SSC CHSL 2025 Tier-1 (Held On: 20 Nov, 2025 Shift 3) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2025 • 100 questions • 60 minutes • Answer key and solutions

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ENGLISH LANGUAGE

Q1. Select the most appropriate synonym of the word : PROPHECY

(a) Prediction
(b) Creation
(c) Denial
(d) Decision

Q2. Choose the correct meaning of the idiom: Flying by the seat of our pants

(a) Acting without preparation
(b) Planning everything in advance
(c) Feeling nervous before doing something
(d) Taking everything slowly

Q3. Choose the correct meaning of the idiom: Do it on autopilot

(a) Do it with full attention
(b) Do it while distracted
(c) Do it out of habit
(d) Do it with full enthusiasm

Q4. Which of the following sentences uses the word "hatch" with a different meaning from the others?

(a) The birds' eggs will hatch soon.
(b) The new employee was told to lift the hatch.
(c) The baby chicks will hatch from the eggs.
(d) We watched as the baby turtles hatch from the sand.

Q5. Select the sentence containing the homonym of the highlighted word: He was the last person to finish the race.

(a) The last song on the album was his favorite.
(b) The meeting will last for an hour.
(c) This is the last slice of pizza.
(d) We were the last to reach the venue.

Q6. Change the following sentence into the Active form.

The famous painter was seen to be walking in the park.

(a) Someone saw the famous painter walking in the park.
(b) The famous painter walked in the park and was seen.
(c) The park was where the famous painter was seen walking.
(d) Someone has seen the famous painter walking in the park.

Q7. Change the following sentence into the Active form.

It was understood that a new management team had been appointed.

(a) A new management team had been appointed, it was understood.
(b) They understood that a new management team had been appointed.
(c) It was understood that they appointed a new management team.
(d) A new management team was appointed, as they understood.

Q8. Choose the correct spelling to complete the sentence:

"She roasted a _____ over the campfire."

(a) marshmellow
(b) marshmallo
(c) marshmallow
(d) marshmelloe

Q9. Choose the correct spelling to complete the sentence:

"Her advice proved to be truly _____ to the success of the project."

(a) indispensible
(b) indespensable
(c) indespensible
(d) indispensable

Q10. Select the option that expresses the given sentence in indirect voice.

The historian said, "Even if the war had ended earlier, the long-term economic effects would have been equally devastating for the country."

(a) The historian said that even if the war would have ended earlier, the long-term economic effects would have been equally devastating for the country.
(b) The historian said that even if the war had ended earlier, the long-term economic effects would have been equally devastating for the country.
(c) The historian said that even if the war ended earlier, the long-term economic effects would have been equally devastating for the country.
(d) The historian said that even if the war had ended earlier, the long-term economic effects will have been equally devastating for the country.

Q11. Identify the misspelled word:

(a) Meticulous
(b) Resuscitate
(c) Adquire
(d) Periphery

Q12. Identify the misspelled word:

(a) Idyllic
(b) Viccissitude
(c) Ephemeral
(d) Tenacious

Q13. Select the option that expresses the given sentence in indirect voice.

He said to her, "I must tell you that I was not the one who broke the vase, as I was not even in the room when it happened."

(a) He told her that he had to tell her that he had not been the one who had broken the vase, as he was not even in the room when it had happened.
(b) He told her that he had to tell her that he was not the one who had broken the vase, as he was not even in the room when it had happened.
(c) He told her that he must tell her that he was not the one who broke the vase, as he was not even in the room when it happened.
(d) He told her that he had to tell her that he was not the one who had broken the vase, as he had not even been in the room

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when it happened.

Q14. Select the option that expresses the given sentence in direct voice.

The old woman explained with a sigh that she was feeling unwell and could not join the outing.

(a) "I am unwell," she said, "and I cannot join the outing."
(b) The old woman said, "I am unwell and I cannot join the outing."
(c) She said, "I was unwell and I could not join the outing."
(d) She explained, "I am unwell, I cannot join the outing."

Q15. Select the option that expresses the given sentence in direct voice.

The tourist, after a long journey, exclaimed with relief that she had finally arrived at her destination.

(a) The tourist said, "I have finally arrived at my destination!"
(b) The tourist exclaimed with relief, "I finally arrived at my destination!"
(c) The tourist exclaimed with relief, "She finally arrived at my destination!"
(d) The tourist said with relief, "She arrived at her destination!"

Q16. Choose the correct passive voice transformation of the sentence:

Why did they have to postpone the crucial board meeting until further notice?

(a) Why the crucial board meeting had to be postponed until further notice by them?
(b) Why the crucial board meeting was postponed until further notice?
(c) Why had the crucial board meeting to be postponed until further notice by them?
(d) Why did the crucial board meeting have to be postponed until further notice?

Q17. Choose the correct passive voice transformation of the sentence:

We saw the new CEO enter the conference room just as the meeting was about to begin.

(a) The new CEO was seen entering the conference room just as the meeting was about to begin by us.
(b) The new CEO was seen to enter the conference room just as the meeting was about to begin by us.
(c) The new CEO was seen enter the conference room just as the meeting was about to begin by us.
(d) The new CEO had been seen to enter the conference room just as the meeting was about to begin.

Directions

Read the passage and answer the following question:

In many countries, tough competitive exams have long been seen as the ultimate gateway to prestigious colleges and stable careers. These examinations, which demand years of rigorous preparation, are intended to select only the most capable candidates. However, in recent years, their importance appears to be declining for several reasons.

Firstly, an increasing number of students and educators argue that these exams test memory and speed rather than true understanding or creativity. Moreover, the stress and pressure linked with clearing such exams often affect students' mental health negatively. With the rise of alternative evaluation methods, like project-based assessments, skill tests, and holistic interviews, many institutions are reconsidering their over-reliance on traditional exams.

Additionally, the rapid growth of online education and professional courses has provided students with alternative pathways to success. Today, employers are placing greater value on practical skills, internships, and real-world problem-solving abilities rather than solely on exam scores. While competitive exams still hold significance, their dominance is slowly fading as the world moves

towards more balanced and diverse ways of measuring talent.

Q18. In the sentence

"These examinations, which demand years of rigorous preparation, are intended to select only the most capable candidates." what is the part of speech of the word "rigorous"?

(a) Verb
(b) Adjective
(c) Noun
(d) Adverb

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Q19. Identify the voice (active or passive) and tense of the verb phrase "are intended" in the sentence:

"These examinations, which demand years of rigorous preparation, are intended to select only the most capable candidates."

(a) Active voice, simple present
(b) Passive voice, present perfect
(c) Passive voice, simple present
(d) Active voice, past perfect

Q20. The word "holistic" means:

(a) Focused on one part only
(b) Based only on written exams
(c) Considering the whole picture
(d) Unfair or biased

Q21. In the sentence:

“The stress and pressure linked with clearing such exams often affect students’ mental health negatively,”

which of the following is the closest synonym for the word “linked” as used in the sentence?

(a) ignored
(b) caused
(c) associated with
(d) removed

Q22. What is the main idea of the passage?

(a) tough exams are more important than ever
(b) Competitive exams should be made harder
(c) Competitive exams are losing value due to new approaches
(d) All students should avoid exams altogether

Q23. Which word is closest in meaning to flair?

He had a professional flair for making people feel he knew everything.

(a) Clumsiness
(b) Confusion
(c) Talent
(d) Hesitation

Q24. What is the term for a sound that cannot be heard clearly?

(a) Cacophony
(b) Muffled
(c) Euphony
(d) Resonance

Q25. What is the term for a government controlled by monopolists?

(a) Oligarchy
(b) Plutocracy
(c) Autocracy
(d) Plutonomy

GENERAL INTELLIGENCE

Q26. A shopkeeper bought 15 dozens of eggs at Rs. 50 per dozen. He sold 10 dozens at Rs. 60 per dozen and the remaining eggs at Rs. 45 per dozen. What is his total profit or loss?

(a) Rs. 50 Profit
(b) Rs. 75 Profit
(c) Rs. 25 Loss

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(d) Rs. 100 Profit

Q27. If A:B = 2:3 and B:C = 4:5, what is A:B:C?

(a) 2:3:5
(b) 8:12:15
(c) 8:9:15
(d) 4:6:5

Q28. A person walks 3 km north, then 4 km east, and finally 3 km south. How far is he from his starting point?

(a) 3 km
(b) 4 km
(c) 5 km
(d) 6 km

Q29. A person walks 6 km west, then 8 km south, and finally 6 km east. In which direction is he from his starting point?

(a) North
(b) South
(c) East
(d) West

Q30. Directions: Pick the correct options from the given alternatives.

TOY: UPZ :: KEY: ?

(a) GLB
(b) BLG
(c) ZPU
(d) LFZ

Q31. Directions: Select the correct options from the given alternatives

1/2, 2/4, 3/6,?

(a) 8/6
(b) 4/8
(c) 7/9
(d) 10/8

Q32. Instructions: For the question below, carefully examine the Reference Statement. Then, identify the single option among the four alternatives (a, b, c, d) that is an EXACT AND COMPLETE REPLICATION of the Reference Statement. Pay exceptionally close attention to every character, number, symbol, space, and punctuation mark.

Reference: Amsterdam; 27 Apr.il, 2025 (Saturday).

(a) Amsterdam; 27 Apr.il, 2025 (Saturday).
(b) Amsterdam; 27 April., 2025 (Saturday).
(c) Amsterdam; 27 Apr.il, 2025 (Sunday).
(d) Amsterdam; 27 April, 2025 (Saturday)

Q33. Instructions: For the question below, carefully examine the Reference Statement. Then, identify the single option among the four alternatives (a, b, c, d) that is an EXACT AND COMPLETE REPLICATION of the Reference Statement. Pay exceptionally close attention to every character, number, symbol, space, and punctuation mark.

Reference: Valletta, MT: 21 September 1964.

(a) Valletta, MT: 21 September 1964.
(b) Valetta, MT: 21 September 1964.
(c) Valletta, MT : 21 September 1946.
(d) Valletta, MT: 21 September 1946

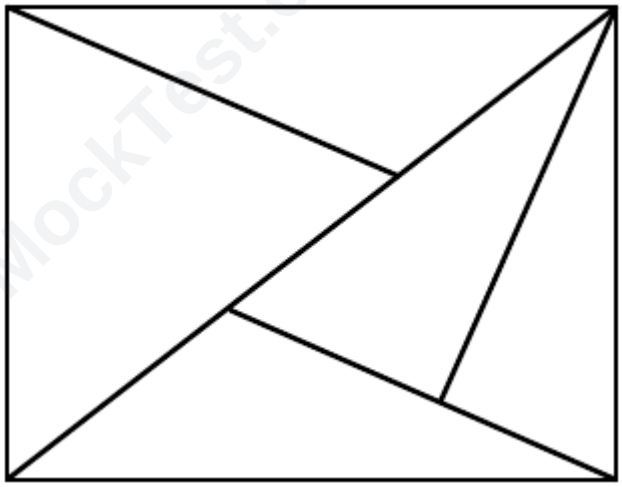
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Q34. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

Col 1	Col 2	Col 3
4	2	7
5	6	3
3	4	2
600	480	?

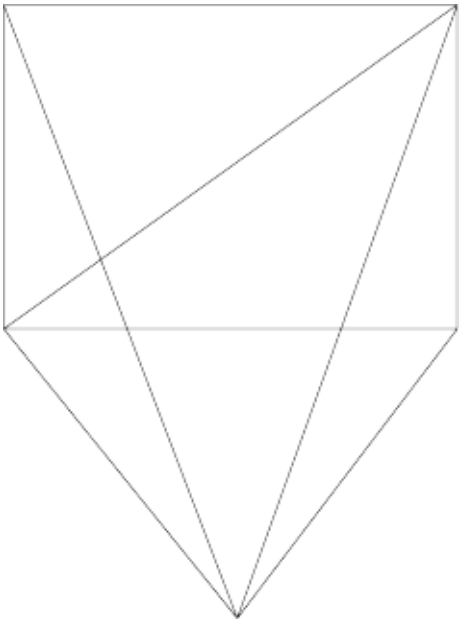
(a) 360
(b) 420
(c) 480
(d) 540

Q35. How many triangles are there in the given figure?



(a) 5
(b) 7
(c) 8
(d) 9

Q36. How many triangles are there in the given figure?



(a) 10

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(b) 12
(c) 13
(d) 14

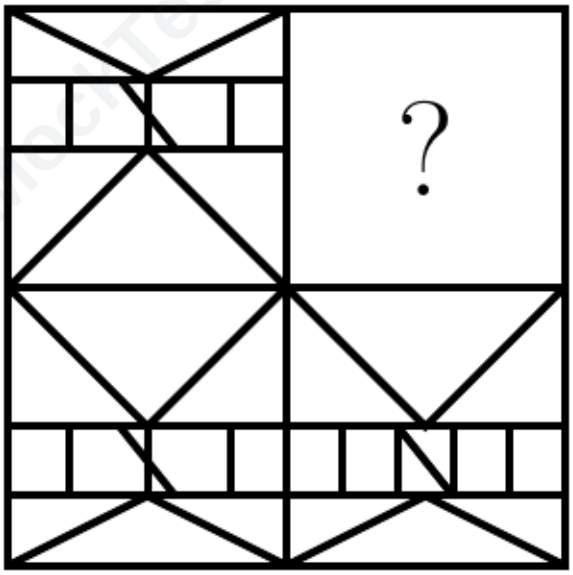
Q37. A is walking towards east. He takes 1 left turn and 1 right turn. In which direction he will be facing finally?

(a) South
(b) East
(c) West
(d) North

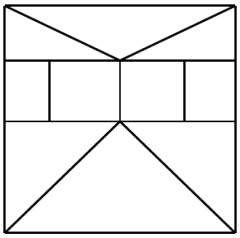
Q38. M starts cycling 16 meters straight from her office. During her journey she took 12 right turns. Finally she is facing towards east direction. In which direction she started cycling? (she took no left turn)

(a) South
(b) West
(c) North
(d) East

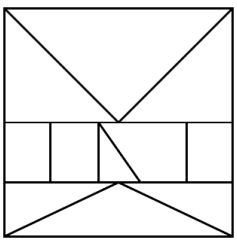
Q39. Which option figure will complete the pattern in the question figure? (Rotation is not allowed)



(a)

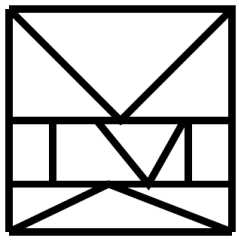


(b)

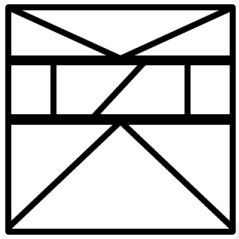


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(c)

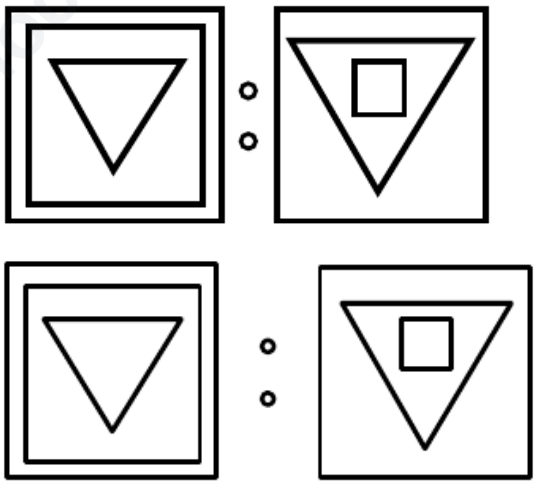


(d)

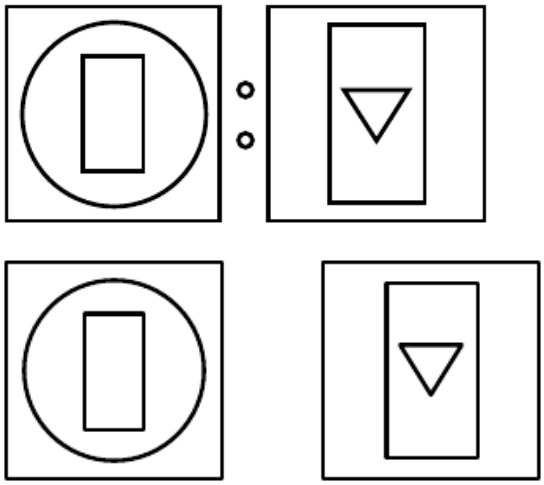


Q40. In the following question, in each option a pair of figures is given. In each pair the figure towards the left of (:) is related by some logic/rule/relation with the figure on the right of (:). Select the odd figure pair from the given alternatives.

