SSC CHSL Tier-1 2024: Official Paper (Held On: 08 Jul, 2024 Shift 2) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2024 • 100 questions • 60 minutes • Answer key and solutions

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ENGLISH LANGUAGE

Q1. Select the most appropriate adverb to fill in the blank.

He comes here _____.

(a) lately
(b) quickly
(c) formerly
(d) daily

Q2. Parts of the following sentence have been given as options. Select the option that contains an error.

That day we reached late for the competition and even though the competition went on smooth, I felt bad about Shivani losing it.

(a) I felt bad
(b) the competition went on smooth
(c) losing it
(d) we reached late

Q3. The sentence below contains errors. Select the option with the correct use of tenses.

I will revised my course at least three times before my final examination.

(a) I will have revised my course at least three times before my final examination.
(b) I must revised my course at least three times before my final examination.
(c) I would revised my course at least three times before my final examination.
(d) I will be revised my course at least three times since my final examination.

Q4. Parts of the following sentence have been given as options. Select the option that contains an error.

During winters, most of the trains are not running on time in North India.

(a) on time in North India.
(b) are not running
(c) most of the trains
(d) During winters,

Directions

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

Hierarchy is key in ensuring normal functioning of our increasingly (1)_____ society. In the US, there is an enormous variety of industries, professional branches, specialisations, as well as a great (2)___ of other domains of human activity or interests. So, competence here is valued and opinion influencers have an important role to play. In fact, leadership evolves as a necessity almost in any realm of human activity/ thinking, (3)____ where more people are involved.

Thus, it isn't hard (4)__ why even in academic institutions throughout the US and worldwide, students are given leadership essay assignments. Most students will take on leadership roles with various degrees of responsibility and impact in their lives, hence, becoming (5)____ with typical challenges, solutions, or skills required is essential.

Q5. Select the most appropriate option to fill in blank 1.

(a) complex
(b) fine
(c) systematic
(d) easy

Q6. Select the most appropriate option to fill in blank 2.

(a) worry
(b) uniformity
(c) difficulty
(d) diversity

Q7. Select the most appropriate option to fill in blank 3.

(a) tactfully
(b) easily
(c) only
(d) especially

Q8. Select the most appropriate option to fill in blank 4.

(a) rejecting
(b) polishing
(c) focusing
(d) accepting

Q9. Select the most appropriate option to fill in blank 5.

(a) familiar
(b) unequal
(c) strange
(d) unusual

Q10. Which of the following idioms means ‘going to sleep’?

(a) Break new grounds
(b) Keep an ear to the ground
(c) Hit the sack
(d) Run around in circles

Q11. Select the INCORRECTLY spelt word.

(a) Agressive
(b) Apparent
(c) Skewed
(d) Creator

Q12. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
Are today / a working day / or a / holiday?

(a) a working day
(b) or a
(c) Are today
(d) holiday

Q13. Select the most appropriate ANTONYM of the given word.
Despondency

(a) Dejection
(b) Satisfaction
(c) Cheerfulness
(d) Hopelessness

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Q14. Select the most appropriate meaning of the given idiom.

Sell like hot cakes

(a) Not bothering about money
(b) Selling out quickly
(c) Extremely hot and humid
(d) Become very famous

Q15. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.

They appointed him as the manager, as he was due for an promotion.

(a) it's
(b) a
(c) No substitution required
(d) next

Q16. Select the most appropriate ANTONYM of the underlined word in the given sentence.

His grandfather was quite grumpy.

(a) Possible
(b) Edible
(c) Amiable
(d) Tenable

Q17. Select the INCORRECTLY spelt word.

(a) Unintended
(b) Apropriate
(c) Amalgamate
(d) Timorous

Q18. Select the most appropriate ANTONYM of the given word.

MOROSE

(a) Jovial
(b) Hurried
(c) Dramatic
(d) Practical

Q19. Select the most appropriate option to fill in the blank.

He hasn't _____ any attention to my miserable state.

(a) gave
(b) had
(c) made
(d) paid

Q20. Select the most appropriate ANTONYM of the underlined word in the given sentence.

The humble pupil sat on the floor with respect.

(a) Corrupt
(b) Proud
(c) Capitalist
(d) Sturdy

Q21. Select the most appropriate synonym of the bracketed word in the following sentence to fill in the blank.

The setting sun turned the _____ (calm) ocean into a sea of gold.

(a) volatile
(b) placid
(c) furtive

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(d) scattered

Q22. Select the most appropriate synonym of the underlined word in the given sentence.

He is just jealous that he didn't get picked for the job.

(a) envious
(b) suspicious
(c) greedy
(d) spiteful

Q23. Choose an appropriate word that can substitute the bracketed word and complete the sentence meaningfully.

What is the time (in) your watch?

(a) on
(b) with
(c) by
(d) into

Q24. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.

She developing a remarkable resistance to cold and altitude.

(a) developed
(b) has develop
(c) No substitution required
(d) has been developing

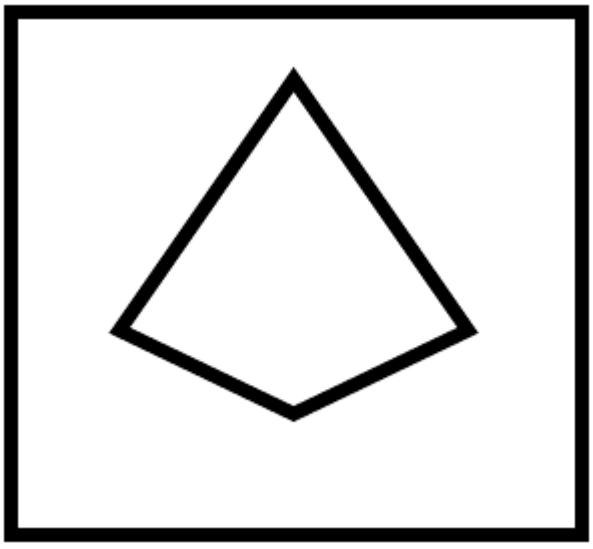
Q25. Select the most appropriate ANTONYM of the underlined word.

