW

D NSXC

Solution

T +5 =Y ,D +5= I

Z -5 =E, J +6 =P

H+5= M ,R +5=W

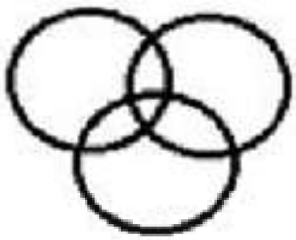
N +5 =S ,X +5 =C

Hence, option B is the correct answer.

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

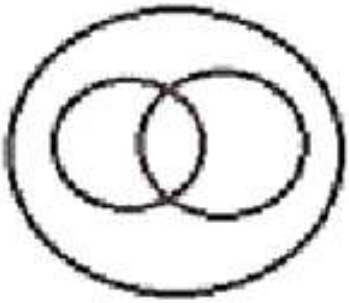
Women, Mother-in-law, Housewives

A

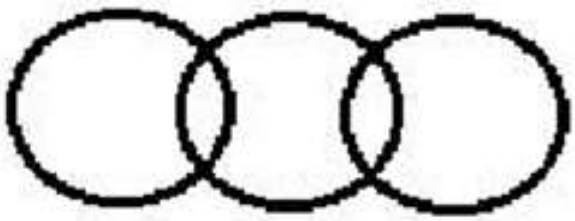


B

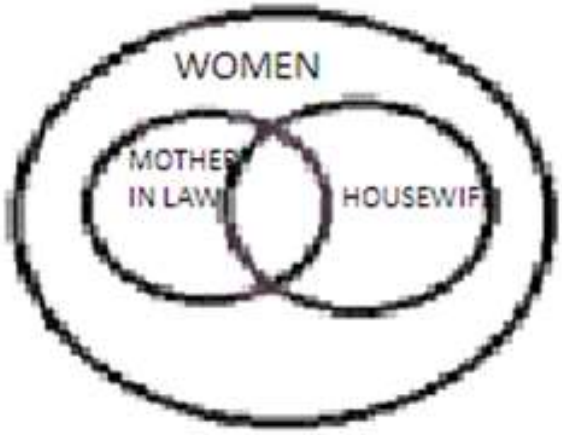
C



D

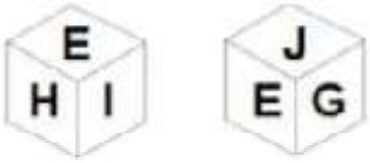


Solution



Hence, option C is the correct answer.

87. **Two different positions of the same dice are shown, the faces of which are market with the letter E, F, G, H, I and J, Select the letter that will be on the face opposite to the face having the letter 'J'.**



A F

B E

C I

D G

Solution

When two position of a dice is given and a letter is common in both the dice, but the position of common letter is different, then the others letter in a dice is opposite to letters on the other dice but on different position.

So H is opposite to G and I is opposite to J

Hence, option C is the correct answer.

88. **Select the correct option that indicates the arrangement of the given words in the order in which they appear in an English dictionary.**

1) Terminal

2) Terminology

3) Temperature

4) Tamarind

5) Tame

6) Tertiary

A **4, 5, 3, 1, 2, 6**

B 4, 5, 3, 2, 1, 6

C 4, 5, 1, 3, 2, 6

D 4, 5, 3, 1, 6, 2

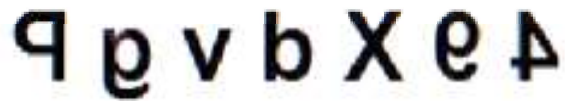
Solution

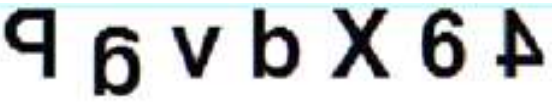
Tamarind.	Tame.	Temperature.	Terminal.	Terminology	Tertiary
4	5	3	1	2	6

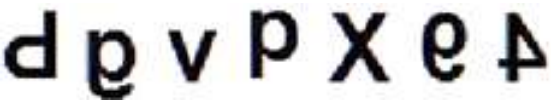
Hence, option A is the correct answer.