(a)

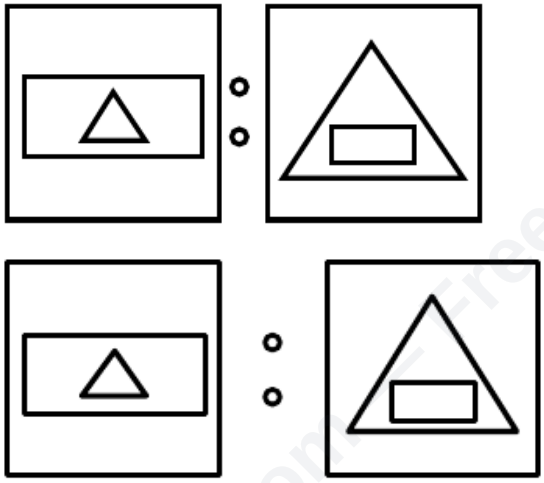


(b)

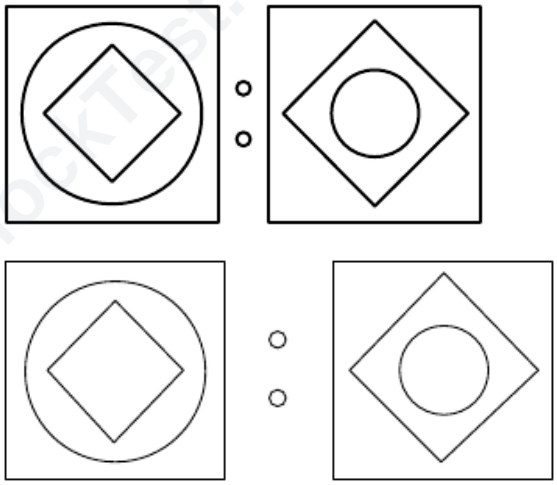


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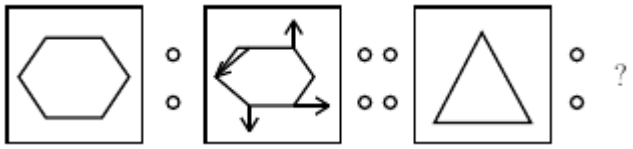
(c)



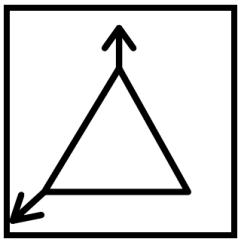
(d)



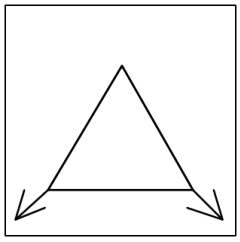
Q41. Two figures given on the left side of (::) are related with some logic/rule/relation. Select the missing figure on the right side of (::) from the given alternatives based on the same logic/rule/relation.



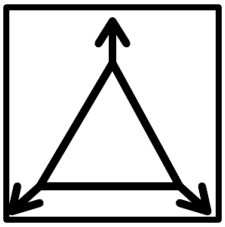
(a)



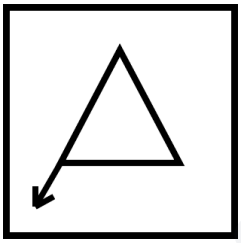
(b)



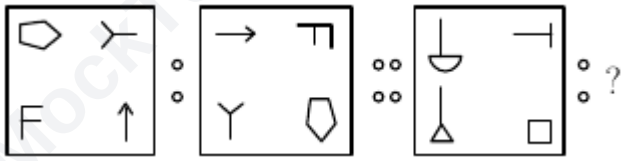
(c)



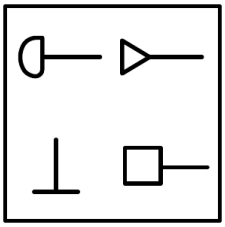
(d)



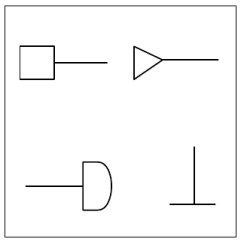
Q42. Two figures given on the left side of (::) are related with some logic/rule/relation. Select the missing figure on the right side of (::) from the given alternatives based on the same logic/rule/relation.



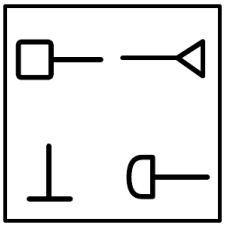
(a)



(b)

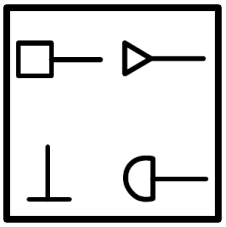


(c)



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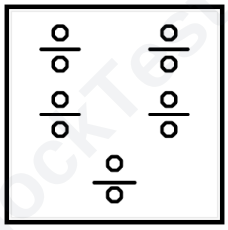
(d)



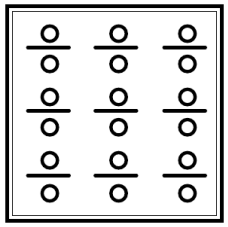
Q43. Two figures given on the left side of (::) are related with some logic/rule/relation. Select the missing figure on the right side of (::) from the given alternatives based on the same logic/rule/relation.



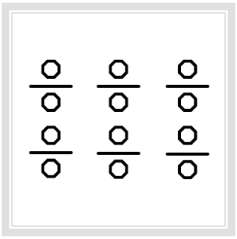
(a)



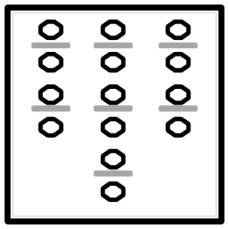
(b)



(c)

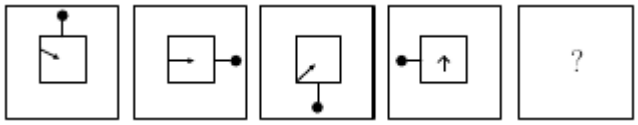


(d)

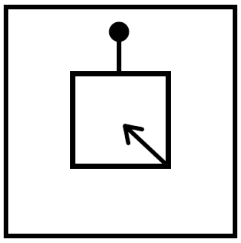


Q44. In the following figure series, select the figure which can be placed at the sign of question mark (?) from the given alternatives.

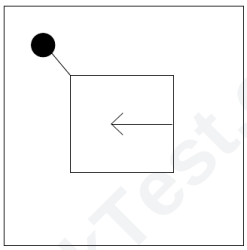
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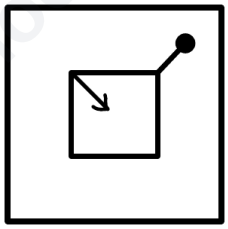
(a)



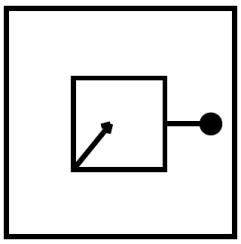
(b)



(c)



(d)



Q45. In the following question, four number pairs are given. In each pair the number on left side of (-) is related to the number of the right side of (-) with some Logic/Rule/Relation. Three pairs are similar on the basis of same Logic/Rule/Relation. Select the odd one out from the given alternatives.

(NOTE: Operations should be performed on the whole numbers, without breaking down the number into its constituent digits. E.g.13 Operations on 13 such as adding /subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(a) 13 - 225
(b) 11 - 169
(c) 15 - 289
(d) 17 - 381

Q46. In a certain coded language 'ROOT' is coded as 'MIJN' and 'FANS' is coded as 'AUIM'. How will 'JAMS' be coded in the same code language?

(a) GSIK
(b) CSGM
(c) FSFM
(d) EUHM

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Q47. In a certain code language, 'image create perception' is coded as 'ca da lp', 'perception bring thought' is coded as 'da li mn', 'thought produced ideas' is coded as 'li po ta'. How will 'thought perception' be coded in that code language?

(a) da ta
(b) li da
(c) li mn
(d) da po

Q48. In a certain code language, 'meal is in mixer' is coded as 'jm dd ev dh', 'harsh waist is injects' is coded as 'nd jm fv fm', 'mixer waist is harsh' is coded as 'fv fm jm dd', 'injects talk in meal' is coded as 'nd ev dh ff'. How will 'waist is harsh' be coded in that code language?

(a) jm fv fm
(b) ev dd dh
(c) fv jm dd
(d) nd ev dh

Q49. A word has been given in the question. This word CAN be formed by using the letters of the word given in one of the alternatives only.

Select that alternative.

NIGHT

(a) THINGHAR
(b) HABITEN
(c) HINTED
(d) HALFRIGHT

Q50. Select the option that is related to the fifth letter cluster in the same way as the second letter cluster is related to the first letter cluster and fourth letter cluster is related to third letter cluster.

PORT : USPQ :: FWND : EOXG :: GBRI : ?

(a) JRDI
(b) JSCH
(c) KRDH
(d) KSDI

QUANTITATIVE APTITUDE

Q51. If the square of 25 is 625, then find the square of 125.

(a) 13625
(b) 14625
(c) 15625
(d) 16625

Q52. Find the value of sin45°cos45° + tan60°sec30° + cosec30°cot 45°.

(a) 9/2
(b) 4/3
(c) 5/2
(d) 11/3

Q53. From the top of a hill 240 metres high, the angles of depression of the top and bottom of a pole are 30Â° and 60Â°, respectively. The difference (in metres) between the height of the pole and its distance from the hill is:

(a) 120(2 - √3)
(b) 120(√3 - 1)
(c) 80(√3 - 1)
(d) 80(2 - √3)

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Q54. A cube-shaped container with a side length of 10 cm is filled with water. A solid metal sphere with a radius of 3 cm is then submerged into the container. How much water, in cubic centimeters, will overflow?

(a) 36 π
(b) 1000 - 36 π
(c) 9 π
(d) 100 - 9 π

Q55. In triangle DEF, side lengths are DE = 75 cm, EF = 100 cm, and DF = 125 cm. Let M be the midpoint of side DF. Find the length of EM.

(a) 33.5 cm
(b) 62.5 cm
(c) 56.5 cm
(d) 79.2 cm

Q56. What is the degree measure of -5 π /3 radians?

(a) -240°
(b) 300°
(c) -150°
(d) -300°

Q57. Which of the following set can never form the sides of a triangle?

(a) 2 cm, 3 cm, 4 cm
(b) 5 cm, 5 cm, 5 cm
(c) 6 cm, 2 cm, 3 cm
(d) 7 cm, 8 cm, 12 cm

Q58. How many diagonals does a regular hexagon have?

(a) 6
(b) 9
(c) 12
(d) 15

Q59. At a specific rate of simple interest, a sum of money becomes Rs. 18,500 after four years and Rs. 19,800 after six. Calculate the simple interest rate at 12% annually for five years on the same amount.

(a) Rs. 8,540
(b) Rs. 7,140
(c) Rs. 9,540
(d) Rs. 9,440

Q60. A specific amount of principal is invested by an individual. The annual simple interest rate is 6% for the first two years, 8% for the following four, and 10% for the remaining time. The total interest earned after nine years is Rs. 7,400. How much was invested initially?

(a) Rs. 10,500
(b) Rs. 11,000
(c) Rs. 10,000
(d) Rs. 11,800

Q61. A person takes a loan of Rs. 25,000 for 2 years at a rate of interest of 5%. What will be the total amount to be paid after 2 years?

(a) Rs. 27,500
(b) Rs. 28,000
(c) Rs. 29,000
(d) Rs. 30,000

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Q62. In two concentric circles, the radius of circle C_2 is less than the radius of circle C_1. If AB is a chord of circle C_1 of length 16 cm, touching circle C_2 at point P, find the length of BP.

(a) 16 cm
(b) 12 cm
(c) 8 cm
(d) 4 cm

Q63. In a circle, there are two parallel chords of lengths 10 cm and 24 cm. Both chords are situated on the same side of the center. If the distance between them is 7 cm, find the area of the circle.

(a) 169 π square cm
(b) 196 π square cm
(c) 179 π square cm
(d) 187 π square cm

Q64. When the radius of a sphere is increased by 7 cm, its surface area increases by 4312 cm^2. What is the volume (in cm^3) of the original sphere? (Take π = 22/7)

(a) 37004 cm^3
(b) 32808 cm^3
(c) 38808 cm^3
(d) 32440 cm^3

Q65. A rope is cut into two pieces. The first piece is 3/5 of the total length. The second piece is 12 meters long. What was the original length of the rope?

(a) 40 meters
(b) 20 meters
(c) 50 meters
(d) 30 meters

Q66. Triangle MNO has an area of 12 cm^2. A similar triangle, M'N'O', has a perimeter that is twice the perimeter of Triangle MNO. What is the area of Triangle M'N'O'?

(a) 37 cm^2
(b) 34 cm^2
(c) 48 cm^2
(d) 36 cm^2

Q67. In a circle with radius of 10 cm, a chord forms a central angle of 60°. What is the length of the chord?

(a) 9 cm
(b) 10 cm
(c) 5 cm
(d) 12 cm

Q68. In a circle with center O, points A, B, and C are on the circumference. If the angle angle AOB = 80°, what is the measure of the angle angle ACB ?

(a) 50°
(b) 45°
(c) 40°
(d) 55°

Q69. If two circles touch each other externally, what is the number of internal common tangents that can be drawn?

(a) 0
(b) 1
(c) 2
(d) 3

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Q70. How many common tangents do two circles have when the distance between their centers equals the sum of their radii?

(a) 1
(b) 2
(c) 3
(d) 4

Q71. Two circles with radii of 6 cm and 3 cm have a distance of 15 cm between their centers. What is the length of the common internal tangent between the two circles?

(a) 10 cm
(b) 12 cm
(c) 11 cm
(d) 14 cm

Q72. Two circles have radii 8 cm and 6 cm. The distance between their centers is 18 cm. What is the length of their common internal tangent segment?

(a) 8√2 cm
(b) 14 cm
(c) 10√2 cm
(d) 10 cm

Q73. The lengths of a common external tangent and a common internal tangent to two circles are 8 cm and 6 cm, respectively. If the distance between their centers is 10 cm, what are the radii of the two circles?

(a) 10 cm and 4 cm
(b) 8 cm and 6 cm
(c) 7 cm and 1 cm
(d) 5 cm and 3 cm

Q74. A person walks at 5 km/h. If he increases his speed to 8 km/h, he takes 30 minutes less to cover a distance. What is the distance?

(a) 7.90 km
(b) 8.67 km
(c) 6.67 km
(d) 6.76 km

Q75. A 7:5 mixture of milk and water is contained in a vessel. The ratio of milk to water becomes 7:9, when 9 liters of the mixture is removed and the same volume of water is added to the vessel. How much milk was there in the vessel at the beginning?

(a) 30 litres
(b) 25 litres
(c) 21 litres
(d) 31 litres

GENERAL AWARENESS

Q76. Which Delhi Sultan appointed people from humble professions to high administrative posts?

(a) Muhammad Tughlaq
(b) Ruknuddin Firuz
(c) Minhaj-us-Siraj
(d) Ghiyasuddin Balban

Q77. Which of the following regions was annexed by Akbar in 1568?

(a) Bengal
(b) Gujarat
(c) Chittor

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(d) Orissa

Q78. Which of the following features of the Indian Constitution is borrowed from Japan?

(a) Concept of "procedure established by Law"
(b) Advisory jurisdiction of the Supreme court
(c) Judicial review
(d) Impeachment of the President

Q79. Which of the following country is one of the founding member of the Shanghai Cooperation Organisation?

(a) Iran
(b) India
(c) Pakistan
(d) Kazakhstan

Q80. The International Court of Justice is located at _____.

(a) Hague
(b) New York
(c) Beijing
(d) Paris

Q81. Harmanpreet Singh has been awarded the Major Dhyan Chand Khel Ratna Award 2024. He is associated with which sport?

(a) Chess
(b) Hockey
(c) Shooting
(d) Para-Athletics

Q82. In September 2024, the Supreme Court has affirmed that the Protection of Women from Domestic Violence Act,__ applies to all women in India regardless of their religion or social background.

(a) 2001
(b) 2003
(c) 2005
(d) 2007

Q83. Launched in 2025, what is the main objective of the Gyan Bharatam Mission?

(a) To digitize historical paintings
(b) To survey, document, and conserve India's manuscript heritage
(c) To fund new book publications
(d) To promote modern literature

Q84. In the World Air Quality Report 2024, what is India's rank among the most polluted countries?

(a) 3rd
(b) 5th
(c) 9th
(d) 46th

Q85. NITI Aayog has released the first School Education Quality Index in _____.

(a) 2019
(b) 2016
(c) 2015
(d) 2024

Q86. Which of the following is the second largest habitat of the One-Horned Rhinoceros in India?

(a) Kaziranga National Park
(b) Jaldapara National Park
(c) Gir National Park

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(d) Kanha National Park

Q87. India started working in space research with the launch of a meteorological rocket in which year?

(a) 1952
(b) 1957
(c) 1963
(d) 1984

Q88. The Satish Dhawan Space Centre is located in _____.

(a) Bhopal
(b) Ahmedabad
(c) Chennai
(d) Sriharikota

Q89. Which of the following statement is correct regarding gaseous state?

I. In this state, the particles move about randomly at high speed

II. Gases are highly compressible

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Q90. In August 2025, DRDO tested 'Sudarshan Chakra' project related to _____.

(a) Satellite
(b) Nuclear Reactor
(c) Submarine
(d) Air Defence Laser System

Q91. Under whose leadership did the Khalsa revolt against the Mughal rule after the death of Guru Gobind Singh?

(a) Chattar Singh Attriwal
(b) Banda Bahadur
(c) Duleep Singh
(d) Udai Singh

Q92. The rupee was made convertible on the current account of the balance of payments in _____.

(a) November 1994
(b) August 1994
(c) January 1995
(d) March 1995

Q93. How many members can the President of India nominate to the Rajya Sabha?

(a) 10
(b) 12
(c) 14
(d) 15

Q94. Which of the following statement is correct regarding the election of Vice president of India?