It's very cheap to display wealth by donning gaudy dresses.

(a) Cheap
(b) Sober
(c) Scanty
(d) Ornate

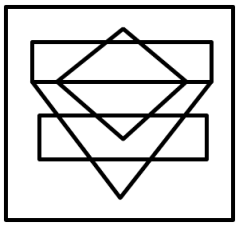
GENERAL INTELLIGENCE

Q26. Select the option in which the given figure is embedded (rotation is NOT allowed).

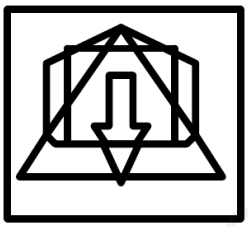


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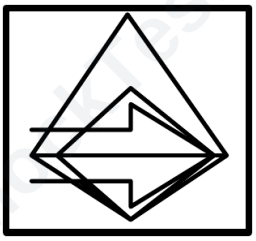
(a)



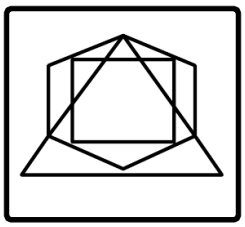
(b)



(c)



(d)



Q27. Four letter - clusters have been given, out of which three are alike in some manner and one is different. Select the letter - cluster that is different.

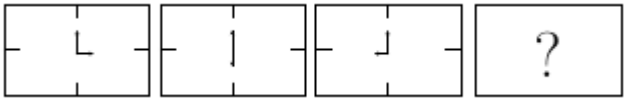
(Note : The odd one out is not based on the number of consonants/vowels or their position in the letter cluster.)

(a) MNOL
(b) AZCX
(c) FUHS
(d) YCAZ

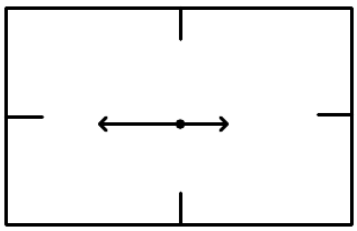
Q28. If 11 November 2009 was Wednesday, then what was the day of the week on 17 November 2013?

(a) Sunday
(b) Thursday
(c) Friday
(d) Saturday

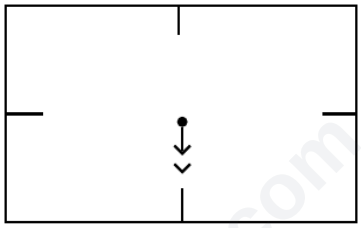
Q29. Identify the figure given in the options which when put in place of? will logically complete the series.



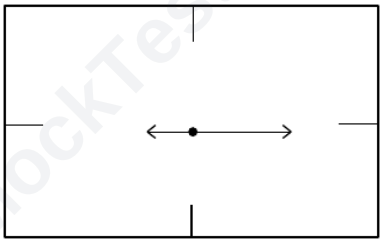
(a)



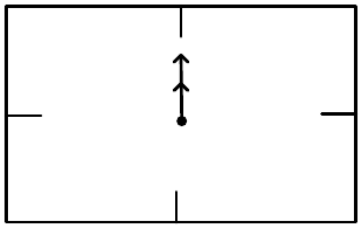
(b)



(c)



(d)



Q30. This question consists of a pair of words which have a certain relationship to each other. Select the pair which does NOT have the same relationship.

Demolish : Repair

1) Condemn : Approve

2) Consequence : Outcome

3) Bind : Release

4) Adamant : Flexible

(a) 2

(b) 3

(c) 1

(d) 4

Q31. 27 is related to 3 following a certain logic. Following the same logic, 343 is related to 7. To which of the following is 1331 related following the same logic?

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /deleting /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

(b) 9

(c) 11

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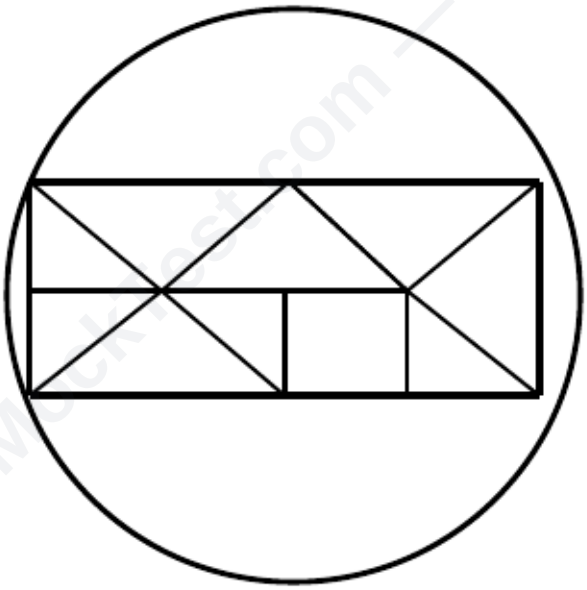
(d) 17

Q32. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for, '-' what will come in place of the question mark (?) in the following equation?

91 B 2 D 22 A 11 C 8 = ?

(a) 128
(b) 168
(c) 188
(d) 148

Q33. How many triangles are there in the given figure?