89. **Select the correct mirror image of the given combination when the mirror is placed at MN as shown.**

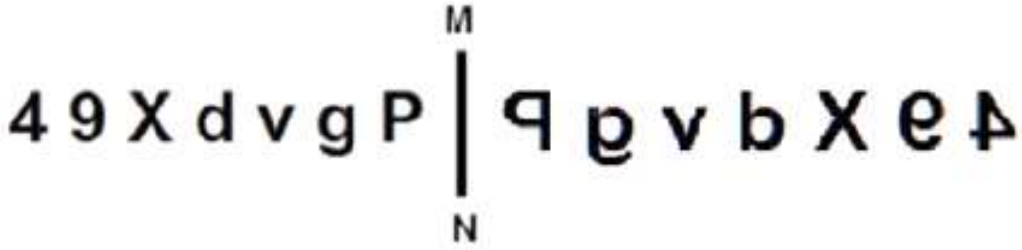
A 

B 

C 

D 

Solution



Hence, option B is the correct answer.

90. **Select the number from among the given options that can replace the question mark (?) in the following series.**

27, 30, 37, 50, ?

A 82

B 62

C **69**

D 98

Solution

27+3=30

30+7=37(leave prime number 5)

37+13=50(leave prime number 11)

50+19=69(leave prime number 17)

Here pattern is adding the prime number but leaving the immediate next prime number.

Hence, option C is the correct answer.

91. **Select the letter-cluster form among the given options that can replace the question mark (?) in the following series.**

UTMD, QXIH, MBEL, IFAP?

A EKXT

B DJVT

C **EJWT**

D EKWU

Solution

U -4 Q -4 M -4 I -4 E

T +4 X +4 B +4 F+4 J

M -4 I -4 E -4 A-4 W

D +4 H +4 L +4 P+4 T

Hence, option C is the correct answer.

92. **Select the option in which the numbers are related in the same way as are the numbers of the following set.**

(7, 52, 346)

A (5, 25, 128)

B (4, 19, 70)

C **(8, 67, 515)**

D (6, 39, 217)

Solution

Pattern is

Second number \(=(\text { first number })^{2}+3\)

Third number \(=(\text { first number })^{3}+3\)

\(52=7^{2}+3=49+3=52\)

\(346=7^{3}+3=346\)

\(67=8^{2}+3=64+3\)

\(515=8^{3}+3=515\)

Hence, option C is the correct answer.

93. **Select the option that is related to the third number in the same way as the second number is related to the first number and the sixth number is related to the fifth number.**

13 : 4 : : 19 : ? : : 16 : 5

A 5

B 3

C 2

D **6**

Solution

13 : 4 : : 19 : ? : : 16 : 5

4*3+1=13

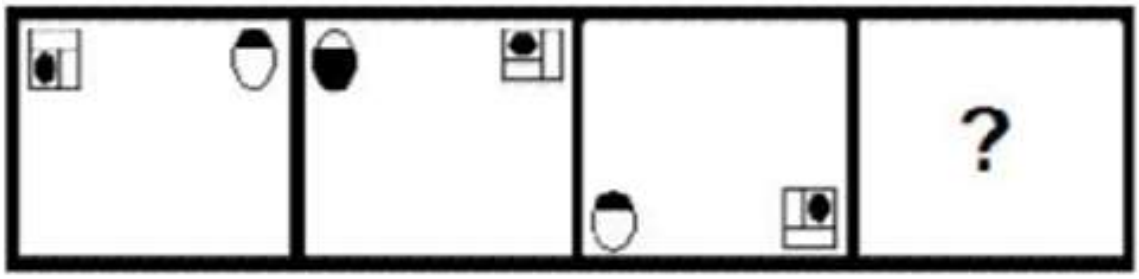
5*3+1=16

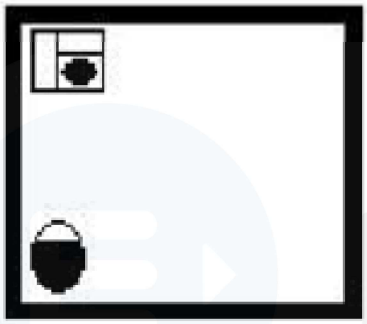
6*3+1=19

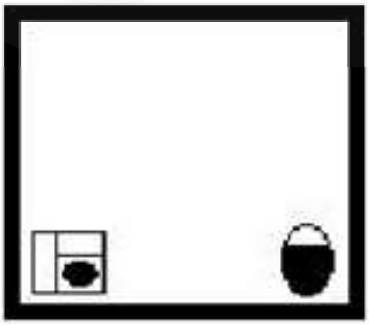
13 : 4 : : 19 : 6 : : 16 : 5

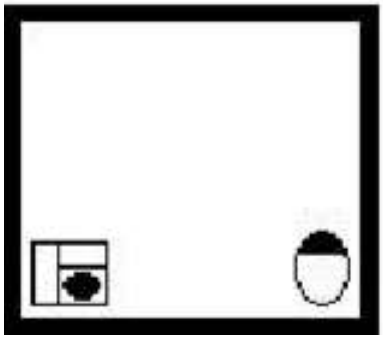
Hence, option D is the correct answer.