I. He should have completed 35 years of age.

II. He should be qualified for election as a member of the Council of States.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

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Q95. The AMUL milk cooperative was set up in _____.

(a) 1946
(b) 1957
(c) 1979
(d) 1992

Q96. In which of the following state, iron ore occurs in a series of hill ranges in Sundergarh, Mayurbhanj and Jhar?

(a) Andhra Pradesh
(b) Tamil Nadu
(c) Odisha
(d) Meghalaya

Q97. Why do single-celled organisms do not need specific organs for taking in food, exchanging gases, or removing wastes?

(a) They have complex body structures
(b) Their entire surface is in contact with the environment
(c) They have a protective wall around them
(d) They do not perform these functions

Q98. Which of the following statement is correct regarding blood vessels?

(a) Arteries are the vessels which carry blood away from the heart to various organs of the body.
(b) Veins collect the blood from heart and spread it to different organs.
(c) Arteries have capillaries to prevent backflow of blood.
(d) The smallest vessels have walls which are one-cell thick and are called veins.

Q99. Which of the following kings ruled during the lifetimes of both Buddha and Mahavira?

(a) Chandragupta Maurya
(b) Ashok
(c) Ajatashatru
(d) Harshavardhana

Q100. What name did the ancient Greeks use to refer to the region around the Indus River?

(a) Sindh
(b) Indoi or Indike
(c) Hind
(d) Bharat

ANSWER KEY

1	a	2	a	3	c	4	b	5	b	6	a	7	b	8	c	9	d	10	b
11	c	12	b	13	b	14	b	15	b	16	d	17	b	18	b	19	c	20	c
21	c	22	c	23	c	24	b	25	b	26	b	27	b	28	b	29	b	30	d
31	b	32	a	33	a	34	b	35	c	36	d	37	b	38	d	39	d	40	b
41	c	42	d	43	d	44	a	45	d	46	d	47	b	48	a	49	a	50	b
51	c	52	a	53	d	54	a	55	b	56	d	57	c	58	b	59	c	60	c
61	a	62	c	63	a	64	c	65	d	66	c	67	b	68	c	69	b	70	c
71	b	72	a	73	c	74	c	75	c	76	a	77	c	78	a	79	d	80	a
81	b	82	c	83	b	84	b	85	a	86	b	87	c	88	d	89	c	90	d
91	b	92	b	93	b	94	c	95	a	96	c	97	b	98	a	99	c	100	b

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SOLUTIONS

Q1. Answer: (a) Prediction

The solution is in Hindi. Read it online.

Q2. Answer: (a) Acting without preparation

The solution is in Hindi. Read it online.

Q3. Answer: (c) Do it out of habit

The solution is in Hindi. Read it online.

Q4. Answer: (b) The new employee was told to lift the hatch.

The solution is in Hindi. Read it online.

Q5. Answer: (b) The meeting will last for an hour.

The solution is in Hindi. Read it online.

Q6. Answer: (a) Someone saw the famous painter walking in the park.

The correct answer is Option 1.

Key Points

• Active voice structure: The subject performs the action described by the verb, and the object receives the action.

• Passive voice structure: The object of the active voice becomes the subject of the passive sentence.

• In the given passive sentence, "The famous painter was seen to be walking in the park," the subject is "The famous painter" and the action is "was seen to be walking."

• To convert to active voice: Identify the implied subject performing the action (e.g., "Someone").

• Reconstruct the sentence so the implied subject comes first, followed by the action and object: "Someone saw the famous painter walking in the park."

Therefore, the correct answer is Option 1.

Correct Sentence: "Someone saw the famous painter walking in the park."

Additional Information

• Option 2: "The famous painter walked in the park and was seen." – Incorrect as it changes the meaning of the sentence.

• Option 3: "The park was where the famous painter was seen walking." – Incorrect as it does not convert to active voice.

• Option 4: "Someone has seen the famous painter walking in the park." – Incorrect tense (present perfect instead of past simple).

Q7. Answer: (b) They understood that a new management team had been appointed.

The correct answer is Option 2.

Key Points

• Passive voice structure: The subject of the active voice sentence performs the action.

• In the passive voice, the original sentence is: "It was understood that a new management team had been appointed."

• To convert to active voice: Identify the implied subject, which is "they."

• Place "they" at the beginning of the sentence.

• Follow with the active verb "understood" and the object "that a new management team had been appointed."

Therefore, the correct answer is Option 2.

Correct Sentence: "They understood that a new management team had been appointed."

Additional Information

• Option 1: "A new management team had been appointed, it was understood." – This is still in passive voice and does not change the sentence structure appropriately.

• Option 3: "It was understood that they appointed a new management team." – Incorrect phrasing and tense.

• Option 4: "A new management team was appointed, as they understood." – Incorrectly conveys the meaning and does not follow active voice rules.

Q8. Answer: (c) marshmallow

The correct answer is 'marshmallow'.

Key Points

• The word "marshmallow" is the correct spelling and refers to a soft, sweet treat commonly roasted over a campfire.

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• Options 1 (marshmellow), 2 (marshmallo), and 4 (marshmelloe) are incorrect spellings of the word.

• Marshmallow is widely recognized as the standard spelling in English.

Therefore, the correct answer is Option 3.

Complete Sentence: "She roasted a marshmallow over the campfire."

Additional Information

• Option 1: "marshmellow" is an incorrect spelling and does not exist in standard English.

• Option 2: "marshmallo" is incomplete and not a valid word.

• Option 4: "marshmelloe" is incorrect and not recognized as a correct spelling.

Q9. Answer: (d) indispensable

The correct answer is 'indispensable'.

Key Points

• The word "indispensable" is spelled correctly and refers to something absolutely necessary or essential.

• The other options (1, 2, and 3) are incorrect spellings of the word "indispensable."

Therefore, the correct answer is Option 4.

Complete Sentence: "Her advice proved to be truly indispensable to the success of the project."

Additional Information

• Option 1: "indispensible" is incorrect because the correct spelling is "indispensable" with an "a" instead of "i" in the second part.

• Option 2: "indespensable" is incorrect because it contains a spelling error; "e" is used instead of "i" in the first part.

• Option 3: "indespensible" is incorrect because it contains two spelling errors: "e" is used instead of "i" in the first part, and "i" is used instead of "a" in the second part.

Q10. Answer: (b) The historian said that even if the war had ended earlier, the long-term economic effects would have been e...

The correct answer is Option 2.

Key Points

• Indirect Speech: The historian said that even if the war had ended earlier, the long-term economic effects would have been equally devastating for the country.

• Key Conversions:

• "Even if the war had ended earlier" remains unchanged:

• The past perfect tense "had ended" is retained as it is correct in both direct and indirect speech.

• "would have been equally devastating" remains unchanged:

• Modal auxiliary verb "would" and perfect infinitive "have been" are retained to reflect the hypothetical nature of the statement.

• Reporting verb:

• "said" remains unchanged as it is used to report the statement.

• Punctuation and Format:

• Quotation marks from direct speech are removed in indirect speech.

• The sentence begins with the reporting clause and is followed by the reported statement.

Therefore, the correct answer is Option 2.

Correct Sentence: The historian said that even if the war had ended earlier, the long-term economic effects would have been equally devastating for the country.

Additional Information

• Option 1: "The historian said that even if the war would have ended earlier, the long-term economic effects would have been equally devastating for the country."

• Incorrect: "would have ended" is grammatically incorrect; "had ended" is the correct form in this context.

• Option 3: "The historian said that even if the war ended earlier, the long-term economic effects would have been equally devastating for the country."

• Incorrect: "ended" (simple past tense) is inappropriate here; the correct form is "had ended" (past perfect tense).

• Option 4: "The historian said that even if the war had ended earlier, the long-term economic effects will have been equally devastating for the country."

• Incorrect: "will have been" is incorrect in this hypothetical context; the correct form is "would have been."

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Q11. Answer: (c) Adquire

The solution is in Hindi. Read it online.

Q12. Answer: (b) Viccissitude

The solution is in Hindi. Read it online.

Q13. Answer: (b) He told her that he had to tell her that he was not the one who had broken the vase, as he was not even in...

The correct answer is Option 2.

Key Points

• Indirect Speech: He told her that he had to tell her that he was not the one who had broken the vase, as he was not even in the room when it had happened.

• Key Conversions:

• "must" becomes "had to"

• In indirect speech, modal verbs like "must" often change to "had to" to reflect the past tense.

• "was not the one who broke" becomes "was not the one who had broken"

• Past simple tense "broke" is converted to past perfect tense "had broken" in indirect speech.

• "was not even in the room when it happened" becomes "was not even in the room when it had happened"

• Past simple tense "happened" is converted to past perfect tense "had happened" to match the timeline in indirect speech.

• Punctuation and Format:

• The direct quotation is removed, and the sentence is restructured in a narrative form.

• Conjunctions like "that" are added to connect the clauses in indirect speech.

Therefore, the correct answer is Option 2.

Correct Sentence: He told her that he had to tell her that he was not the one who had broken the vase, as he was not even in the room when it had happened.

Additional Information

• Option 1: He told her that he had to tell her that he had not been the one who had broken the vase, as he was not even in the room when it had happened.

• The phrase "he had not been the one" incorrectly emphasizes the timeline, making the sentence unclear.

• Option 3: He told her that he must tell her that he was not the one who broke the vase, as he was not even in the room when it happened.

• The modal "must" is not correctly converted to "had to," which is required in indirect speech.

• The past simple tense "broke" and "happened" are not converted to the past perfect tense, making the sentence grammatically incorrect.

• Option 4: He told her that he had to tell her that he was not the one who had broken the vase, as he had not even been in the room when it happened.

• The addition of "he had not even been" unnecessarily complicates the sentence and alters the meaning slightly.

Q14. Answer: (b) The old woman said, "I am unwell and I cannot join the outing."

The correct answer is Option 2.

Key Points

• Indirect Speech: The old woman explained with a sigh that she was feeling unwell and could not join the outing.

• Key Conversions:

• "she was feeling unwell" becomes "I am unwell"

• Pronoun "she" is converted to "I" to match direct speech.

• Verb "was feeling" is changed to "am" to match the present tense in direct speech.

• "could not join" becomes "cannot join"

• Verb "could" is changed to "cannot" to match direct speech tense.

• Subject Preservation: The subject 'The old woman' is preserved in the reporting clause for accuracy, rather than using a pronoun.

Therefore, the correct answer is Option 2.

Correct Sentence: The old woman said, “I am unwell and I cannot join the outing.”

Additional Information

• Option 1: Uses the pronoun 'she' instead of preserving the noun 'The old woman' from the original sentence.

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• Option 3: Tense is incorrect; the verbs remain in the past tense.
• Option 4: Uses the pronoun 'She' and lacks the proper conjunction 'and'.

Q15. Answer: (b) The tourist exclaimed with relief, "I finally arrived at my destination!"

The correct answer is Option 2.

Key Points

• Indirect Speech: The tourist, after a long journey, exclaimed with relief that she had finally arrived at her destination.
• Key Conversions:
• "she had finally arrived" becomes "I have finally arrived"
• Pronoun "she" is changed to "I" to match the direct speech format.
• Verb "had arrived" is converted to "have arrived" to align with the present perfect tense in direct speech.
• Reporting verb:
• Indirect: "exclaimed with relief"
• Converted to: "exclaimed with relief," maintaining the emotional tone.
• Punctuation and Format:
• Direct speech is enclosed in quotation marks.
• Starts with a capital letter "I" and ends with an exclamation mark "!".
• Reporting clause follows the quoted speech, separated by a comma.

Therefore, the correct answer is Option 2.

Correct Sentence: "The tourist exclaimed with relief, "I finally arrived at my destination!".

Additional Information

• Option 1: "The tourist said, "I have finally arrived at my destination!""
• The tone of the sentence does not align with the emotional "exclaimed with relief" in the original sentence.
• Option 3: "The tourist exclaimed with relief, "She finally arrived at my destination!""
• Pronoun "she" is incorrect, as it does not align with the direct voice conversion.
• Option 4: "The tourist said with relief, "She arrived at her destination!""
• Pronoun "she" is incorrect, as it does not align with the direct voice conversion.

Q16. Answer: (d) Why did the crucial board meeting have to be postponed until further notice?

The correct answer is Option 4.

Key Points

• Passive voice structure: The object of the active voice sentence becomes the subject of the passive voice sentence.
• In the active voice, the sentence is: "Why did they have to postpone the crucial board meeting until further notice?"
• To convert to passive voice: Place the object "the crucial board meeting" at the beginning.
• Change the active verb form "did have to postpone" to "did have to be postponed."
• Ensure the question structure is retained with "why" at the beginning.

Therefore, the correct answer is Option 4.

Correct Sentence: "Why did the crucial board meeting have to be postponed until further notice?"

Additional Information

• Option 1: "Why the crucial board meeting had to be postponed until further notice by them?" – Incorrect structure of the question.
• Option 2: "Why the crucial board meeting was postponed until further notice?" – Incorrect as it omits the modal "have to."
• Option 3: "Why had the crucial board meeting to be postponed until further notice by them?" – Incorrect tense and awkward phrasing.

Q17. Answer: (b) The new CEO was seen to enter the conference room just as the meeting was about to begin by us.

The correct answer is Option 2.

Key Points

• Passive voice structure: The object of the active voice sentence becomes the subject of the passive voice sentence.
• In the active voice, the sentence is: "We saw the new CEO enter the conference room just as the meeting was about to begin."
• To convert to passive voice: Place the object "the new CEO" at the beginning.
• Change the active verb form "saw enter" to "was seen to enter" (past simple passive).
• Add the preposition "by" followed by the original subject "us."

Therefore, the correct answer is Option 2.

Correct Sentence: "The new CEO was seen to enter the conference room just as the meeting was about to begin by us."

Additional Information

• Option 1: "The new CEO was seen entering the conference room just as the meeting was about to begin by us." – Incorrect, as "entering" changes the meaning.

• Option 3: "The new CEO was seen enter the conference room just as the meeting was about to begin by us." – Incorrect, as "enter" is not grammatically correct in passive voice.

• Option 4: "The new CEO had been seen to enter the conference room just as the meeting was about to begin." – Incorrect, as "had been" changes the tense unnecessarily.

Q18. Answer: (b) Adjective

The correct answer is 'Option 2'.

Key Points

• A) "Rigorous" qualifies the noun "preparation" in the sentence.

• This means that "rigorous" is used as an adjective, as adjectives describe or modify nouns.

• B) Adjectives provide more information about the noun.

• "Rigorous" here describes the type of preparation required for the examinations, emphasizing its intensity and thoroughness.

Therefore, the correct answer is Option 2.

Additional Information

• Option 1: Incorrect because a verb denotes an action, and "rigorous" is not performing any action here.

• Option 3: Incorrect because a noun is a person, place, thing, or idea, and "rigorous" is describing a noun, not acting as one.

• Option 4: Incorrect because an adverb modifies a verb, adjective, or other adverb, and "rigorous" is specifically modifying a noun (preparation).

Q19. Answer: (c) Passive voice, simple present

The correct answer is Option 3 i.e 'Passive voice, simple present'.

Key Points

• The verb phrase "are intended" is in the passive voice, which means the subject is receiving the action of the verb.

• In the simple present tense, the passive voice is formed by using the present tense of the verb "to be" (am, is, are) followed by the past participle of the main verb.

• In this case, "are" is the present tense of the verb "to be", and "intended" is the past participle of the main verb "intend".

Therefore, the correct answer is- Option 3.

Additional Information

• Active voice: In an active voice sentence, the subject performs the action expressed by the verb. "These examinations select..." is an example of the active voice.

• Present perfect: The present perfect tense is formed with "have/has" + the past participle of the verb. For example, "have intended" or "has intended".

• Past perfect: The past perfect tense is formed with "had" + the past participle of the verb. For example, "had intended".

Q20. Answer: (c) Considering the whole picture

The solution is in Hindi. Read it online.

Q21. Answer: (c) associated with

The solution is in Hindi. Read it online.

Q22. Answer: (c) Competitive exams are losing value due to new approaches

The correct answer is Option 3 i.e 'Competitive exams are losing value due to new approaches'.

Key Points

• The passage suggests that traditional competitive exams, which require years of rigorous preparation, are being undermined or losing effectiveness due to new methods or approaches in evaluating candidates.

• The emphasis is on how the value of these exams is diminishing rather than discussing the importance of making exams tougher or the necessity to avoid them entirely.

• It highlights a shift away from the conventional examination methods to possibly more innovative or holistic approaches in candidate selection.

Therefore, the correct answer is- Option 3.

Additional Information

• Option 1: This suggests the importance of tough exams, but the passage is more focused on the diminishing value of traditional

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exams.

• Option 2: This implies a need to make exams harder, which is not the main point of the passage.

• Option 4: Suggests avoiding exams altogether, which is not advocated by the passage.

Q23. Answer: (c) Talent

The solution is in Hindi. Read it online.

Q24. Answer: (b) Muffled

The solution is in Hindi. Read it online.

Q25. Answer: (b) Plutocracy

The solution is in Hindi. Read it online.