(a) 10
(b) 8
(c) 14
(d) 11

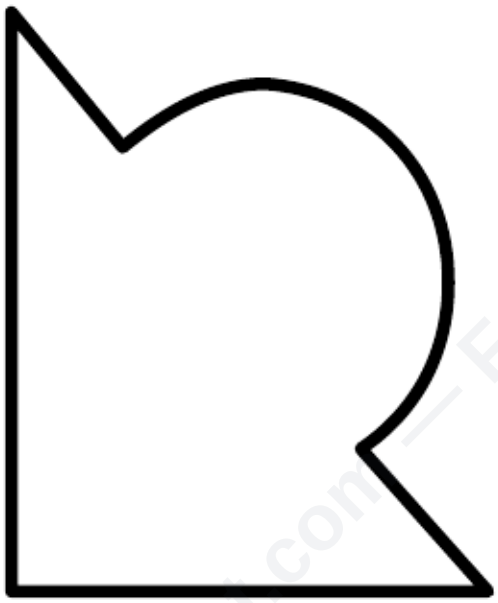
Q34. Which of the following letter-clusters can replace the question mark (?) in the given series to make it logically complete?

IPX, ?, OTZ, RVA, UXB

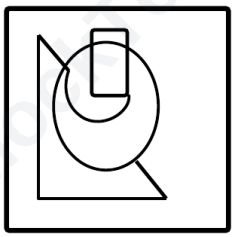
(a) COP
(b) LRY
(c) YHR
(d) LOM

Q35. Select the option figure in which the given figure is embedded as its part (rotation is NOT allowed).

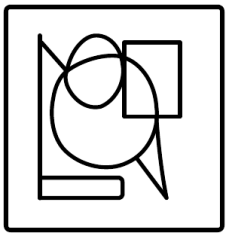
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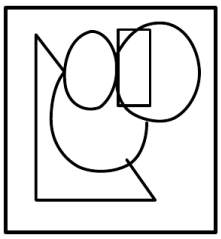
(a)



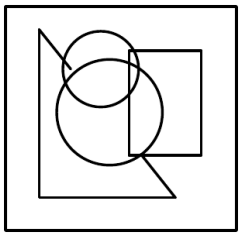
(b)



(c)



(d)



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Q36. Which of the following numbers will replace the question mark (?) in the given series?

106, 106, 108, 36 ,40 ,8 ?

(a) 28
(b) 10
(c) 22
(d) 14

Q37. Three statements are followed by conclusions numbered I, II. You have to consider these statements to be true, even if they seem to be at variance with commonly known facts. Decide which of the given conclusions logically follow/s from the given statement.

Statements :

Some roses are flowers.

All buds are roses.

All lilies are flowers.

Conclusion (I) : Some buds are lilies.

Conclusion (II) : All flowers are buds.

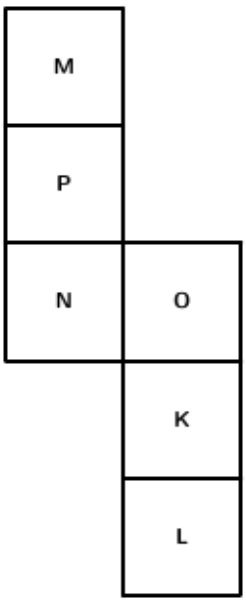
(a) Only conclusion (II) follows.
(b) Only conclusion (I) follows.
(c) Neither conclusion (I) nor (II) follows.
(d) Both conclusions (I) and (II) follow.

Q38. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

XVS, AYV, DBY, GEB,?

(a) EJH
(b) JEH
(c) EHJ
(d) JHE

Q39. What would be the letter on the opposite side of 'N' if the given sheet is folded to form a cube?



(a) K
(b) O
(c) M
(d) L

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Q40. What will come in the place of the question mark (?) in the following equation, if '+' and '×' are interchanged and '-' and '÷' are interchanged?

55 × 84 - 12 + 9 ÷ 26 = ?

(a) 95
(b) 90
(c) 96
(d) 92

Q41. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', then the resultant of which of the following will be 338?

(a) 32 D 11 B 80 A 4 C 6
(b) 32 C 11 D 80 A 4 B 6
(c) 32 B 11 D 80 A 4 C 6
(d) 32 A 11 D 80 B 4 C 6

Q42. In a certain code language,

M & N means 'M is the son of N',

M @ N means 'M is the brother of N',

M $ N means 'M is the father of N',

M # N means ' M is the mother of N'.

Based on this, how is E related to A, if 'A # B $ C @ D & E'?

(a) Son
(b) Daughter
(c) Daughter's husband
(d) Son's wife

Q43. After 36 days it will be a Sunday. What day is it today?

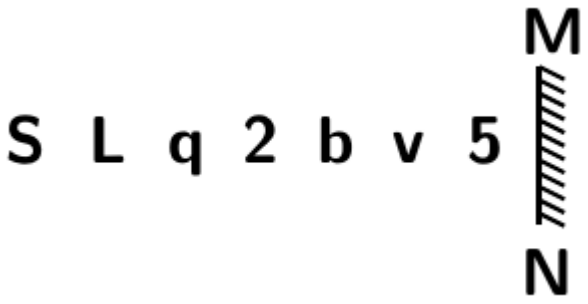
(a) Saturday
(b) Monday
(c) Friday
(d) Sunday

Q44. What should come in place of? in the given series?

281 392 503 614 725 ?

(a) 866
(b) 856
(c) 846
(d) 836

Q45. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.



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(a)



(b)



(c)



(d)



Q46. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(59, 246, 23)

(68, 300, 32)

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers 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) (47, 248, 15)
(b) (42, 213, 29)
(c) (31, 169, 53)
(d) (32, 188, 71)

Q47. What should come in place of the question mark (?) in the given series?

77, 144, 278, 546, ?

(a) 1802
(b) 1028
(c) 1082
(d) 1208

Q48. KLOQ is related to NORT in a certain way based on the English alphabetical order. In the same way, HILN is related to KLOQ. To which of the following is PQTV related, following the same logic?