94. **Select the figure from among the given options that can replace the question mark (?) in the following series.**

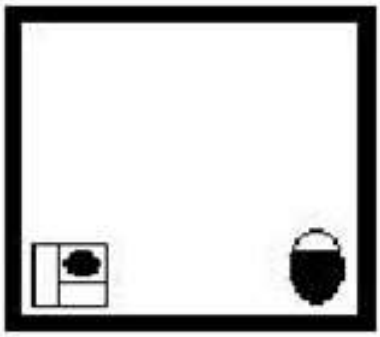


A 

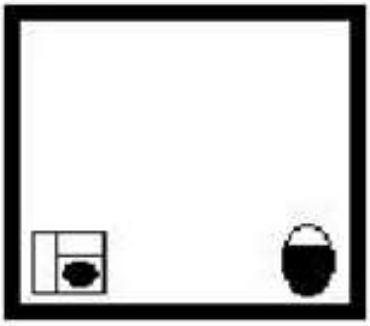
B 

C 

D

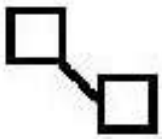


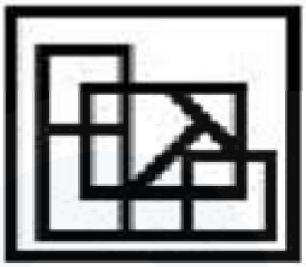
Solution

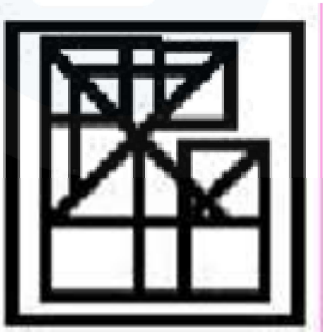


Hence, option B is the correct answer.

95. **Select the option in which the given figure is embedded (rotation is not allowed).**



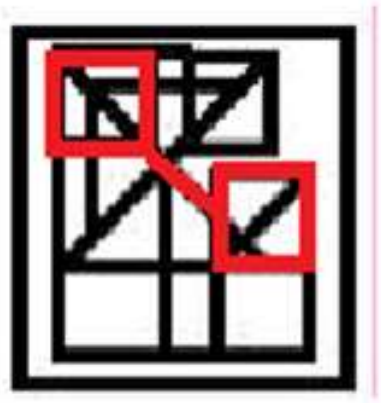
A 

B 

C none

D 

Solution



Hence, option B is the correct answer.

96. **Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.**

Statements:

1) All rugs are blankets.

2) All blankets are pillows.

3) Some blankets are frames.

Conclusions:

I. All pillows are rugs.

II. Some pillows are rugs.

III. All rugs are frames.

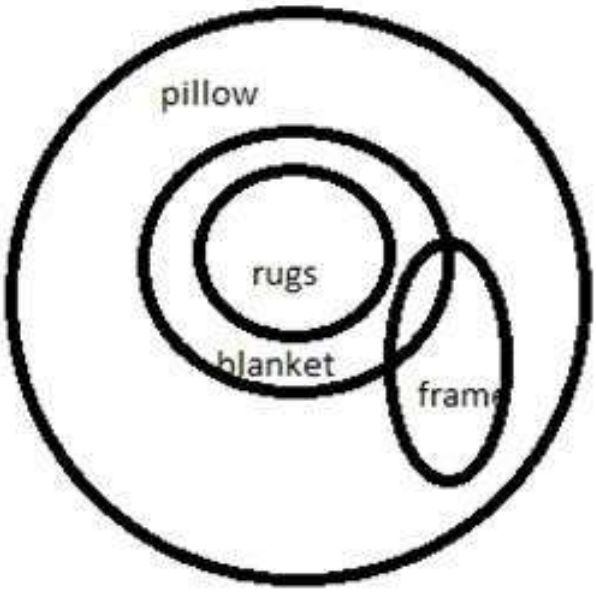
A **Only conclusion II follows**

B Either conclusions I or follows

C Both conclusions I and III follow

D Neither conclusion II nor III follows

Solution



Conclusions:

I. All pillows are rugs= false

II. Some pillows are rugs= true

III. All rugs are frames= false

Hence, option A is the correct answer.

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