Q26. Answer: (b) Rs. 75 Profit

Given:

Total eggs bought = 15 dozens

Cost price per dozen = Rs. 50

Sold 10 dozens at Rs. 60 per dozen

Remaining sold at Rs. 45 per dozen

Formula Used:

Total Cost Price (CP) = Quantity × CP per dozen

Total Selling Price (SP) = (Quantity1 × SP1) + (Quantity2 × SP2)

Profit/Loss = SP − CP

Calculation:

Total CP = 15 × 50 = Rs. 750

SP of first 10 dozens = 10 × 60 = Rs. 600

Remaining dozens = 15 − 10 = 5

SP of remaining = 5 × 45 = Rs. 225

Total SP = 600 + 225 = Rs. 825

Profit = 825 − 750 = Rs. 75

Therefore The shopkeeper makes a profit of Rs. 75.

Q27. Answer: (b) 8:12:15

Given:

A : B = 2 : 3

B : C = 4 : 5

Formula Used:

To combine ratios, make the common term (B) equal.

Calculation:

From A : B = 2 : 3 and B : C = 4 : 5

LCM of B terms (3 and 4) = 12

Multiply first ratio by 4:

A : B = 8 : 12

Multiply second ratio by 3:

B : C = 12 : 15

Therefore, A : B : C = 8 : 12 : 15

Therefore The correct answer is option 2.

Q28. Answer: (b) 4 km

Walks 3 km North

Then 4 km East

Then 3 km South

So, he is 4 km from his starting point.

Hence, the correct answer is option 2

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Q29. Answer: (b) South

Walks 6 km West → position: 6 km west of start
Walks 8 km South → position: 6 km west & 8 km south
Walks 6 km East → west and east cancel
Hence, the correct answer is option 2

Q30. Answer: (d) LFZ

The logic followed here is.
For TOY : UPZ
Applying the same logic to KEY : ?
The missing word is LFZ.
Hence, the correct answer is "Option 4".

Q31. Answer: (b) 4/8

Given:
1/2, 2/4, 3/6, ?
Numerator increases by 1 each time:
1, 2, 3 → next is 4
Denominator also increases by 2 each time:
2, 4, 6 → next is 8
So the next term is:
4/8
Hence, the correct answer is option 2

Q32. Answer: (a) Amsterdam; 27 Apr.il, 2025 (Saturday).

Reference:
Amsterdam; 27 Apr.il, 2025 (Saturday).
Check options:
1. Amsterdam; 27 Apr.il, 2025 (Saturday). ? Exactly same
2. Uses April instead of Apr.il ?
3. Uses Sunday instead of Saturday ?
4. Uses April instead of Apr.il ?
Hence, the correct answer is Option 1.

Q33. Answer: (a) Valletta, MT: 21 September 1964.

Reference:
Valletta, MT: 21 September 1964.
Check options:
Valletta, MT: 21 September 1964. ? Exact match
Valetta (missing one “l”) ?
Year is 1946 instead of 1964 ?
Year is 1946 instead of 1964 ?
Hence, the correct answer is Option 1

Q34. Answer: (b) 420

The logic followed here is:
1st Column → 4 × 5 × 3 × 10 = 600
2nd Column → 2 × 6 × 4 × 10 = 480
3rd Column → 7 × 3 × 2 × 10 = 420
Hence, "Option 2" is the correct answer.

Q35. Answer: (c) 8

Hence, the correct answer is option 3

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Q36. Answer: (d) 14

Hence, the correct answer is option 4

Q37. Answer: (b) East

Start direction: East

From East, 1 left turn → North

From North, 1 right turn → East

Hence, the correct answer is option 2

Q38. Answer: (d) East

Given:

M starts cycling 16 meters straight from her office.

During her journey she took 12 right turns.

Finally she is facing towards east direction.

As a full circle (360° revolutions) consists of 4 right turns (90° each), so for 12 turns → 12 ÷ 4 = 0 Remainder

As 12 is exact multiple of 4, therefore M is facing in the same direction as when she took first right turn.

Therefore, Starting direction = Last direction = EAST

Thus, M started cycling in the east direction.

Hence, "Option 4" is the correct answer.

Q39. Answer: (d) [figure]

Figure which will complete the pattern of the question figure is,

Hence, the correct answer is "Option 4".

Q40. Answer: (b) [figure] [figure]

The logic followed here is:

Figure 1)

→ Same elements in the both figures i.e.

square and triangle.

Figure 2)

→ Different elements in the both figures i.e.

circle, rectangle and triangle.

Figure 3)

→ Same elements in the both figures i.e.

rectangle and triangle.

Figure 4)

→ Same elements in the both figures i.e.

square and triangle.

Hence, "Option 2" is the correct answer.

Q41. Answer: (c) [figure]

Logic: The pattern followed in the question is: the RHS image is the same as the LHS image, but it has arrows on all its edges.

Similarly: Option 3 follows the same pattern

Hence, the correct answer is "Option 3".

Q42. Answer: (d) [figure]

The logic followed here is:

→ Elements shift diagonally and rotate 90°

clockwise.

Similarly,

→ Elements shift diagonally and rotate 90°

clockwise.

Hence, "Option 4" is the correct answer.

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Q43. Answer: (d) [figure]

The logic followed here is:

→ Number of sides in 1st figure = Number of

elements in 2nd figure [4 (Sqaure) + 3 (Triangle) = 7 (cross signs)]

Similarly,

→ Number of sides in 1st figure = Number of

elements in 2nd figure [4 (Rhombus) + 3 (Triangle) = 7 (Divide signs)]

Hence, "Option 4" is the correct answer.

Q44. Answer: (a) [figure]

Logic: The pattern followed in the question is: the arrow inside the box moves 45° anti-clockwise, while the outer line rotates 90° clockwise.

Hence, the correct answer is "Option 1".

Q45. Answer: (d) 17 - 381

The logic followed here is:

(First Number + 2)²= Second Number

Similarly:

1) $(13 + 2)^2 = 225$

152 = 225

225 = 225 (LHS = RHS)

2) (11 + 2)2 = 169

132 = 169

169 = 169 (LHS = RHS)

3) (15 + 2)2 = 289

172 = 289

289 = 289 (LHS = RHS)

4) (17 + 2)2 = 381

192 = 381

361 ≠ 381 (LHS ≠ RHS)

Therefore The correct answer is "Option 4".

Q46. Answer: (d) EUHM

The logic followed here is:

ROOT is coded as MIJN

FANS is coded as AUIM

Similarly JAMS will be coded as

Hence, the correct answer is "Option 4".

Q47. Answer: (b) li da

The logic followed here is as:

Now, 'thought perception' will be coded as 'li da'.

Hence, the correct answer is "Option 2".

Q48. Answer: (a) jm fv fm

The logic followed here is as:

Now, 'waist is harsh' will be coded as 'jm fv fm'

Hence, the correct answer is "Option 1".

Q49. Answer: (a) THINGHAR

Given Word: NIGHT

Option 1) THINGHAR → Can be formed, as all the letters 'NIGHT' are present.

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Q50. Answer: (b) JSCH

The pattern followed here is:
PORT : USPQ
FWND : EOXG
Similarly For, GBRI : JSCH
Hence, the correct answer is "Option 2".

Q51. Answer: (c) 15625

Given:
Square of 25 = 625
Find the square of 125
Formula Used:
Square of a number = Number × Number
Calculation:
=> Square of 125 = 125 × 125
=> 125 × 125 = 15625
Therefore The correct answer is 15625.

Q52. Answer: (a) 9/2

Given:
in45°cos45° + tan60°sec30° + cosec30°cot 45°.
Formula Used:
sin45° = 1 ÷ √2, cos45° = 1 ÷ √2
tan60° = √3, sec30° = 2 ÷ √3
cosec30° = 2, cot45° = 1
Calculation:
=> sin45°cos45° + tan60°sec30° + cosec30°cot45°
=> (1 ÷ √2 × 1 ÷ √2) + (√3 × 2 ÷ √3) + (2 × 1)
=> (1 ÷ 2) + (2) + (2)
=> 1 ÷ 2 + 4
=> 9 ÷ 2
Therefore The correct answer is 9 ÷ 2.

Q53. Answer: (d) 80(2 - √3)

Shortcut Trick
Let the hill height H = 240 m, pole height h, and distance x.
From the base of the hill: x = H / tan 60° => 240/√3 = 80√3 m.
From the top of the pole: H − h = x × tan 30° => 80√3 × (1/√3) = 80 m.
So, height of pole h = 240 − 80 = 160 m.
Required Difference (h − x) = 160 − 80√3 = 80(2 − √3) m.
Therefore The correct answer is 80(2 − √3) m.
Alternate Method
Given: Height of the hill (AB) = 240 m, Angle of depression to pole top (C) = 30°, Angle of depression to pole bottom (D) = 60°.
Formula Used: tan θ = Perpendicular / Base
=> In right ΔABD, tan 60° = AB / BD
=> √3 = 240 / x
=> x = 240 / √3 = 80√3 m
=> In right ΔACE, let EC = BD = x and AE = AB − EB = 240 − h
=> tan 30° = AE / EC
=> 1 / √3 = (240 − h) / (80√3)
=> 240 − h = 80
=> h = 160 m
=> Difference = h − x = 160 − 80√3

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=> Difference = 80(2 − √3) m

Therefore The correct answer is 80(2 − √3) m.

Additional Information

Angle of Depression

The angle formed between the horizontal line from the observer's eye and the line of sight to an object below the horizontal level.

Trigonometric Ratio Relationships

For a fixed height H, the distance x = H × cot θ. As the angle θ increases, the distance x decreases.

Standard Values

tan 30° = 1/√3, tan 45° = 1, tan 60° = √3. These are fundamental for solving Height and Distance problems quickly.

Q54. Answer: (a) 36 π

Given:

Side of cube = 10 cm

Radius of sphere = 3 cm

Formula Used:

Volume of cube = side³

Volume of sphere = 4 ÷ 3 × π × r³

Calculation:

=> Volume of sphere = 4 ÷ 3 × π × 3³

=> = 4 ÷ 3 × π × 27

=> = 36π

Therefore The correct answer is 36π.

Q55. Answer: (b) 62.5 cm

Given:

DE = 75 cm

EF = 100 cm

DF = 125 cm

M is midpoint of DF

Formula Used:

Median length = √[(2a² + 2b² − c²) ÷ 4]

Calculation:

=> EM = √[(2 × 75² + 2 × 100² − 125²) ÷ 4]

=> = √[(2 × 5625 + 2 × 10000 − 15625) ÷ 4]

=> = √[(11250 + 20000 − 15625) ÷ 4]

=> = √[(15625) ÷ 4]

=> = √3906.25

=> = 62.5

Therefore The correct answer is 62.5.

Q56. Answer: (d) -300°

Given:

Angle in radians = -5π/3

Conversion factor = 180°/π

Formula Used:

Degree measure = Radian × (180°/π)

Calculation:

=> Degree measure = (-5π/3) × (180°/π)

=> Degree measure = (-5 × 180°)/3

=> Degree measure = -900°/3

=> Degree measure = -300°

Therefore The correct answer is -300°.

Q57. Answer: (c) 6 cm, 2 cm, 3 cm

Given:

Set 1: 2 cm, 3 cm, 4 cm

Set 2: 5 cm, 5 cm, 5 cm

Set 3: 6 cm, 2 cm, 3 cm

Set 4: 7 cm, 8 cm, 12 cm

Formula Used:

Sum of any two sides > third side

Calculation:

=> Set 1: 2 + 3 = 5 > 4 Yes

=> Set 2: 5 + 5 = 10 > 5 Yes

=> Set 3: 2 + 3 = 5 < 6 No

=> Set 4: 7 + 8 = 15 > 12 Yes

Therefore The correct answer is 6 cm, 2 cm, 3 cm.

Q58. Answer: (b) 9

Given:

Total sides of a regular hexagon = 6

Formula Used:

Total number of diagonals = n(n - 3) / 2

Where n = number of sides

Calculation:

=> Total number of diagonals = 6(6 - 3) / 2

=> Total number of diagonals = 6 × 3 / 2

=> Total number of diagonals = 18 / 2

=> Total number of diagonals = 9

Therefore The correct answer is 9.

Q59. Answer: (c) Rs. 9,540

Given:

Amount after 4 years = 18500

Amount after 6 years = 19800

Time difference = 2 years

Rate = 12%

Time = 5 years

Formula Used:

Simple Interest = Principal × Rate × Time ÷ 100

Amount = Principal + Simple Interest

Calculation:

=> Interest for 2 years = 19800 − 18500

=> = 1300

=> Interest for 1 year = 1300 ÷ 2

=> = 650

=> Principal = 18500 − (4 × 650)

=> = 18500 − 2600

=> = 15900

=> Simple Interest for 5 years = 15900 × 12 × 5 ÷ 100

=> = 15900 × 60 ÷ 100

=> = 15900 × 0.6

=> = 9540

Therefore The correct answer is 9540.

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Q60. Answer: (c) Rs. 10,000

Shortcut Trick

Total effective Simple Interest rate = (2 years × 6%) + (4 years × 8%) + (3 years × 10%)

Total percentage = 12% + 32% + 30% = 74%

According to the question, 74% of Principal = Rs. 7,400

=> 100% (Principal) = (7,400 ÷ 74) × 100 = Rs. 10,000

Therefore The correct answer is Rs. 10,000.

Alternate Method

Given:

Total time = 9 years

Rate 1 (R1) = 6% for Time 1 (T1) = 2 years

Rate 2 (R2) = 8% for Time 2 (T2) = 4 years

Rate 3 (R3) = 10% for remaining Time 3 (T3) = 9 − (2 + 4) = 3 years

Total Interest (SI) = Rs. 7,400

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

Calculations:

Let the Principal amount be P.

=> Total SI = (P × R1 × T1)/100 + (P × R2 × T2)/100 + (P × R3 × T3)/100

=> 7,400 = (P × 6 × 2)/100 + (P × 8 × 4)/100 + (P × 10 × 3)/100

=> 7,400 = (12P/100) + (32P/100) + (30P/100)

=> 7,400 = (12P + 32P + 30P) ÷ 100

=> 7,400 = 74P ÷ 100

=> 7,400 × 100 = 74P

=> P = 7,40,000 ÷ 74

=> P = Rs. 10,000

Therefore The correct answer is Rs. 10,000.

Additional Information

Effective Rate of Interest

For multiple time periods with different rates, the total interest percentage is the sum of (Rate × Time) for each individual segment.

Simple Interest vs Amount

Amount (A) = Principal (P) + Interest (I). In terms of percentage, if Rate × Time = R%, then A = (100 + R)% of Principal.

Direct Proportion

In Simple Interest, interest earned is directly proportional to the time and the principal when the rate is constant.

Q61. Answer: (a) Rs. 27,500

Given:

Principal (P) = Rs. 25,000

Rate of Interest (R) = 5%

Time (T) = 2 years

Formula Used:

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

Total Amount = Principal + Simple Interest

Calculation:

=> SI = (Rs. 25,000 × 5 × 2) / 100

=> SI = Rs. 2,500

=> Total Amount = Rs. 25,000 + Rs. 2,500

=> Total Amount = Rs. 27,500

Therefore The correct answer is Rs. 27,500.

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Q62. Answer: (c) 8 cm

Given:

AB = 16 cm

AB touches inner circle at P

Both circles are concentric

Formula Used:

Perpendicular from centre to chord bisects the chord

Calculation:

=> Since AB touches inner circle at P, OP ? AB

=> Perpendicular from centre bisects AB

=> AP = PB

=> PB = 16 ÷ 2

=> PB = 8

Therefore The correct answer is 8.

Q63. Answer: (a) 169 π square cm

Given:

Chord 1 = 10 cm

Chord 2 = 24 cm

Distance between chords = 7 cm

Formula Used:

Chord length = $2 \times \sqrt{(r^2 - d^2)}$

Area of circle = πr^2

Calculation:

=> $10 = 2 \times \sqrt{(r^2 - d1^2)}$

=> $5 = \sqrt{(r^2 - d1^2)}$

=> $r^2 - d1^2 = 25$

=> $24 = 2 \times \sqrt{(r^2 - d2^2)}$

=> $12 = \sqrt{(r^2 - d2^2)}$

=> $r^2 - d2^2 = 144$

=> $d1 - d2 = 7$

=> $r^2 - (d2 + 7)^2 = 25$

=> $r^2 - (d2^2 + 14d2 + 49) = 25$

=> $r^2 - d2^2 - 14d2 - 49 = 25$

=> $144 - 14d2 - 49 = 25$

=> $95 - 14d2 = 25$

=> $70 = 14d2$

=> $d2 = 5$

=> $r^2 - 5^2 = 144$

=> $r^2 - 25 = 144$

=> $r^2 = 169$

=> $r = 13$

=> Area = $\pi \times 13^2$

=> 169π

Therefore The correct answer is 169π.

Q64. Answer: (c) 38808 cm³

Shortcut Trick

Difference in Surface Area: $4\pi(R^2 - r^2) = 4312$

=> $(r + 7)^2 - r^2 = 4312 \div (4 \times 22/7) = 343$

=> $7(2r + 7) = 343$ => $2r + 7 = 49$ => $r = 21$ cm

=> Original Volume = $(4/3) \times (22/7) \times 21^3 = 88 \times 21^2 = 38808$ cm³

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Therefore The correct answer is 38808 cm³.

Alternate Method

Given: Increase in radius = 7 cm, Increase in surface area = 4312 cm², π = 22/7.