(a) STUY
(b) SUVY
(c) STWY
(d) SWTY

Q49. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

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(a)



(b)



(c)



(d)



Q50. In a certain code language. 'FORK' is coded as '6851' and 'FROG' is coded as '5981. How is 'K' coded in the given language?

(a) 5
(b) 6
(c) 1
(d) 9

QUANTITATIVE APTITUDE

Q51. The ratio of the speeds of a boat while going upstream and going downstream is 2 : 3 and the sum of these two speeds is 15 km/h. What is the speed of the stream?

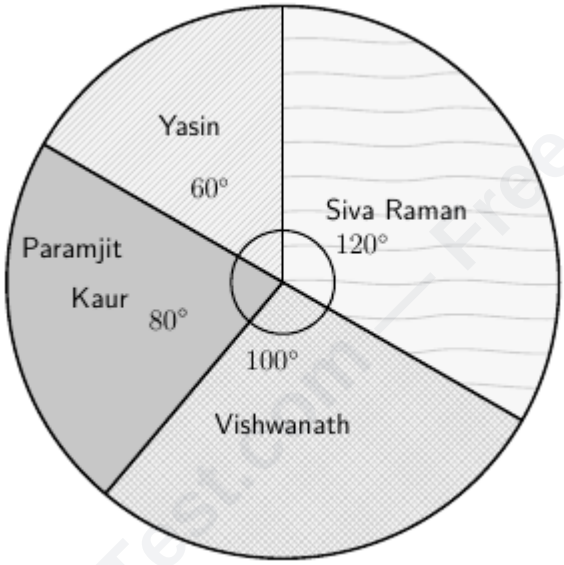
(a) 3.5 km/h
(b) 2.5 km/h
(c) 1.5 km/h
(d) 3 km/h

Q52. If the radius of a sphere is increased by 3.5 cm, its surface area increases by 550 cm^2. What was the original radius of the sphere? (use $\pi = 22/7$)

(a) 4 cm
(b) 6 cm
(c) 4.5 cm
(d) 3.5 cm

Q53. Study the given pie - chart and answer the question that follows.

The pie - chart represents the total number of valid votes obtained by four students who contested for school leadership. The total number of valid votes polled was 720.



Who won the election?

(a) Paramjit Kaur
(b) Yasin
(c) Siva Raman
(d) Vishwanath

Q54. Identify a single-digit number other than 1, which may exactly divide the number $17^3 + 18^3 - 16^3 - 15^3$.

(a) 2
(b) 3
(c) 7
(d) 5

Q55. Rohan takes 10 hours to mow a large lawn. He and Mohan together can mow it in 4 hours. How long will Mohan take to mow the lawn if he works alone?

(a) 10/3 hours
(b) 16/3 hours
(c) 20/3 hours
(d) 40/3 hours

Q56. ABC is a right - angled triangle, right angled at A in such a way that AB = AC and the bisector of angle B intersects the side AC at D. DM is perpendicular to BC, intersecting BC at M. If AB = 12 cm and BC = $12\sqrt{2}$ cm, then find the length of side AD.

(a) $12(\sqrt{2} - 2)$ cm
(b) $12(\sqrt{2} + 1)$ cm
(c) $12(\sqrt{2} - 1)$ cm
(d) $12(\sqrt{2} + 2)$ cm

Q57. The length of a common external tangent to two circles of an equal radius of 5 units is equal to the diameter of the circle. Which of the following can be the distance between the centres of the circles in units?

(a) 9
(b) 8
(c) 10
(d) 12

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Q58. To clear the old stock. Arshad offers a discount scheme to his customers - on buying 24 glass tumblers get 12 glass tumblers free. What is the effective percentage discount given by Arshad to his customers?

(a) 33 1/3 %
(b) 34 2/3 %
(c) 30 1/3 %
(d) 32 2/3 %

Q59. When the integer n is divided by 5, the remainder is 3. What is the remainder if 6n is divided by 5?

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

Q60. Two circles have radii of 27 cm and 36 cm. The distance between their centres is 45 cm. What is the length (in cm) of their common chord?

(a) 47.5 cm
(b) 40.5 cm
(c) 37.2 cm
(d) 43.2 cm

Q61. The given table represents the percentage marks of three students in three subjects. Study the table and answer the question.

subject →	Geography	History	Economics
Student ↓			
Rohan	78	77	74
Sohan	84	80	82
Mohan	87	83	86

The average marks obtain by Sohan in all three subject is equal to:

(a) 82
(b) 84
(c) 80
(d) 78

Q62. The average of the first 10 natural numbers is _____.

(a) 6.5
(b) 6
(c) 5
(d) 5.5

Q63. Two numbers are in the ratio 2 : 3. Their sum is 135. Find the numbers.

(a) 50, 85
(b) 45, 90
(c) 60, 75
(d) 54, 81

Q64. If tan(t) = 3/7, t is an acute angle, then what is the value of cosec(t)?

(a) √58/3
(b) √58/7
(c) √53/3
(d) √53/7

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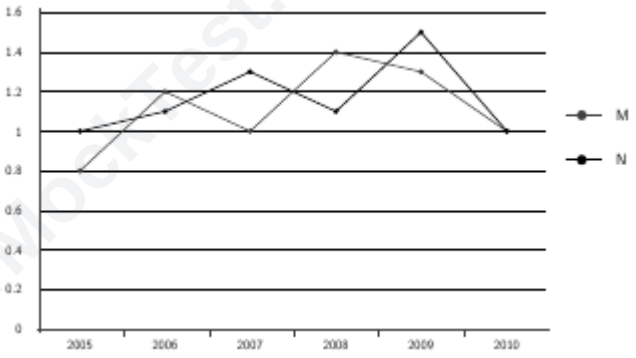
Q65. A's income is equal to 125% of the income of B, while B's savings are 120% of the savings of A. If the expenditure of B is 75% of the expenditure of A, then how much are B's savings as a percentage of her expenditure?