Formula Used: Surface Area of Sphere = 4πr²; Volume of Sphere = (4/3)πr³

=> Let original radius be r. New radius = (r + 7) cm.

=> 4 × (22/7) × [(r + 7)² − r²] = 4312

=> (88/7) × (r² + 14r + 49 − r²) = 4312

=> 14r + 49 = (4312 × 7) ÷ 88

=> 14r + 49 = 49 × 7 = 343

=> 14r = 343 − 49 = 294

=> r = 294 ÷ 14 = 21 cm

=> Original Volume = (4/3) × (22/7) × 21 × 21 × 21

=> Original Volume = 4 × 22 × 21 × 21 = 88 × 441

=> Original Volume = 38808 cm³

Therefore The correct answer is 38808 cm³.

Additional Information

Properties of Sphere

Total Surface Area = 4πr² and Volume = (4/3)πr³. For a sphere, the curved surface area is equal to the total surface area.

Properties of Hemisphere

Curved Surface Area = 2πr², Total Surface Area = 3πr², and Volume = (2/3)πr³.

Change in Dimensions

If the radius changes by a factor k, the Surface Area changes by k² and the Volume changes by k³.

Q65. Answer: (d) 30 meters

Given:

First piece = 3/5 of total length

Second piece = 12 m

Formula used:

Total length = First piece + Second piece

Calculations:

Let total length = x m

First piece = (3/5)x

Second piece = x − (3/5)x

=> x − (3/5)x = 12

=> (5x − 3x) / 5 = 12

=> 2x / 5 = 12

=> 2x = 12 × 5

=> 2x = 60

=> x = 60 ÷ 2

=> x = 30 m

Therefore Original length of the rope = 30 m

Q66. Answer: (c) 48 cm²

Given:

Area of triangle MNO = 12

Perimeter ratio = 2 : 1

Formula Used:

Area ratio = (Side ratio)²

Calculation:

=> Side ratio = 2

=> Area ratio = 2²

=> = 4

=> Area of M'N'O' = 12 × 4

=> = 48

Therefore The correct answer is 48.

Q67. Answer: (b) 10 cm

Given:

Radius = 10 cm

Central angle = 60°

Formula Used:

Chord length = 2r sin(θ ÷ 2)

Calculation:

=> Chord length = 2 × 10 × sin(60° ÷ 2)

=> = 20 × sin30°

=> = 20 × 1 ÷ 2

=> = 10

Therefore The correct answer is 10.

Q68. Answer: (c) 40°

Given:

angle AOB = 80°

Formula Used:

Angle at centre = 2 × Angle at circumference

Calculation:

=> angle ACB = angle AOB ÷ 2

=> = 80 ÷ 2

=> = 40

Therefore The correct answer is 40.

Q69. Answer: (b) 1

Given:

Two circles touch externally

Formula Used:

If two circles touch externally, number of internal common tangents = 1

Calculation:

=> For externally touching circles, the two internal tangents coincide at the point of contact

=> Therefore only 1 distinct internal common tangent exists

Therefore The correct answer is 1.

Q70. Answer: (c) 3

Given:

Distance between centres = Sum of radii

Formula Used:

If distance between centres = r1 + r2, circles touch externally

Number of common tangents for externally touching circles = 3

Calculation:

=> Since distance = r1 + r2

=> Circles touch externally

=> Two direct common tangents

=> One transverse common tangent

=> Total common tangents = 3

Therefore The correct answer is 3.

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Q71. Answer: (b) 12 cm

Given:

Radius1 = 6 cm

Radius2 = 3 cm

Distance between centres = 15 cm

Formula Used:

Length of internal common tangent = $\sqrt{(d^2 - (r1 + r2)^2)}$

Calculation:

=> Length = $\sqrt{(15^2 - (6 + 3)^2)}$

=> = $\sqrt{(225 - 9^2)}$

=> = $\sqrt{(225 - 81)}$

=> = $\sqrt{144}$

=> = 12

Therefore The correct answer is 12.

Q72. Answer: (a) 8√2 cm

Given:

Radius1 = 8 cm

Radius2 = 6 cm

Distance between centres = 18 cm

Formula Used:

Length of internal common tangent = $\sqrt{(d^2 - (r1 + r2)^2)}$

Calculation:

=> Length = $\sqrt{(18^2 - (8 + 6)^2)}$

=> = $\sqrt{(324 - 14^2)}$

=> = $\sqrt{(324 - 196)}$

=> = $\sqrt{128}$

=> = $\sqrt{(64 \times 2)}$

=> = $8\sqrt{2}$

Therefore The correct answer is $8\sqrt{2}$.

Q73. Answer: (c) 7 cm and 1 cm

Given:

Length of external tangent = 8

Length of internal tangent = 6

Distance between centres = 10

Formula Used:

External tangent length = $\sqrt{(d^2 - (r1 - r2)^2)}$

Internal tangent length = $\sqrt{(d^2 - (r1 + r2)^2)}$

Calculation:

=> $8 = \sqrt{(10^2 - (r1 - r2)^2)}$

=> $64 = 100 - (r1 - r2)^2$

=> $(r1 - r2)^2 = 36$

=> $r1 - r2 = 6$

=> $6 = \sqrt{(10^2 - (r1 + r2)^2)}$

=> $36 = 100 - (r1 + r2)^2$

=> $(r1 + r2)^2 = 64$

=> $r1 + r2 = 8$

=> $r1 - r2 = 6$

=> $r1 + r2 = 8$

=> $2r1 = 14$

=> $r1 = 7$

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=> r2 = 1

Therefore The correct answer is 7 and 1.

Q74. Answer: (c) 6.67 km

Given:

Speed1 = 5 km/h

Speed2 = 8 km/h

Time difference = 30 minutes = 1 ÷ 2 hour

Formula Used:

Time = Distance ÷ Speed

Calculation:

=> Distance ÷ 5 − Distance ÷ 8 = 1 ÷ 2

=> (8Distance − 5Distance) ÷ 40 = 1 ÷ 2

=> 3Distance ÷ 40 = 1 ÷ 2

=> 3Distance = 40 ÷ 2

=> 3Distance = 20

=> Distance = 20 ÷ 3

=> Distance = 20 ÷ 3 × 1

=> Distance = 6.67

Therefore The correct answer is 6.67 km.

Q75. Answer: (c) 21 litres

Given:

Initial ratio of milk : water = 7 : 5

Milk = 7x

Water = 5x

Mixture removed = 9

Final ratio of milk : water = 7 : 9

Formula Used:

Quantity removed of each component = (Component ÷ Total) × Removed quantity

Calculation:

=> Total mixture = 12x

=> Milk removed = 9 × 7x ÷ 12x

=> = 63 ÷ 12

=> = 21 ÷ 4

=> Water removed = 9 × 5x ÷ 12x

=> = 45 ÷ 12

=> = 15 ÷ 4

=> Milk left = 7x − 21 ÷ 4

=> Water left = 5x − 15 ÷ 4 + 9

=> (7x − 21 ÷ 4) ÷ (5x − 15 ÷ 4 + 9) = 7 ÷ 9

=> (28x − 21) ÷ (20x − 15 + 36) = 7 ÷ 9

=> (28x − 21) ÷ (20x + 21) = 7 ÷ 9

=> 9(28x − 21) = 7(20x + 21)

=> 252x − 189 = 140x + 147

=> 112x = 336

=> x = 3

=> Initial milk = 7x

=> = 21

Therefore The correct answer is 21.

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Q76. Answer: (a) Muhammad Tughlaq

The correct answer is Muhammad Tughlaq.

Key Points

• Muhammad Tughlaq, one of the Delhi Sultans, is known for his unorthodox administrative policies and decisions during his reign (1325-1351 CE).

• He broke traditional norms and appointed individuals from humble and low-ranking professions to high administrative posts.

• This policy was driven by his belief in the merit and capability of individuals rather than their social status or birth.

• Some of the people appointed to high posts during his reign included barbers, gardeners, and other individuals from non-aristocratic backgrounds.

• Though innovative, this policy often created resentment among the traditional elite and nobility, leading to unrest and dissatisfaction within the administration.

Additional Information

• About Muhammad Tughlaq:

• He was the second ruler of the Tughlaq dynasty of the Delhi Sultanate and ruled from 1325 to 1351 CE.

• He is known for his ambitious projects and administrative reforms, many of which were ahead of their time but failed due to poor execution.

• His policies included the transfer of the capital from Delhi to Daulatabad, introduction of token currency, and tax reforms.

• Other Delhi Sultans:

• Ruknuddin Firuz: He ruled for a brief period and is primarily remembered for his weak administration and indulgence in luxury.

• Minhaj-us-Siraj: He was not a ruler but a historian who documented the history of the Delhi Sultanate in his work, the Tabqat-i-Nasiri.

• Ghiyasuddin Balban: A strong ruler of the Delhi Sultanate known for his autocratic policies and emphasis on the divine right of kingship.

• Innovative Policies of Muhammad Tughlaq:

• He introduced a system of token currency made of copper and brass to replace gold and silver coins, but this led to rampant counterfeiting.

• His decision to shift the capital to Daulatabad aimed to secure the empire from Mongol invasions but caused massive hardships to the population.

• He implemented agricultural reforms and increased taxes in the Doab region, but the policy failed due to a famine.

• Legacy of Muhammad Tughlaq:

• While his administrative experiments failed, they reflect his visionary and intellectual approach to governance.

• He is often referred to as the most controversial ruler of the Delhi Sultanate due to his unconventional ideas and policies.

Important Points

• Impact of Appointing People from Humble Professions:

• This policy showcased Muhammad Tughlaq's belief in meritocracy and his willingness to challenge societal norms.

• However, it alienated the traditional ruling elite and created friction within the administration.

• It also highlights the challenges of implementing progressive policies in a rigidly hierarchical society.

• Learning from His Reign:

• Muhammad Tughlaq's reign serves as a historical example of the importance of practical execution in governance.

• His visionary ideas were often undone by his failure to account for the logistical and administrative challenges of implementation.

Q77. Answer: (c) Chittor

The correct answer is Chittor.

Key Points

• Chittor was annexed by Akbar in 1568 after a fierce siege. It marked an important step in his expansionist policy in the Rajasthan region.

• The Siege of Chittor was one of the most significant battles during Akbar's reign. It involved a prolonged conflict with the forces of Maharana Udai Singh II of Mewar, although Udai Singh himself fled the fort before the siege.

• The siege ended with Akbar's forces emerging victorious after using advanced siege tactics, including the deployment of heavy artillery.

• After capturing Chittor, Akbar ensured that the fort became a symbol of Mughal authority in Rajputana. However, it also led to the tragic massacre of the residents, which is remembered as a dark chapter in history.

• This victory was part of Akbar's broader strategy to subdue the Rajput states and integrate them into the Mughal Empire, which he achieved through both military conquests and alliances.

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Additional Information

• Bengal:

• The region of Bengal was annexed later by Akbar in 1576 after the Battle of Rajmahal, where the forces of Daud Khan Karrani, the last Afghan ruler of Bengal, were defeated.

• It marked the incorporation of Bengal into the Mughal Empire, further strengthening Akbar's rule in eastern India.

• Gujarat:

• Gujarat was annexed by Akbar in 1572. The region was strategically important for its wealth and trade routes, particularly access to the sea.

• The decisive victory at the Battle of Ahmedabad played a key role in the annexation of Gujarat.

• Orissa:

• The conquest of Orissa was carried out in 1592 under Akbar’s general, Raja Man Singh. This marked the eastern expansion of the Mughal Empire.

• Orissa’s annexation was crucial for strengthening Mughal control over the eastern provinces and consolidating trade routes.

• Important Points:

• Akbar’s military campaigns were characterized by advanced tactics, skilled leadership, and the use of artillery.

• His annexation of key regions like Chittor, Gujarat, Bengal, and Orissa helped lay the foundation for the vast Mughal Empire.

• Akbar’s conquests were complemented by his administrative reforms, which included the introduction of the Mansabdari system and fostering relations with local rulers through diplomacy and alliances.

Q78. Answer: (a) Concept of "procedure established by Law"

The correct answer is Concept of "procedure established by Law".

Key Points

• The Indian Constitution borrowed the concept of "Procedure Established by Law" from the Japanese Constitution.

• This principle implies that a law is valid as long as it is enacted by the legislature following the prescribed procedure, irrespective of whether it is just or fair.

• In contrast to "Due Process of Law" (as adopted by the United States Constitution), this concept does not evaluate the fairness or reasonableness of the law itself.

• The term "Procedure Established by Law" is enshrined in Article 21 of the Indian Constitution, which guarantees the right to life and personal liberty.

• Japan's post-World War II Constitution, which introduced this concept, served as a significant influence for the framers of the Indian Constitution in this regard.

Additional Information

• Concept of "Procedure Established by Law":

• This doctrine limits judicial review to the procedural validity of the law. Courts cannot question whether the law is just or violates fundamental rights beyond the prescribed procedure.

• For example, if a law prescribes capital punishment after a fair trial, the judiciary cannot evaluate the morality or fairness of the punishment under this doctrine.

• It ensures the supremacy of the legislature, giving it significant authority over the content of laws.

• Comparison with "Due Process of Law":

• In contrast to "Procedure Established by Law," "Due Process of Law" not only checks procedural correctness but also ensures laws are fair, reasonable, and just.

• The United States follows the "Due Process" doctrine, which gives its judiciary more power to evaluate laws and safeguard individual rights.

• Article 21 of the Indian Constitution:

• Article 21 provides that no person shall be deprived of their life or personal liberty except according to the procedure established by law.

• This article has been expanded in scope by the judiciary through various landmark judgments, including the introduction of the "Due Process" element in certain cases.

• Other Borrowed Features in the Indian Constitution:

• While the "Procedure Established by Law" is borrowed from Japan, other features like "Judicial Review" and "Separation of Powers" are borrowed from the United States, and "Parliamentary System" is borrowed from the United Kingdom.

Important Points

• Evolution of Article 21:

• Initially, under the "Procedure Established by Law," courts had limited scope to examine laws depriving life or liberty.

• However, with landmark cases like Maneka Gandhi v. Union of India (1978), the Supreme Court expanded the interpretation to

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include principles of fairness, justice, and reasonableness, incorporating elements of "Due Process."

• Landmark Cases Related to Article 21:

• A.K. Gopalan v. State of Madras (1950): This case upheld the narrow interpretation of "Procedure Established by Law."

• Maneka Gandhi v. Union of India (1978): This case expanded Article 21 to include "fairness" and "reasonableness," bridging the gap between "Procedure Established by Law" and "Due Process."

Q79. Answer: (d) Kazakhstan

The correct answer is Kazakhstan.

Key Points

• Kazakhstan is one of the founding members of the Shanghai Cooperation Organisation (SCO), which was established on 15 June 2001, in Shanghai, China.

• The founding members of SCO include China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan.

• The organization initially evolved from the Shanghai Five, a group formed in 1996 to strengthen regional security and cooperation.

• India and Pakistan joined SCO as full members later in 2017, while Iran became a full member in 2023. Hence, these countries are not founding members.

• SCO focuses on regional security, economic cooperation, and combating issues like terrorism, separatism, and extremism among member nations.

Additional Information

• Shanghai Cooperation Organisation (SCO):

• SCO is a political, economic, and security alliance formed to promote regional stability and cooperation.

• The organization aims to ensure regional security, fight terrorism, and foster economic collaboration among member states.

• The headquarters of SCO is located in Beijing, China.

• It currently has 9 full members: China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, India, Pakistan, and Iran.

• Key Features and Functions of SCO:

• Promotes multilateral cooperation in areas like economy, culture, trade, energy, and regional development.

• Addresses transnational threats such as terrorism, extremism, and separatism through mutual collaboration.

• Conducts joint military exercises like "Peace Mission" to enhance defense capabilities.

• Facilitates economic initiatives, including the Belt and Road Initiative (BRI), supported by China.

• Characteristics of Member Countries:

• Kazakhstan: Largest landlocked country in the world; plays a crucial role in regional connectivity and energy trade.

• China: A major global power and economic leader, driving initiatives like BRI.

• Russia: A key player in geopolitics and defense cooperation within SCO.

• India and Pakistan: Joined SCO in 2017, contributing to regional development and security dialogues.

• Iran: Recently became a full member in 2023, expanding SCO’s influence in the Middle East.

• Important Points:

• SCO member states collectively represent over 40% of the global population and account for nearly 25% of the global GDP.

• The organization actively promotes regional integration and cooperation in areas such as trade, energy, and infrastructure development.

• It has a Regional Anti-Terrorist Structure (RATS) headquartered in Tashkent, Uzbekistan, aimed at combating terrorism and extremism.

• The SCO also has observer states and dialogue partners, broadening its scope and influence worldwide.

• Key agreements: SCO Charter (2002) and Treaty on Long-Term Good Neighborliness, Friendship, and Cooperation (2007).

Q80. Answer: (a) Hague

The correct answer is Hague.

Key Points

• The International Court of Justice (ICJ) is the principal judicial organ of the United Nations established in 1945 by the Charter of the United Nations.

• The ICJ is located in The Hague, Netherlands, which serves as the seat of its operations and is the only principal UN organ based outside New York.

• It primarily resolves disputes between states and provides advisory opinions on legal questions referred to it by authorized international organizations and UN bodies.

• The ICJ is housed in the Peace Palace, a historic building in The Hague, which also accommodates other legal institutions.

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• The Court is composed of 15 judges elected for nine-year terms by the United Nations General Assembly and the Security Council. Judges represent various legal systems globally.

Additional Information

• Functions of the ICJ:

• The ICJ settles disputes submitted by states based on international law. These disputes can involve territorial issues, treaty interpretations, and diplomatic relations.

• It provides advisory opinions on legal questions referred by international bodies, helping clarify international legal principles.

• Its rulings are binding for the states involved in the dispute but lack enforcement mechanisms; compliance is based on states' goodwill and international pressure.

• History and Establishment:

• The ICJ was established in 1945 and began its operations in 1946, succeeding the Permanent Court of International Justice of the League of Nations.

• The ICJ is governed by its Statute, which is an integral part of the UN Charter.

• The Peace Palace in The Hague was constructed in 1913 and initially housed the Permanent Court of International Justice.

• Composition and Selection of Judges:

• Judges are elected by the UN General Assembly and Security Council from a list of candidates nominated by national groups of the Permanent Court of Arbitration.

• They represent major legal systems globally and maintain impartiality in their judgments.

• The ICJ president and vice-president are elected by the judges themselves for three-year terms.

• Key Cases:

• Some notable cases include the Corfu Channel Case (1949), the Advisory Opinion on Nuclear Weapons (1996), and the Whaling in the Antarctic Case (2014).

• These cases have influenced international law, particularly on issues like sovereignty, environmental conservation, and human rights.

• Other Legal Institutions in The Hague:

• The Hague is also home to other international legal bodies, such as the International Criminal Court (ICC), the Permanent Court of Arbitration (PCA), and the Special Tribunal for Lebanon.

• These institutions contribute to The Hague's status as a global center for international law and justice.

Important Points

• ICJ vs. ICC:

• The ICJ primarily handles disputes between states, while the ICC prosecutes individuals for war crimes, genocide, crimes against humanity, and aggression.

• Both institutions are located in The Hague, but their mandates and functions differ significantly.

• Jurisdiction:

• The ICJ's jurisdiction is based on the consent of states. States can voluntarily submit disputes or accept compulsory jurisdiction through treaties.

• It does not have jurisdiction over disputes involving private parties or non-state entities.

• Membership:

• All 193 UN member states are parties to the ICJ Statute, making its decisions relevant globally.

• Non-member states can also access the ICJ for dispute resolution under specific conditions.

• Significance:

• The ICJ plays a crucial role in promoting peaceful dispute resolution and reinforcing the rule of law at the international level.

• Its advisory opinions contribute to shaping international legal norms and frameworks.

Q81. Answer: (b) Hockey

The correct answer is Hockey.

Key Points

• Harmanpreet Singh is an acclaimed Indian professional field hockey player and serves as the captain of the Indian men's hockey team.

• He plays as a defender and is also renowned for his expertise in drag flicking, which is a critical skill in penalty corners.

• Harmanpreet Singh has been instrumental in India’s success in international hockey tournaments, including the team’s bronze medal victory at the 2020 Tokyo Olympics.

• The Major Dhyan Chand Khel Ratna Award is India’s highest sporting honor, and Harmanpreet Singh was awarded this in 2024 in recognition of his outstanding contributions to the sport of hockey.

• Under his leadership, the Indian hockey team has achieved remarkable milestones, including podium finishes at the Asian Games and the FIH Hockey Pro League.

Additional Information

• Major Dhyan Chand Khel Ratna Award:

• It is the highest sporting honor in India, awarded annually by the Ministry of Youth Affairs and Sports.

• Named after Major Dhyan Chand, one of the greatest hockey players in history, the award recognizes exceptional performance in sports.

• The award includes a medal, a certificate, and a cash prize.

• Hockey in India:

• Hockey is often regarded as India's national sport, with a rich history of achievements, including 8 Olympic gold medals.

• The Indian men's hockey team won its last Olympic gold medal in 1980 at the Moscow Games.

• The sport has seen a revival in recent years, with improved performances in global tournaments like the Hockey World Cup and the FIH Pro League.

• Harmanpreet Singh's Achievements:

• He was the top scorer for India in several international tournaments.

• Harmanpreet has won accolades such as the FIH Rising Star of the Year and was named in the FIH All-Star Team.

• He is celebrated for his leadership and ability to deliver under pressure during high-stakes matches.

• Role of Drag Flicking in Hockey:

• Drag flicking is a specialized skill used to score goals from penalty corners.

• It requires a combination of strength, technique, and precision.

• Harmanpreet Singh is one of the world's finest drag flickers, making him a crucial asset to the Indian team.

Important Points

• Tokyo Olympics 2020:

• The Indian men's hockey team won a bronze medal, ending a 41-year medal drought at the Olympics.

• Harmanpreet Singh played a crucial role in this historic achievement by scoring key goals.

• Asian Games:

• The Indian hockey team, under Harmanpreet's leadership, has consistently performed well in the Asian Games, securing podium finishes.

• Harmanpreet's ability to lead from the front has been pivotal in maintaining India's dominance in the Asian circuit.

Q82. Answer: (c) 2005

The correct answer is 2005.

Key Points

• The Protection of Women from Domestic Violence Act, 2005 is a landmark legislation enacted in India to address issues of domestic violence against women.

• The Act was passed in Parliament in August 2005 and came into effect on October 26, 2006. It aims to provide protection to women who are victims of domestic violence.

• This legislation applies to all women in India, irrespective of their religion, caste, or social background. It is a secular law and ensures equal protection for women across all communities.

• The Act defines domestic violence broadly, including physical, emotional, sexual, verbal, and economic abuse. It recognizes the rights of women to live in a violence-free environment within their homes.

• Under this Act, women can seek relief in the form of protection orders, residence orders, monetary relief, custody orders, and compensation orders. It also provides for the appointment of Protection Officers to assist victims.

Additional Information

• Salient Features of the Protection of Women from Domestic Violence Act:

• The Act covers women in marital relationships, live-in relationships, and other domestic relationships such as family members living together.

• It provides a civil remedy rather than a criminal remedy, ensuring that victims receive support without initiating a criminal case against the abuser.

• The Act ensures that the shared household where the victim resides cannot be taken away from her, even if it is owned or rented by the abuser.

• Role of Protection Officers:

• Protection Officers are appointed by the government to assist victims in filing complaints and obtaining relief under the Act.

• They help victims access services such as legal aid, medical facilities, and shelters.

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• Judicial Precedence:

• In several judgments, the Supreme Court of India has emphasized that the Act is gender-specific to protect women and ensure their safety within domestic spaces.

• Courts have also clarified that the Act applies to all women, irrespective of their religion, making it secular in nature.

• Statistical Context:

• According to the National Crime Records Bureau (NCRB), cases of domestic violence have been steadily reported, demonstrating the importance of this legislation in providing recourse to victims.

• As per reports, awareness campaigns and legal provisions under this Act have encouraged more women to come forward and report domestic violence.

Important Points

• Applicability to All Religions:

• The Act is applicable to women of all religions, making it inclusive and ensuring protection without discrimination.

• It is aligned with the constitutional guarantee of equality and non-discrimination under Articles 14 and 15 of the Indian Constitution.

• Implementation Challenges:

• Lack of awareness about the provisions of the Act remains a major hurdle in ensuring its effective implementation.

• There is a need for consistent training of law enforcement officials and judiciary to handle cases under this Act sensitively.

Q83. Answer: (b) To survey, document, and conserve India's manuscript heritage

The correct answer is To survey, document, and conserve India's manuscript heritage.

Key Points

• The Gyan Bharatam Mission, launched in 2025, aims to address the longstanding need to conserve India's vast and rich manuscript heritage.

• The primary objective is to survey, document, and preserve ancient manuscripts, which are invaluable repositories of India's history, culture, science, and philosophy.

• India holds an estimated 5 million manuscripts, making it one of the richest countries in terms of handwritten heritage. Many of these manuscripts are deteriorating due to neglect, lack of awareness, or improper storage conditions.

• The mission seeks to digitize and catalog manuscripts systematically to ensure their accessibility for scholars, researchers, and the public worldwide.

• It also focuses on promoting awareness and capacity building by training experts in manuscript conservation techniques and creating infrastructure for their proper storage and restoration.

Additional Information

• Significance of Manuscript Conservation:

• Manuscripts are primary sources of knowledge, offering insights into ancient literature, philosophy, science, and art.

• They include works in Sanskrit, Pali, Prakrit, Arabic, Persian, and several other languages, reflecting India's multilingual and multicultural heritage.

• Preservation ensures that these invaluable resources are not lost to time and can contribute to modern research and education.

• Challenges in Manuscript Conservation:

• Environmental factors such as humidity, temperature fluctuations, and pests contribute significantly to the degradation of manuscripts.

• Lack of expertise, infrastructure, and funding has historically hindered manuscript preservation efforts.

• There is also a need for raising awareness among the public and institutions about the importance of preserving these cultural treasures.

• Role of Digitization:

• Digitization is a key component of the Gyan Bharatam Mission, enabling the creation of a digital repository accessible to scholars and researchers globally.

• It mitigates the risk of physical damage by reducing the need to handle fragile manuscripts frequently.

• Previous Initiatives in India:

• The National Mission for Manuscripts (NMM), established in 2003, was one of the earlier efforts to conserve and document manuscripts in India.

• Under NMM, several manuscripts were cataloged, digitized, and restored, laying the groundwork for the broader objectives of the Gyan Bharatam Mission.

Important Points

• Manuscript Definition: A manuscript refers to any document written by hand, predating the use of printing presses. These documents are often unique and irreplaceable, making their preservation critical.

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• Languages and Scripts: Manuscripts in India are written in a variety of scripts, including Devanagari, Brahmi, Grantha, Nastaliq, and Modi, among others.

• Global Recognition: Efforts to conserve India's manuscript heritage have garnered international attention, with organizations like UNESCO supporting initiatives to document and preserve cultural heritage.

• Technological Interventions: Advanced technologies like AI-based restoration techniques and high-resolution imaging are being employed to enhance the quality of digital replicas.

• Future Goals: The Gyan Bharatam Mission aims to establish India as a global leader in manuscript conservation, fostering international collaborations for cultural preservation.

Q84. Answer: (b) 5th

The correct answer is 5th.

Key Points

• The World Air Quality Report is an annual assessment of air quality across the globe, highlighting the most polluted and least polluted countries and cities based on data from monitoring stations.

• In the 2024 edition of the report, India ranked 5th among the most polluted countries in the world.

• This ranking is determined by the concentration of Particulate Matter (PM2.5) in the atmosphere, which is a key pollutant affecting air quality and public health.

• PM2.5 refers to fine particulate matter with a diameter of less than 2.5 micrometers, which poses severe health risks due to its ability to penetrate deep into the lungs and bloodstream.

• India's air pollution problem is primarily attributed to vehicular emissions, industrial activities, construction dust, crop residue burning, and household fuel burning.

• The report serves as a critical tool for governments, policymakers, and environmental organizations to strategize and implement measures to combat air pollution.

Additional Information

• World Air Quality Report:

• Published annually by IQAir, a Swiss-based air quality technology company.

• The report uses real-time air quality data from monitoring stations in various countries to rank global cities and nations based on their air pollution levels.

• The main parameter analyzed is the annual average concentration of PM2.5, expressed in micrograms per cubic meter ($\mu g/m^3$).

• The data is sourced from various monitoring networks, including government agencies, NGOs, and private entities.

• India's Air Pollution:

• India is home to several cities consistently ranked among the most polluted in the world, including Delhi, Ghaziabad, and Kanpur.

• Sources of air pollution include stubble burning in northern states, thermal power plants, and industrial emissions.

• During winter, air quality deteriorates significantly due to temperature inversions and reduced dispersion of pollutants.

• Efforts such as the National Clean Air Programme (NCAP) aim to reduce PM2.5 levels by 20-30% by 2024 in non-attainment cities.

• PM2.5 Health Impacts:

• Prolonged exposure to high levels of PM2.5 can lead to respiratory diseases, cardiovascular issues, and premature deaths.

• Children, the elderly, and individuals with pre-existing health conditions are particularly vulnerable.

• The World Health Organization (WHO) has set a guideline of 5 $\mu g/m^3$ for annual PM2.5 exposure, which many countries, including India, exceed by a significant margin.

• Global Context:

• Countries like Bangladesh, Pakistan, and Mongolia often rank higher than India in terms of pollution, primarily due to industrial and energy production practices.

• On the other hand, nations such as Finland, New Zealand, and Sweden consistently rank among the least polluted, thanks to stringent environmental policies and renewable energy adoption.

Important Points

• National Clean Air Programme (NCAP):

• Launched in 2019, it is India's flagship initiative to combat air pollution.

• Aims to reduce PM2.5 and PM10 levels by 20-30% from 2017 levels in 122 non-attainment cities by 2024.

• Focuses on measures like public awareness campaigns, pollution monitoring systems, and electric vehicle adoption.

• Graded Response Action Plan (GRAP):

• Implemented in Delhi-NCR to address severe air pollution episodes.

• Includes measures like banning construction activities, restricting vehicular movement, and shutting down coal-based industries

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during extreme pollution events.

• Global Initiatives:

• The Paris Agreement aims to limit global warming and reduce emissions, indirectly benefiting air quality worldwide.

• The UN Environment Programme (UNEP) promotes clean energy solutions and sustainable urban planning to combat air pollution globally.

Q85. Answer: (a) 2019

The correct answer is 2019.

Key Points

• NITI Aayog released the first School Education Quality Index (SEQI) in 2019. The SEQI was developed to evaluate the performance of states and union territories in the field of school education.

• The index was prepared in collaboration with the Ministry of Education and the World Bank and aims to bring focus on the quality of education across different states.

• It uses a set of 30 indicators categorized under domains like learning outcomes, access, equity, infrastructure, and governance processes to assess the performance of states and UTs.

• The SEQI was developed to encourage states and union territories to improve their school education systems by identifying strengths and weaknesses through objective data and ranking.

• The states and UTs were divided into large states, small states, and union territories to ensure fair comparisons, given their varied population sizes and resources.

Additional Information

• NITI Aayog:

• NITI Aayog, established in 2015, is a policy think tank of the Government of India aimed at fostering cooperative federalism.

• Its objective is to provide strategic and technical advice to states and union territories for effective governance.

• School Education Quality Index (SEQI):

• The SEQI provides an annual ranking of states and UTs based on their performance in the school education sector.

• The index encourages competition among states and UTs to improve their education systems.

• The ranking system is based on measurable indicators, ensuring objectivity in assessing performance.

• Key Features of SEQI:

• Focuses on learning outcomes, such as literacy and numeracy levels among students.

• Measures equity by considering the performance of marginalized groups and gender disparities.

• Evaluates governance processes, including teacher availability, student attendance, and management practices.

• Performance Highlights:

• Kerala was ranked as the top-performing state among large states in the first SEQI report.

• States like Uttar Pradesh and Bihar featured among the lower-performing states, highlighting the need for improvement.

Important Points

• Objective: The index aims to improve policy-making in the education sector by providing data-driven insights into state-level performance.

• Indicators: SEQI includes indicators such as student learning levels, dropout rates, gender parity, and infrastructure.

• Collaboration: The index was developed with inputs from international agencies like the World Bank to ensure global standards in evaluation.

• Significance: SEQI serves as a tool for transparency and accountability in the education sector, encouraging states to focus on improving quality rather than just expanding access.

Q86. Answer: (b) Jaldapara National Park

The correct answer is Jaldapara National Park.

Key Points

• Jaldapara National Park, located in the state of West Bengal, is the second largest habitat of the One-Horned Rhinoceros in India.

• The park has a rich biodiversity and is known for its grasslands and forests, which provide a suitable environment for the One-Horned Rhinoceros to thrive.

• It is home to a significant population of this species, second only to Kaziranga National Park in Assam.

• Jaldapara was declared a wildlife sanctuary in 1941 and upgraded to a national park in 2012 for better protection and conservation of its unique wildlife.

• The park is situated on the banks of the Torsa River, which enhances its ecological diversity and supports various species of flora and fauna.

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Additional Information

• Kaziranga National Park:

• Kaziranga National Park, located in Assam, is the largest habitat of the One-Horned Rhinoceros in India.

• It was declared a UNESCO World Heritage Site in 1985.

• The park is known for its wetlands, grasslands, and forests, which support a diverse range of wildlife, including elephants, tigers, and swamp deer.

• It hosts more than 2,400 One-Horned Rhinoceroses, making it a critical area for their conservation.

• Gir National Park:

• Gir National Park, located in Gujarat, is primarily known as the habitat of Asiatic Lions rather than One-Horned Rhinoceroses.

• It was established in 1965, and its unique dry deciduous forest ecosystem supports a variety of wildlife.

• Gir does not host any population of One-Horned Rhinoceroses.

• Kanha National Park:

• Kanha National Park, located in Madhya Pradesh, is renowned for its population of Royal Bengal Tigers and Barasingha (Swamp Deer).

• It does not provide a habitat for the One-Horned Rhinoceros.

• Established in 1955, it is one of the most well-maintained parks in India.

• Conservation Status:

• The One-Horned Rhinoceros is classified as a Vulnerable species under the IUCN Red List.

• Efforts like the Indian Rhino Vision 2020 aim to increase the population of rhinos across protected areas in Assam and West Bengal.