(a) 20%
(b) 18 3/4 %
(c) 22 1/2 %
(d) 16 2/3 %

Q66. Pranav gave 30% of the money he had to his wife, and 86% of the remaining to his two children. Half of the amount left was spent on other things, and the remaining amount of Rs. 98,000 was deposited in the bank. How much money did he have initially?

(a) Rs. 40,00,000
(b) Rs. 10,00,000
(c) Rs. 30,00,000
(d) Rs. 20,00,000

Q67. The following line graph shows the ratio of imports to exports of two companies over the years. Study the graph carefully and answer the question that follows.



The exports of Company M with relation to imports was the maximum in which of the following years?

(a) 2006
(b) 2008
(c) 2009
(d) 2005

Q68. The profit obtained by selling on article for Rs. 86 is twice the loss obtained by selling the same article for Rs. 53. Find the cost price.

(a) Rs. 64
(b) Rs. 33
(c) Rs. 22
(d) Rs. 75

Q69. X and Y are two points on the circumference of a circle having diameter 20 cm. The length of the line segment XY is 16 cm. Find the distance (in cm) of the line segment XY from the centre of the circle.

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

Q70. A two-digit number is 12 more than five times the sum of its digits. The number formed by reversing the digits is 9 less than the original number. The number is:

(a) 96
(b) 78
(c) 87
(d) 69

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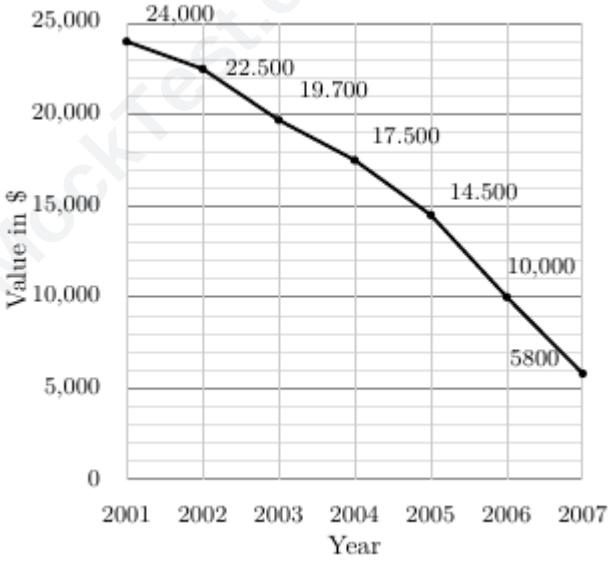
Q71. A metallic solid cuboid of dimensions 36 cm × 22 cm × 12 cm is melted and recast in the form of cubes of side 6 cm. Find the number of the cubes so formed.

(a) 43
(b) 46
(c) 45
(d) 44

Q72. What will be the amount due on Rs. 12,000 in 2 years when the rate of simple interest on successive years is 9% and 10%, respectively?

(a) Rs. 14,150
(b) Rs. 14,350
(c) Rs. 14,250
(d) Rs. 14,280

Q73. Study the given graph and answer the question that follows. The graph represents the depreciation of a car from 2001 to 2007.



What is the depreciation of the car from 2001 to 2007 in percentage?

(a) 58%
(b) 62%
(c) 75.83%
(d) 81.32%

Q74. The perimeter of a square whose area is the same as the area of a semi - circle of radius 2√2 cm is:

(a) 16 √π cm
(b) 4 √π cm
(c) 8 √2π cm
(d) 8 √π cm

Q75. Suresh studies the pattern of daily sale of a shop. He finds that on Monday, the sale was decreased by 10% in comparison to the sale on Sunday. On Tuesday, the sale was increased by 10% in comparison to the sale of Monday. If the sale on Tuesday was of Rs. 1,485, how much was the sale on Sunday?

(a) Rs. 1,495
(b) Rs. 1,485
(c) Rs. 1,500
(d) Rs. 1,475

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GENERAL AWARENESS

Q76. Which state secured over all third position in the medals tally at the 36^(th) National Games (2022) of India?

(a) Haryana
(b) Maharashtra
(c) Kerala
(d) Delhi

Q77. In which year did the Indian football team go on its first known official international tour?

(a) 1924
(b) 1950
(c) 1914
(d) 1947

Q78. Recently, a bill on Uniform Civil Code (UCC) was introduced. Consider the following statements about UCC and identify the correct statement(s) from them.

1. The Uniform Civil Code in India Bill, 2020, was introduced in the Lok Sabha as a private member bill.
2. UCC refers to the same set of civil laws applicable to all the citizens of India in all the personal matters.
3. The provision for UCC in the Constitution of India is mentioned under Article 44.

(a) Only 3
(b) Only 2 and 3
(c) Only 1 and 3
(d) Only 1

Q79. Which state organises the Lokrang Festival?

(a) Madhya Pradesh
(b) Uttar Pradesh
(c) Arunachal Pradesh
(d) Himachal Pradesh

Q80. Why is the six membered cyclic structure of glucose called a pyranose structure?

(a) Furan is a five membered cyclic compound, with one oxygen and four carbon atoms.
(b) Pyran is a non-cyclic organic compound, with one oxygen atom and five carbon atoms in the ring.
(c) Furan is a five membered non-cyclic compound, with one oxygen and four carbon atoms.
(d) Pyran is a cyclic organic compound, with one oxygen atom and five carbon atoms in the ring.

Q81. In which of the following regions of India is the Mundari language spoken?