• Anti-poaching measures and habitat conservation are critical for their survival.

Important Points

• Historical Protection Efforts:

• The One-Horned Rhinoceros was once widely distributed across the Indian subcontinent.

• Due to habitat loss and poaching, its range has been reduced to specific protected areas.

• Tourism and Awareness:

• National parks like Jaldapara and Kaziranga attract tourists, raising awareness about rhino conservation.

• Eco-tourism initiatives help generate funds for conservation while engaging local communities.

Q87. Answer: (c) 1963

The correct answer is 1963.

Key Points

• India’s journey in space research began in the year 1963 with the launch of its first meteorological rocket from the Thumba Equatorial Rocket Launching Station (TERLS) located near Thiruvananthapuram, Kerala.

• This marked the initiation of the Indian space program under the leadership of Dr. Vikram Sarabhai, who is regarded as the father of India’s space program.

• The first sounding rocket launched was a NASA-provided rocket named Nike-Apache, which carried scientific instruments to study the upper atmosphere.

• The Thumba location was chosen because it is close to the geomagnetic equator, making it ideal for atmospheric studies.

• This milestone laid the foundation for the establishment of the Indian Space Research Organisation (ISRO) in 1969, which later developed into one of the world’s leading space agencies.

Additional Information

• Thumba Equatorial Rocket Launching Station (TERLS):

• TERLS was established in 1962 and inaugurated in 1963. It is located in Kerala and was India’s first rocket launching station.

• The geomagnetic equator passes over Thumba, making it an ideal location for space research related to the Earth’s magnetic field and upper atmosphere.

• Dr. Vikram Sarabhai:

• Dr. Sarabhai was instrumental in laying the foundation of India’s space program and initiating research in space technology.

• He envisioned the use of space technology for societal benefits, including communication, weather forecasting, and resource mapping.

• Sounding Rockets:

• Sounding rockets are small rockets used to carry instruments into the upper atmosphere to collect data on atmospheric and space phenomena.

• India initially relied on international collaborations for sounding rockets and later developed its indigenous capabilities.

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• Development of ISRO:
• ISRO was established in 1969 and has grown to become a global leader in space exploration and satellite technology.
• It has undertaken several landmark missions, such as Chandrayaan, Mangalyaan, and Gaganyaan.

Important Points

• Timeline of India's Space Journey:
• 1962: The Indian National Committee for Space Research (INCOSPAR) was formed under Dr. Vikram Sarabhai.
• 1963: India's first rocket (Nike-Apache) was launched from TERLS.
• 1969: ISRO was established as the main agency for space research and development.
• 1975: India launched its first satellite, Aryabhata, with the help of the Soviet Union.
• 1980: India launched its first indigenous satellite, Rohini, using the SLV-3 rocket.
• Global Collaboration in Early Stages:
• India collaborated with agencies like NASA and the Soviet Union during the initial phases of its space program.
• These collaborations provided India with access to advanced technology and expertise.

Q88. Answer: (d) Sriharikota

The correct answer is Sriharikota.

Key Points

• The Satish Dhawan Space Centre (SDSC), also known as Sriharikota Range (SHAR), is located in Sriharikota, Andhra Pradesh, India.
• SDSC serves as the primary launch site for the Indian Space Research Organisation (ISRO).
• It is situated on a barrier island off the Bay of Bengal, ensuring safety for launches and minimizing risks to surrounding areas.
• This facility is named after Dr. Satish Dhawan, one of India's eminent space scientists and former Chairman of ISRO.
• Sriharikota is equipped with advanced infrastructure for launch vehicle integration, testing, and launching, making it a hub for India's space missions.

Additional Information

• History of SDSC:
• SDSC was established in 1971 and has since been the primary launch site for ISRO.
• It was initially used for the launch of sounding rockets and later developed to handle satellite launches.
• Key Features:
• The facility includes two operational launch pads for launching rockets like the Polar Satellite Launch Vehicle (PSLV) and Geosynchronous Satellite Launch Vehicle (GSLV).
• SDSC features assembly buildings, tracking systems, and control centers for efficient mission execution.
• Notable Missions:
• India's historic Chandrayaan-1, Chandrayaan-2, and Mangalyaan (Mars Orbiter Mission) were launched from this site.
• It was also the launch site for PSLV-C37, which placed a record-breaking 104 satellites into orbit in a single mission.
• Strategic Importance:
• Sriharikota's location near the equator is ideal for launching satellites into geostationary orbits.
• The secluded area minimizes risks to populated regions during launches.

Important Points

• Dr. Satish Dhawan:
• Dr. Dhawan was the third Chairman of ISRO and played a pivotal role in shaping India's space program.
• The center was renamed in his honor to recognize his contributions to space science and technology.
• Other Launch Sites in India:
• While SDSC is the primary site, ISRO also uses facilities like the Thumba Equatorial Rocket Launching Station (TERLS) for sounding rockets.
• Global Recognition:
• SDSC has earned a reputation for its reliability and capability in handling complex missions.
• International satellites are often launched from this site, showcasing India's space capabilities.

Q89. Answer: (c) Both I and II

The correct answer is Both I and II.

Key Points

• Statement I: In the gaseous state, particles move about randomly at high speed. This is a fundamental property of gases where

their particles are in constant motion, and this motion is random due to the negligible intermolecular forces. This statement is correct.

• Statement II: Gases are highly compressible. This is because gas particles are widely spaced, leaving large gaps between them. When pressure is applied, these particles can be brought closer together, demonstrating high compressibility. This statement is correct.

• Gases have no definite shape or volume and take the shape of the container they occupy. This behavior is due to their high kinetic energy and negligible intermolecular forces.

• The kinetic molecular theory explains the behavior of gases, including their random motion, compressibility, and diffusion properties.

• The gaseous state is one of the three primary states of matter and is characterized by low density, high energy, and rapid particle movement.

Additional Information

• Kinetic Molecular Theory:

• This theory describes the behavior of gases based on the motion of their particles.

• It assumes that gas particles are in constant, random motion and collide elastically with each other and the walls of their container.

• It explains key properties like pressure, temperature, and volume in terms of particle motion.

• Compressibility of Gases:

• Compressibility is a measure of how much a substance decreases in volume under pressure.

• Due to the large distance between gas particles, gases are more compressible compared to liquids and solids.

• Examples of applications: Compressed gas cylinders used in industries, oxygen cylinders for medical purposes.

• Random Motion of Particles:

• Gas particles exhibit Brownian motion, which is the random movement of particles in a fluid due to collisions.

• This property leads to diffusion, where gases mix spontaneously without external force.

• Example: The spread of perfume in a room demonstrates the random motion of gas particles.

• Real-Life Applications of Gaseous State:

• Gases like oxygen are essential for respiration, while carbon dioxide is used in carbonated beverages.

• Industrial gases include nitrogen for food preservation and helium for inflating balloons.

• Natural gas is widely used as a cleaner source of energy for heating and cooking.

Important Points

• Ideal Gas vs Real Gas:

• Ideal gases follow the gas laws (Boyle's, Charles', Avogadro's) perfectly under all conditions.

• Real gases deviate from ideal behavior at high pressure and low temperature due to intermolecular forces and finite particle volume.

• Gas Laws:

• Boyle's Law: Pressure is inversely proportional to volume at constant temperature.

• Charles' Law: Volume is directly proportional to temperature at constant pressure.

• Avogadro's Law: Equal volumes of gases contain an equal number of particles at the same temperature and pressure.

• Diffusion and Effusion:

• Diffusion: The process by which gas particles spread out evenly in a container.

• Effusion: The process where gas particles pass through a tiny hole without collisions between particles.

Q90. Answer: (d) Air Defence Laser System

The correct answer is Air Defence Laser System.

Key Points

• DRDO (Defence Research and Development Organisation) tested the 'Sudarshan Chakra' project in August 2025. The project is related to the development of Air Defence Laser Systems.

• The Air Defence Laser System is a cutting-edge technology designed to counter aerial threats such as drones, missiles, and aircraft.

• Laser-based air defence systems use directed energy weapons to neutralize threats by either damaging or disrupting their operational capabilities.

• This system provides high precision and rapid response capabilities, making it an essential component of modern air defence mechanisms.

• The 'Sudarshan Chakra' project reflects India's commitment to strengthening its defence technology and achieving self-reliance

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in military systems.

Additional Information

• Characteristics of Air Defence Laser Systems:

• These systems use high-energy lasers to target and neutralize incoming threats.

• The lasers operate at the speed of light, ensuring instantaneous action against fast-moving targets.

• They are capable of targeting threats with precision, minimizing collateral damage.

• Laser systems have a lower operational cost compared to traditional missile defence systems as they rely on electric power rather than expensive ammunition.

• Applications of Laser-based Defence Systems:

• Used to counter unmanned aerial vehicles (UAVs) and drones.

• Protects strategic installations from missile attacks.

• Supports integrated air defence systems by providing a layer of.

• Effective in neutralizing swarm attacks where multiple small drones or UAVs are deployed simultaneously.

• Global Examples of Laser Defence Systems:

• The United States has developed systems such as the Laser Weapon System (LaWS), which is deployed on naval ships.

• Israel's Iron Beam is a short-range laser-based air defence system designed to complement its Iron Dome.

• China is also working on laser-based defence technologies for its military applications.

• Role of DRDO:

• DRDO is India’s premier agency for developing advanced military technologies such as missile systems, electronic warfare systems, and directed energy weapons.

• The 'Sudarshan Chakra' project aligns with DRDO's vision to achieve indigenization of defence technologies.

• It contributes to enhancing India’s national security and reducing dependency on foreign defence systems.

Important Points

• Difference Between Traditional and Laser-based Air Defence Systems:

• Traditional systems rely on missiles or projectiles, which have a limited supply and higher operational costs.

• Laser systems use directed energy, offering unlimited usage as long as power is available.

• Laser-based systems provide silent operations and are harder to detect compared to traditional systems.

• Future of Laser Defence Systems:

• Expected to play a critical role in countering threats from hypersonic weapons.

• Will be increasingly integrated into multi-layered defence frameworks.

• Ongoing research focuses on enhancing power output and range to tackle more advanced threats effectively.

Q91. Answer: (b) Banda Bahadur

The correct answer is Banda Bahadur.

Key Points

• Banda Bahadur, also known as Lachman Das, was a notable Sikh military commander and leader. After the death of Guru Gobind Singh in 1708, Banda Bahadur led the Khalsa in a revolt against the oppressive Mughal rule in northern India.

• Banda Bahadur was appointed by Guru Gobind Singh to lead the Sikh army and take the struggle for justice forward. He became the first Sikh military leader to establish Sikh sovereignty in Punjab.

• Under his leadership, the Sikh army achieved significant victories against the Mughals, notably the capture of Samana in 1709, where he redistributed land to peasants, aligning with Sikh values of social justice and equality.

• He issued the first Sikh coins in the name of Guru Nanak and Guru Gobind Singh, symbolizing the establishment of Sikh political authority.

• Banda Bahadur is remembered for his efforts to uplift the oppressed and his ability to unite the Sikh community against the tyranny of the Mughal Empire.

Additional Information

• Guru Gobind Singh:

• He was the tenth Sikh Guru, who founded the Khalsa in 1699 to fight against oppression and uphold justice and righteousness.

• Before his death in 1708, Guru Gobind Singh passed the leadership of the Sikh community to the Guru Granth Sahib (the Sikh holy scripture) and appointed Banda Bahadur to lead the military struggle.

• Banda Bahadur’s Campaigns:

• One of his most significant victories was the battle of Sirhind in 1710, where the Mughal governor Wazir Khan was defeated.

• Banda Bahadur's policies focused on redistributing land to the poor and removing feudal oppression, which made him popular

among peasants and the lower classes.

• Downfall and Legacy:

• Banda Bahadur was eventually captured by the Mughal forces in 1715 and executed in 1716 in Delhi after being tortured for months.

• Despite his tragic end, Banda Bahadur's legacy lives on as a symbol of courage, sacrifice, and the fight against tyranny.

• Other Options:

• Chattar Singh Attriwal: He was a Sikh leader during the Sikh Empire, but he did not lead the Khalsa revolt post Guru Gobind Singh's death.

• Duleep Singh: He was the last Maharaja of the Sikh Empire and not related to the Khalsa revolt after Guru Gobind Singh's death.

• Udai Singh: A Rajput king and not associated with Sikh history or the Khalsa revolt.

Important Points

• Banda Bahadur's Policies:

• He abolished the zamindari system and granted land to the tillers, which was revolutionary for the time.

• He introduced Sikh principles of equality and justice in the governance of captured territories.

• Khalsa Army:

• The Khalsa was a military and spiritual order established by Guru Gobind Singh.

• Under Banda Bahadur, the Khalsa transformed into a formidable force challenging the Mughal Empire.

Q92. Answer: (b) August 1994

The correct answer is August 1994.

Key Points

• The rupee was made convertible on the current account of the balance of payments in August 1994. This marked a significant step in the liberalization of India's economy.

• The move towards current account convertibility was a critical aspect of the economic reforms initiated in 1991 under the leadership of Prime Minister P.V. Narasimha Rao and Finance Minister Dr. Manmohan Singh.

• Current account convertibility refers to the freedom to convert domestic currency into foreign currency for transactions related to trade, services, income, and transfers without the need for prior approval from the Reserve Bank of India (RBI).

• The decision to make the rupee convertible on the current account was in accordance with the Article VIII obligations of the International Monetary Fund (IMF). India formally accepted the Article VIII status in August 1994.

• This move simplified foreign trade and investment, eliminated multiple exchange rates, and boosted confidence among international investors in the Indian economy.

Additional Information

• Balance of Payments (BoP):

• The Balance of Payments is a comprehensive record of a country's economic transactions with the rest of the world over a specific period.

• It consists of two main accounts: the current account and the capital account.

• The current account includes transactions in goods, services, income, and current transfers, whereas the capital account records capital transfers and the acquisition or disposal of non-produced, non-financial assets.

• Current Account Convertibility:

• Current account convertibility allows residents of a country to make and receive payments in foreign exchange for permissible current account transactions without restrictions.

• It facilitates foreign trade, remittances, and invisible transactions like services and income flows.

• India's adoption of current account convertibility in 1994 was a part of its commitment to IMF Article VIII, which aims to eliminate restrictions on international payments and transfers for current account transactions.

• IMF Article VIII Obligations:

• By accepting IMF Article VIII, member countries commit to refraining from imposing restrictions on payments and transfers for current international transactions without prior approval from the IMF.

• This status enhances international trade and investment by ensuring a stable and predictable foreign exchange regime.

• India's acceptance of Article VIII in August 1994 marked its readiness to align with global financial norms and practices.

Important Points

• Capital Account Convertibility:

• Unlike current account convertibility, which deals with trade and services, capital account convertibility refers to the freedom to convert domestic currency into foreign currency and vice versa for capital transactions like investments and loans.

• India has partial capital account convertibility, with restrictions in place to manage capital inflows and outflows to maintain

financial stability.

Q93. Answer: (b) 12

The correct answer is 12.

Key Points

• The President of India has the authority to nominate 12 members to the Rajya Sabha, the upper house of the Parliament of India.

• This provision is provided under Article 80 of the Indian Constitution.

• The nominated members are selected based on their special knowledge or practical experience in fields such as literature, science, art, and social service.

• The purpose of this nomination is to ensure that the Rajya Sabha has representation from experts and distinguished individuals who can contribute to policy-making and discussions.

• The nomination of these members is seen as a way to include non-political voices in the legislative process, thereby enriching the debates and discussions in the house.

Additional Information

• Article 80 of the Indian Constitution:

• It specifies the composition of the Rajya Sabha, which includes a maximum of 250 members.

• Out of these, 12 members are nominated by the President, and the rest are elected by the legislative assemblies of the states and union territories.

• Criteria for Nomination:

• The nominated members are selected based on their expertise in fields such as literature, science, art, and social service.

• This ensures that the house benefits from the insights and experiences of individuals who have made significant contributions to their respective fields.

• Notable Nominated Members:

• Some prominent personalities who have been nominated to the Rajya Sabha include Dr. Zakir Hussain (educationist), Rukmini Devi Arundale (dancer), Sachin Tendulkar (cricketer), and Lata Mangeshkar (singer).

• This highlights the diversity and richness of expertise brought by the nominated members.

• Role of Nominated Members:

• The nominated members participate in debates, discussions, and policymaking, bringing specialized perspectives to the legislative process.

• However, they do not have the right to vote in the election of the President of India.

Important Points

• Rajya Sabha Overview:

• The Rajya Sabha is a permanent house and is not subject to dissolution, but one-third of its members retire every two years.

• The Vice-President of India serves as the ex-officio Chairman of the Rajya Sabha.

• Historical Context:

• The provision for nominating members was included in the Constitution to ensure representation of individuals who might not be part of the electoral process but have significant contributions to society.

• This reflects the vision of the framers of the Constitution to make the Rajya Sabha a house of intellectuals and experts.

• Comparison with Lok Sabha:

• Unlike the Lok Sabha, which is fully elected, the Rajya Sabha includes both elected and nominated members, making it a unique blend of democratic and expert representation.

Q94. Answer: (c) Both I and II

The correct answer is 3) Both I and II.

Key Points

• Statement I: He should have completed 35 years of age:

The Vice President of India must have attained the age of 35 years as per Article 66 of the Constitution of India. This is a mandatory eligibility criterion for being elected to the office of the Vice President. Hence, this statement is correct.

• Statement II: He should be qualified for election as a member of the Council of States:

Under Article 66(3)(b) of the Indian Constitution, the Vice President must be eligible for election as a member of the Rajya Sabha (Council of States). This means he/she should fulfill the qualifications mentioned in Article 84, including being a citizen of India, at least 30 years old, and meeting other criteria. Hence, this statement is also correct.

• The Vice President of India is elected by the members of both Houses of Parliament through a system of proportional representation by means of the single transferable vote.

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• The role of the Vice President is primarily to act as the Chairman of the Rajya Sabha and to step into the President's role if the President's office becomes vacant.

• Both statements (I and II) are correct, fulfilling the eligibility criteria for the election of the Vice President of India.

Additional Information

• Election Process of Vice President:

• The Vice President is elected by an electoral college consisting of members of both Houses of Parliament (Lok Sabha and Rajya Sabha).

• The election follows the principle of proportional representation by means of a single transferable vote. Voting is conducted by secret ballot.

• Qualifications for Vice President:

• Must be a citizen of India.

• Must have completed 35 years of age.

• Must be eligible for election as a member of the Rajya Sabha.

• Must not hold any office of profit under the Government of India or any state government.

• Term and Removal:

• The Vice President serves for a term of five years. However, he/she can be re-elected for subsequent terms.

• The Vice President can be removed by a resolution passed by a majority of the members of the Rajya Sabha and agreed to by the Lok Sabha.

• Functions of the Vice President:

• Acts as the Chairman of the Rajya Sabha and ensures its smooth functioning.

• Takes over the duties of the President during a vacancy in the office of the President due to death, resignation, removal, or otherwise.

• Serves as the acting President until a new President is elected.

Important Points

• The Vice President is the second-highest constitutional office in India, after the President.

• Unlike the President, the Vice President is not required to take an oath of office before assuming duties as the Chairman of the Rajya Sabha.

• If the Vice President acts as the President, he/she is entitled to the emoluments, allowances, and privileges of the President.

• The Vice President does not have any executive powers except when acting as the President.

Q95. Answer: (a) 1946

The correct answer is 1946.

Key Points

• Amul, which stands for Anand Milk Union Limited, was established in the year 1946 in the town of Anand in Gujarat, India.

• It was founded under the guidance of Tribhuvandas Patel, who was supported by Sardar Vallabhbhai Patel. The cooperative was later developed into a model by Dr. Verghese Kurien, known as the "Father of the White Revolution" in India.

• The primary aim of establishing Amul was to empower rural farmers and eliminate the exploitation by middlemen in the dairy industry, ensuring fair prices for milk producers.

• Amul played a pivotal role in India’s White Revolution, which transformed the country into the largest producer of milk and dairy products globally.

• The cooperative operates under the Gujarat Cooperative Milk Marketing Federation (GCMMF) and has become one of the most successful dairy brands in India, known for products like butter, cheese, and milk powder.

Additional Information

• White Revolution:

• The White Revolution in India was initiated in the 1970s under the Operation Flood program spearheaded by the National Dairy Development Board (NDDB) and Dr. Verghese Kurien.

• This revolution significantly boosted milk production in India, making it self-sufficient and the largest producer of milk globally.

• It enhanced rural incomes, improved nutrition levels, and contributed to rural development through dairy farming.

• Tribhuvandas Patel:

• He was the founder chairman of Amul and played a key role in establishing the cooperative movement in Gujarat.

• Patel's efforts were instrumental in organizing local farmers into cooperatives to fight exploitation by milk contractors.

• Dr. Verghese Kurien:

• He is hailed as the "Father of the White Revolution" for his significant contributions to the growth of India’s dairy industry.

• Kurien’s leadership in designing and implementing Operation Flood transformed India from a milk-deficient country to a global

dairy leader.

• He was honored with numerous awards, including the Ramon Magsaysay Award, Padma Shri, Padma Bhushan, and Padma Vibhushan.

• Gujarat Cooperative Milk Marketing Federation (GCMMF):

• GCMMF is the apex organization that markets dairy products under the Amul brand.

• It is the largest food products organization in India and a significant player in the global dairy industry.

• GCMMF's innovative marketing strategies have made Amul a household name in India.

• Amul's Achievements:

• Amul introduced India's first butter and milk powder plant, revolutionizing the dairy industry.

• It is renowned for its iconic advertising campaigns, particularly the Amul Girl mascot, which has been a part of Indian pop culture for decades.

• Amul also played a key role in promoting rural entrepreneurship and uplifting the socio-economic status of dairy farmers.

Q96. Answer: (c) Odisha

The correct answer is Odisha.

Key Points

• Iron ore deposits in Odisha are found in the hill ranges of Sundergarh, Mayurbhanj, and Jhar. Odisha is one of the leading states in terms of iron ore production in India.

• The Keonjhar district of Odisha is known for its abundant reserves of high-grade iron ore, making it a significant contributor to India's steel industry.

• Odisha accounts for more than 50% of India's iron ore production, primarily due to the presence of large mines like Kudremukh, Barbil, and Joda.

• The iron ore deposits in Odisha are primarily of the hematite type, which is considered high-quality ore due to its rich iron content.

• Mining activities in Odisha play a vital role in supporting the steel manufacturing industry in India, which depends heavily on iron ore as a raw material.

Additional Information

• Iron Ore Deposits in India:

• India is rich in iron ore resources, with major deposits found in states like Odisha, Jharkhand, Chhattisgarh, Karnataka, and Goa.

• The two primary types of iron ore found in India are hematite and magnetite. Hematite has higher iron content and is more commonly used.

• Chhattisgarh has significant iron ore deposits, particularly in the Bastar region, while Karnataka has reserves in Bellary and Chitradurga.

• Goa is known for low-grade iron ore, which is exported primarily to countries like China and Japan.

• Uses of Iron Ore:

• Iron ore is primarily used in the production of steel, which is a critical material for construction, automobiles, infrastructure, and various other industries.

• It is also used in the manufacturing of pig iron, sponge iron, and ferroalloys.

• Iron ore derivatives are used in industries such as cement production and as a catalyst in chemical processes.

• Major Mining Companies in Odisha:

• Prominent companies involved in iron ore mining in Odisha include National Mineral Development Corporation (NMDC), Odisha Mining Corporation (OMC), and Tata Steel.

• These companies contribute significantly to the state's economy and provide employment opportunities in mining regions.

• Environmental Concerns:

• Iron ore mining has led to environmental challenges such as deforestation, soil erosion, and water contamination in mining areas.

• Efforts are being made to ensure sustainable mining practices, including reforestation and proper waste disposal.

Important Points

• Top Iron Ore Producing Countries:

• The leading producers globally include Australia, Brazil, China, India, and Russia.

• Australia and Brazil are dominant exporters, while China is the largest consumer of iron ore worldwide.

• Iron and Steel Industry in India:

• India is the second-largest producer of steel globally, with major production hubs in Jharkhand, Odisha, and Chhattisgarh.

• Government initiatives like Make in India aim to boost steel production and reduce imports.

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• Government Regulation:

• The Indian government has introduced policies such as the Mines and Minerals (Development and Regulation) Act to regulate mining activities.

• Steps are being taken to promote sustainable mining and ensure efficient utilization of mineral resources.

Q97. Answer: (b) Their entire surface is in contact with the environment

The correct answer is Their entire surface is in contact with the environment.

Key Points

• Single-celled organisms, such as amoeba, paramecium, or bacteria, are microscopic organisms that consist of only one cell. Their entire surface is in direct contact with the environment, allowing them to carry out all essential life processes without specialized organs.

• Their small size and large surface-area-to-volume ratio enable them to exchange substances like oxygen, carbon dioxide, nutrients, and waste products efficiently through simple diffusion. This is why they do not need specialized respiratory or excretory organs.

• These organisms absorb nutrients from their surroundings through mechanisms like endocytosis, wherein the cell membrane engulfs food particles.

• Waste products are also expelled directly into the external environment via simple processes like exocytosis or diffusion.

• Metabolic processes occur within the cytoplasm, and the absence of complex structures like tissues or organs simplifies their physiological functions.

Additional Information

• Option 1: They have complex body structures

• This is incorrect because single-celled organisms are inherently simple in structure. They lack the complexity of multicellular organisms, which have specialized tissues and organs.

• Option 3: They have a protective wall around them

• While some single-celled organisms like bacteria possess a cell wall, it is primarily for protection and structural support. It does not replace the need for organs but rather facilitates interaction with the environment.

• Option 4: They do not perform these functions

• This is incorrect because single-celled organisms actively perform essential functions like nutrient intake, gas exchange, and waste removal to sustain life.

• Examples of single-celled organisms:

• Amoeba: Known for its ability to change shape, it engulfs food through pseudopodia.

• Paramecium: Moves with the help of cilia and feeds on smaller microorganisms.

• Bacteria: Perform functions like nutrient absorption and waste expulsion directly through their cell membrane or wall.

• Key Terminologies:

• Diffusion: The process by which molecules move from an area of higher concentration to an area of lower concentration.

• Endocytosis: The process by which cells engulf external substances by surrounding them with their cell membrane.

• Exocytosis: The process by which cells expel waste or substances by vesicles merging with the cell membrane.

Important Points

• Surface-Area-to-Volume Ratio: Single-celled organisms have a high surface-area-to-volume ratio, which ensures efficient exchange of gases, nutrients, and waste. Larger organisms require specialized systems due to their lower ratio.

• Energy Efficiency: Simple diffusion and direct environmental interaction allow single-celled organisms to conserve energy compared to multicellular organisms.

• Adaptability: Single-celled organisms exhibit high adaptability to environmental changes because of their simplicity and direct interaction with their surroundings.

Q98. Answer: (a) Arteries are the vessels which carry blood away from the heart to various organs of the body.

The correct answer is Arteries are the vessels which carry blood away from the heart to various organs of the body.

Key Points

• Arteries are the vessels which carry blood away from the heart to various organs of the body. This is correct because arteries transport oxygenated blood (except pulmonary arteries) from the heart to the tissues and organs.

• Veins collect the blood from the heart and spread it to different organs is incorrect. Veins carry deoxygenated blood (except pulmonary veins) from different parts of the body back to the heart. Hence, this statement is false.

• Arteries have capillaries to prevent backflow of blood is incorrect. Arteries do not have capillaries; rather, arteries branch into arterioles, which further divide into capillaries. Backflow prevention is ensured by valves present in veins, not arteries.

• The smallest vessels have walls which are one-cell thick and are called veins is incorrect. The smallest blood vessels are

capillaries, not veins. Capillaries have walls that are only one-cell thick to allow the exchange of oxygen, carbon dioxide, nutrients, and waste products between blood and tissues.

Additional Information

• Functions of Arteries:

• Arteries transport oxygen-rich blood from the heart to other parts of the body.

• The exception is pulmonary arteries, which carry deoxygenated blood from the heart to the lungs for oxygenation.

• Arteries have thick, elastic walls to withstand high pressure exerted by the heart during blood pumping.

• Functions of Veins:

• Veins carry deoxygenated blood from the tissues back to the heart, except pulmonary veins, which carry oxygenated blood from the lungs to the heart.

• Veins have valves to prevent the backflow of blood, as they work under lower pressure than arteries.

• Capillaries:

• Capillaries are the smallest blood vessels with walls that are one-cell thick. This thin structure facilitates the exchange of gases, nutrients, and waste products.

• Capillaries connect arterioles and venules, forming an extensive network for efficient diffusion.

• Blood Circulation Pathway:

• The heart pumps oxygenated blood into arteries, which distribute it to tissues through arterioles and capillaries.

• Capillaries exchange oxygen and nutrients for carbon dioxide and waste products, which are carried back to the heart via veins.

• The blood then travels to the lungs for reoxygenation and removal of carbon dioxide.

Important Points

• Key Differences Between Arteries and Veins:

• Arteries: Thick-walled, high-pressure vessels that carry blood away from the heart.

• Veins: Thin-walled, low-pressure vessels with valves to prevent backflow, carrying blood toward the heart.

• Oxygenation Exceptions:

• Pulmonary arteries and veins are exceptions to the oxygenation rule. Pulmonary arteries carry deoxygenated blood, while pulmonary veins carry oxygenated blood.

• Significance of Capillaries:

• Capillaries play a critical role in nutrient and gas exchange, as their thin walls allow efficient diffusion between blood and tissues.

Q99. Answer: (c) Ajatashatru

The correct answer is Ajatashatru.

Key Points

• Ajatashatru was a king of the Haryanka dynasty and ruled the kingdom of Magadha from approximately 492 BCE to 460 BCE.

• Both Gautama Buddha and Mahavira, the founders of Buddhism and Jainism respectively, lived during Ajatashatru's reign, and he had interactions with both religious leaders.

• Ajatashatru is known to have supported the Buddhist Sangha and played a significant role in the spread of Buddhism during his time.

• He was also involved in conflicts with other kingdoms, such as the Republic of Vaishali, and expanded Magadha's power during his reign.

• The rulers mentioned in the other options either lived before or after the time of Buddha and Mahavira, making Ajatashatru the correct answer.

Additional Information

• Ajatashatru:

• Ajatashatru was the son of King Bimbisara, another prominent ruler of the Haryanka dynasty.

• He ascended the throne of Magadha after overthrowing and reportedly killing his father, an act that earned him the name "Ajatashatru," which means "one who has no enemies."

• He built the Rajagriha fort and strengthened the military infrastructure of Magadha.

• Gautama Buddha:

• Buddha lived from approximately 563 BCE to 483 BCE and founded Buddhism, a religion focused on enlightenment and the cessation of suffering.

• Ajatashatru is said to have been deeply influenced by Buddha's teachings and supported the Buddhist Sangha.

• Mahavira:

• Mahavira, the 24th Tirthankara of Jainism, lived from approximately 599 BCE to 527 BCE.

• He propagated the principles of non-violence (Ahimsa), truth, and asceticism, which became key tenets of Jainism.

• Comparison with Other Options:

• Chandragupta Maurya: He ruled from approximately 321 BCE to 297 BCE, much later than Buddha and Mahavira.

• Ashok: Known as Emperor Ashoka, he ruled from 268 BCE to 232 BCE and was a key figure in the spread of Buddhism, but lived after Buddha and Mahavira.

• Harshavardhana: He ruled in the 7th century CE and was much later than the timeline of Buddha and Mahavira.

Important Points

• The reign of Ajatashatru marked a period of significant political and religious activity in ancient India.

• He is credited with the first use of war machines, such as catapults, in ancient India during his conflict with Vaishali.

• Ajatashatru's court saw the rise of two major religions, Buddhism and Jainism, which shaped Indian culture and philosophy for centuries.

• The first Buddhist council, held at Rajagriha shortly after Buddha's death, was supported by Ajatashatru, highlighting his contribution to Buddhism.

Q100. Answer: (b) Indoi or Indike

The correct answer is Indoi or Indike.

Key Points

• The ancient Greeks referred to the region around the Indus River as "Indoi" or "Indike." This term was derived from the Sanskrit word "Sindhu," which was the local name for the Indus River.

• Greek historians and explorers like Megasthenes, Herodotus, and Strabo frequently used the term "Indike" to describe the region of India, specifically the territories around the Indus River.

• The use of the word "Indoi" highlights the ancient Greeks' interaction with and knowledge of the Indian subcontinent, which was facilitated by trade and Alexander the Great's conquests in the 4th century BCE.

• The Greek word "Indike" evolved over centuries and contributed to the modern name "India," which is used internationally to describe the nation.

• The term "Indoi" also underscores the significance of the Indus River as a critical geographical and cultural feature in the ancient world, influencing the naming of the region.

Additional Information

• Sindh:

• The term "Sindh" is derived from the Sanskrit word "Sindhu," referring to the Indus River. It is still used today to describe the region in modern-day Pakistan, but it was not the term the Greeks used.

• Sindh was a significant part of the Indus Valley Civilization, one of the world's earliest urban cultures.

• Hind:

• "Hind" is a Persian word derived from "Sindhu" and was used by Persians and Arabs to describe the Indian subcontinent.

• This term became prominent in medieval periods but was not used by the Greeks.

• Bharat:

• "Bharat" is derived from an ancient Indian king and is the native name of India in many Indian languages.

• The term is rooted in Indian mythology and literature, specifically in the Mahabharata and Puranas.

• It was not associated with Greek references to the region.

• Indus River:

• The Indus River is one of the longest rivers in Asia, originating in Tibet and flowing through India and Pakistan.

• It was the lifeline of the Indus Valley Civilization (2500–1500 BCE), which was one of the world's earliest urban civilizations.

• The river's name was pivotal in defining the region's identity in ancient times and influenced terms like "Indoi," "India," and "Hind."

Important Points

• Greek Influence on Indian History:

• The Greeks, especially during Alexander the Great's campaigns, documented their interactions with the Indian subcontinent extensively.

• Greek historians like Megasthenes wrote about the Mauryan Empire under Chandragupta Maurya, providing valuable insights into ancient India.

• Evolution of the Name India:

• The term "India" has its roots in the ancient Greek and Latin adaptations of "Indoi" and "Indus."

• Over time, the name evolved through interactions with Persian, Arabic, and European cultures.

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