(a) Chota - Nagpur plateau
(b) Malwa plateau
(c) Thar desert
(d) Baghelkhand

Q82. A school teacher asks students to stand up every time national anthem is sung. Which Article enshrines this fundamental duty?

(a) Article 51 (d)
(b) Article 51 (b)
(c) Article 51 (a)
(d) Article 51

Q83. Which of the following statements is/are true with respect to MRTP Act?

i) The Monopolies and Restrictive Trade Practices Act (MRTP Act) was repealed and replaced by the Competition Act, 2002.

ii) The asset limit for MRTP companies was fixed at Rs. 25 crores by the first/original Monopolies and Restrictive Trade Practices Act (MRTP Act).

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iii) The Monopolies and Restrictive Trade Practices Act (MRTP Act) was first passed in 1969.

(a) Only iii
(b) Only i and ii
(c) Only ii and iii
(d) Only i and iii

Q84. India is home to the second oldest cricket club in the world. Where is it situated?

(a) Mumbai
(b) Kolkata
(c) Hyderabad
(d) Chennai

Q85. Which type of electromagnetic radiation was discovered by Johann Wilhelm Ritter in 1801?

(a) Ultraviolet rays
(b) X - rays
(c) Infrared rays
(d) Gamma rays

Q86. Which cost is considered for calculating the national income in India?

(a) Factor cost
(b) Product cost
(c) Market cost
(d) Sunk cost

Q87. Which of the following types of crops are sown at the beginning of the monsoon season?

(a) Zaid crops
(b) Rabi crops
(c) Kharif crops
(d) Vital crops

Q88. The Government of India's Ministry of Culture organised a programme called Vitasta in January 2023. This programme exhibits rich culture, arts and crafts of which region?

(a) Himachal
(b) Ladakh
(c) Punjab
(d) Kashmir

Q89. _____ is a musical composition that expresses devotion through madhura bhakti.

(a) Padam
(b) Tillana
(c) Kriti
(d) Gita

Q90. Which set of Articles in the Constitution of India are known as 'Cultural and Educational Rights'?

(a) Articles 29-30
(b) Articles 23-24
(c) Articles 19-20
(d) Articles 14-15

Q91. Which of the following organisation's initiative is 'India Justice Report'?

(a) Azim Premji Foundation
(b) Infosys Foundation
(c) Tata Trusts
(d) HCL Foundation

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Q92. According to the National Multidimensional poverty index 2021, which of the following states has the lowest percentage of population being multidimensional poor?

(a) Maharashtra
(b) Sikkim
(c) Punjab
(d) Bihar

Q93. Indian Railway was introduced in the year _____.

(a) 1851
(b) 1853
(c) 1852
(d) 1850

Q94. Who founded a reformist organisation called ‘Brahmo Samaj’ in Calcutta?

(a) Ishwar Chandra Vidyasagar
(b) Vinoba Bhave
(c) Jyotiba Phule
(d) Raja Ram Mohan Roy

Q95. Pandit Birju Maharaj was related to:

(a) Odissi
(b) Kathak
(c) Tapu
(d) Ozele

Q96. When a new text document is created in MS - Office 2016, the default text size of the document is _____.

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

Q97. In the 11th century, under Mahmūd of Ghazni, Ghaznī, a small town in _____, became the capital of the vast empire of the Ghaznavids.

(a) Afghanistan
(b) Turkey
(c) Egypt
(d) Persia

Q98. 'Pankhida' songs are sung by peasants of _____ while working on the fields.

(a) Rajasthan
(b) Bihar
(c) Odisha
(d) Uttar Pradesh

Q99. Western disturbances are responsible for:

(a) extremely chilled weather of north-east India
(b) dusty storms in eastern costal area of India
(c) hot winds during summers in northern India
(d) rainfall during winters in north-western part of India

Q100. Which of the following is an input device?

(a) Monitor
(b) Keyboard
(c) Printer
(d) Speaker

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) daily

The correct answer is Option 4.

Key Points

• The adverb "daily" is used to indicate something that happens every day.

• In the context of the sentence, "He comes here _____," the most appropriate adverb to use is "daily" because it makes sense that someone comes to a place every day.

• The other options do not fit the context as well as "daily."

• Therefore, the correct answer is Option 4.

Correct Sentence: "He comes here daily."

Additional Information

• Option 1: "lately" – This means recently and does not fit the context of the sentence.

• Option 2: "quickly" – This describes the speed of the action, not the frequency, so it is not appropriate here.

• Option 3: "formerly" – This means in the past and does not fit the context of the sentence.

• Option 5: (blank) – This is not a valid option as it provides no adverb to complete the sentence.

Q2. Answer: (b) the competition went on smooth

The correct answer is Option 2.

Key Points

• The phrase "the competition went on smooth" is incorrect.

• The word "smooth" should be replaced with the adverb "smoothly" to describe how the competition went on.

• Adverbs are used to modify verbs, adjectives, or other adverbs, and in this context, "smoothly" correctly modifies the verb "went on".

• Thus, the error is located in Option 2 of the sentence.

• Therefore, the correct answer is Option 2.

Correct Sentence: "That day we reached late for the competition and even though the competition went on smoothly, I felt bad about Shivani losing it."

Additional Information

• Option 1: "I felt bad" – This part of the sentence is grammatically correct and does not require any changes.

• Option 3: "losing it" – This part of the sentence is grammatically correct and does not require any changes.

• Option 4: "we reached late" – This part of the sentence is grammatically correct and does not require any changes.

Q3. Answer: (a) I will have revised my course at least three times before my final examination.

The correct answer is Option 1.

Key Points

• The primary issue in the sentence is the incorrect use of the verb tense.

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• The phrase "I will revised" is grammatically incorrect because "revised" is the past form and cannot be used with "will."
• The correct future perfect tense is "I will have revised."
• This indicates that the action of revising will be completed before the final examination.
• Therefore, the correct answer is Option 1.

Correct Sentence: "I will have revised my course at least three times before my final examination."

Additional Information

• Option 2: "I must revised" is incorrect; "must" should be followed by the base form of the verb "revise."
• Option 3: "I would revised" is incorrect; "would" should be followed by the base form of the verb "revise."
• Option 4: "I will be revised" is incorrect; "will be" should be followed by a present participle (revising) not past participle (revised).

Q4. Answer: (b) are not running

The correct answer is Option 2.

Key Points

• The primary issue in the sentence is the use of the present continuous tense "are not running" instead of the simple present tense "do not run."
• The simple present tense is more appropriate for habitual actions or general truths.
• The correct phrase should be "do not run," ensuring grammatical correctness and clarity.
• Thus, the error is located in Option 2 of the sentence.
• Therefore, the correct answer is Option 2.

Correct Sentence: "During winters, most of the trains do not run on time in North India."

Additional Information

• Option 1: "on time in North India," – This part of the sentence is grammatically correct and does not require any changes.
• Option 3: "most of the trains" – This part of the sentence is grammatically correct and does not require any changes.
• Option 4: "During winters," – This part of the sentence is grammatically correct and does not require any changes.

Q5. Answer: (a) complex

The solution is in Hindi. Read it online.

Q6. Answer: (d) diversity

The solution is in Hindi. Read it online.

Q7. Answer: (d) especially

The solution is in Hindi. Read it online.

Q8. Answer: (d) accepting

The correct answer is Option 4.

Key Points

• The correct word should fit the context of understanding why it is important. Hence, "accepting" fits well with the context of understanding why even academic institutions give leadership assignments.
• The other options: "rejecting," "polishing," and "focusing" do not appropriately fit the context.

Therefore, the correct answer is 'Option 4'.

Complete Sentence: Thus, it isn't hard accepting why even in academic institutions throughout the US and worldwide, students are given leadership essay assignments.

Additional Information

• Rejecting: means dismissing as inadequate, unacceptable, or faulty.
• Polishing: means making smooth and shiny by rubbing.
• Focusing: means concentrating on a particular activity or focus.

Q9. Answer: (a) familiar

The solution is in Hindi. Read it online.

Q10. Answer: (c) Hit the sack

The solution is in Hindi. Read it online.

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Q11. Answer: (a) Agressive

The solution is in Hindi. Read it online.

Q12. Answer: (c) Are today

The correct answer is Option 3.

Key Points

• The primary issue in the sentence is the incorrect use of the verb "Are" at the beginning of the sentence.
• "Are" is a plural verb and does not agree with "today," which is singular.
• The correct verb should be "Is" to match the singular subject "today."
• Thus, the error is located in part 3 of the sentence.
• Therefore, the correct answer is 3.

Correct Sentence: "Is today a working day or a holiday?"

Additional Information

• 1: "a working day" – This part of the sentence is grammatically correct and does not require any changes.
• 2: "or a" – This part of the sentence is grammatically correct and does not require any changes.
• 4: "holiday" – This part of the sentence is grammatically correct and does not require any changes.

Q13. Answer: (c) Cheerfulness

The solution is in Hindi. Read it online.

Q14. Answer: (b) Selling out quickly

The solution is in Hindi. Read it online.

Q15. Answer: (b) a

The correct answer is Option 2.

Key Points

• The primary issue in the sentence is the omission of the article "a" before the term "promotion."
• Singular countable nouns typically require an article ("a" or "an").
• The correct phrase should be "due for a promotion," ensuring grammatical correctness and clarity.
• Thus, the error is located in part B of the sentence.
• Therefore, the correct answer is Option 2.

Correct Sentence: "They appointed him as the manager, as he was due for a promotion."

Additional Information

• A: "They appointed him as the manager," – This part of the sentence is grammatically correct and does not require any changes.
• C: "as he was due for" – This part of the sentence is grammatically correct and does not require any changes.
• D: "promotion." – This part of the sentence is grammatically correct and does not require any changes.`

Q16. Answer: (c) Amiable

The solution is in Hindi. Read it online.

Q17. Answer: (b) Apropriate

The solution is in Hindi. Read it online.

Q18. Answer: (a) Jovial

The solution is in Hindi. Read it online.

Q19. Answer: (d) paid

The correct answer is Option 4.

Key Points

• The verb "paid" is commonly used with the noun "attention" to indicate the act of noticing or considering something.
• The other options do not fit grammatically or contextually with the noun "attention".
• Therefore, "He hasn’t paid any attention to my miserable state" is the correct and grammatically appropriate sentence.

Additional Information

• Option 1: "gave" – The verb "gave" does not correctly combine with "attention" in this context.
• Option 2: "had" – The verb "had" is not appropriate in this context.
• Option 3: "made" – The verb "made" does not correctly fit with "attention".

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Q20. Answer: (b) Proud

The solution is in Hindi. Read it online.

Q21. Answer: (b) placid

The solution is in Hindi. Read it online.

Q22. Answer: (a) envious

The solution is in Hindi. Read it online.

Q23. Answer: (c) by

The correct answer is Option 3.

Key Points

• The preposition "in" is often used to indicate location or time within something, but in the context of a watch, "by" is the correct preposition to use.

• "By" is used to indicate the means or instrument used to measure or indicate something, in this case, time.

• The correct phrase is "What is the time by your watch?" which is commonly used to ask for the time indicated on someone's watch.

• Therefore, the correct answer is Option 3.

Correct Sentence: "What is the time by your watch?"

Additional Information

• on – This preposition is used to indicate a surface or a day/date, and is incorrect in this context.

• with – This preposition implies possession or accompaniment and is incorrect in this context.

• into – This preposition indicates movement towards the inside of something and is incorrect in this context.

Q24. Answer: (a) developed

The correct answer is Option 1.

Key Points

• The primary issue in the sentence is the tense used in the underlined segment.

• The correct tense should be past tense to match the context of the sentence.

• The correct phrase should be "developed", ensuring grammatical correctness and clarity.

• Therefore, the correct answer is Option 1.

Correct Sentence: "She developed a remarkable resistance to cold and altitude.

Q25. Answer: (b) Sober

The solution is in Hindi. Read it online.

Q26. Answer: (d) [figure]

The image embedded in given figure is as shown below:

Hence, "Option 4" is the correct answer.

Q27. Answer: (d) YCAZ

The logic follows here is:

Option 1: MNOL

Option 2: AZCX

Option 3: FUHS

Option 4: YCAZ

So, YCAZ is odd.

Hence, the correct answer is "Option 4".

Q28. Answer: (a) Sunday

Given: 11 November 2009 was Wednesday.

Now,

2009 to 2013 = 4 Years (3 Ordinary Year and 1 Leap Year).

And, In 4 Years = 1 Leap year and 3 Ordinary Year.

So, 1 Leap Year has 2 odd days,

And, 3 Ordinary Year has 3 odd days.

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Total odd days = 2 + 3 = 5.
then, 11 November 2013 will be Wednesday + 5 = Monday.
Now, the number of days between 11 November 2013 to 17 November 2013
= 6 days.
So, 17 November 2013 will be Monday + 6 = Sunday.
Hence, the correct answer is "Option 1".

Q29. Answer: (d) [figure]

The logic followed here is:
• One needle face is same and second clock needle is moving in 90º clockwise direction.
Hence, the correct answer is "Option 4".

Q30. Answer: (a) 2

The logic followed here is:
Logic: Opposites.
Here,
Demolish : Repair → Demolish and Repair are opposites.
Similarly,
Condemn : Approve → Condemn and Approve are opposites.
Bind : Release → Bind and Release are opposites.
Adamant : Flexible → Adamant and Flexible are opposites.
However,
Consequence : Outcome → Consequence and Outcome are not opposites; they are synonyms.
Hence, the correct answer is "Option 2".

Q31. Answer: (c) 11

The logic followed here is:
Logic: $(\text{2nd number})^3 = \text{1st number}$.
Now,
For, 27 : 3
=> $3^3 = 27$.
For, 343 : 7
=> $7^3 = 343$.
Similarly, for 1331 : ?
=> $11^3 = 1331$.
Hence, the correct answer is "Option 3".

Q32. Answer: (c) 188

Given Equation: 91 B 2 D 22 A 11 C 8 = ?
BODMAS Rule:
Decoding the given information:

Alphabet	A	B	C	D
Meaning	÷	×	•	•

Now replacing the sign from left to right using BODMAS Rule, we get:
=> 91 × 2 - 22 ÷ 11 + 8 = ?
=> 91 × 2 - 2 + 8 = ?
=> 182 - 2 + 8 = ?
=> 190 - 2 = 188.
Hence, the correct option is "Option 3".

Q33. Answer: (c) 14

The triangles are:

So, there are '14' triangles in the given figure.
Hence, the correct answer is "Option 3".

Q34. Answer: (b) LRY

The logic followed here is:
Hence, "Option 2" is the correct answer.

Q35. Answer: (d) [figure]

The image embedded in given figure is as shown below:
Hence, "Option 4" is the correct answer.

Q36. Answer: (d) 14

The logic followed here is:
Hence, "Option 4" is the correct answer.

Q37. Answer: (c) Neither conclusion (I) nor (II) follows.

Given statements:
Some roses are flowers.
All buds are roses.
All lilies are flowers.
The least possible Venn diagram for the given statement is:
Conclusion:
(I) : Some buds are lilies → False (Because, There is no direct relative between buds and lilies, so it can be possible)
(II) : All flowers are buds → False (Because, There is no direct relative between buds and lilies, so it can be possible)
So, Neither conclusion I nor II follow.
Hence, the correct answer is "Option 3".

Q38. Answer: (d) JHE

The logic followed here is:
Hence, the correct answer is "Option 4".

Q39. Answer: (c) M

From the given open Dice:
M and N is the opposite sides.
P and K is the opposite sides.
L and Q is the opposite sides.
Hence, the correct answer is "Option 3".

Q40. Answer: (d) 92

BODMAS Table:
Given equation: 55 × 84 - 12 + 9 ÷ 26 = ?
Now, if '+' and '×' and '-' and '÷' are interchanged, then:
=> 55 + 84 ÷ 12 × 9 - 26 = ?
=> ? = 55 + 7 × 9 - 26
=> ? = 55 + 63 - 26
=> ? = 118 - 26 = 92
Hence, the correct answer is "Option 4".

Q41. Answer: (c) 32 B 11 D 80 A 4 C 6

BODMAS Table:
If ‘A’ stands for ‘÷’, ‘B’ stands for ‘×’, ‘C’ stands for ‘+’ and ‘D’ stands for ‘–’ then;
Let's check each option one by one.
Option 1) 32 D 11 B 80 A 4 C 6
After replacing the letter with signs we get;
=> 32 - 11 × 80 ÷ 4 + 6

=> 32 - 11 × 20 + 6
=> 32 - 220 + 6
=> 36 - 220 = -184
Option 2) 32 C 11 D 80 A 4 B 6
After replacing the letter with signs we get;
=> 32 + 11 - 80 ÷ 4 × 6
=> 32 + 11 - 20 × 6
=> 32 + 11 - 120
=> 43 - 120 = - 77
Option 3) 32 B 11 D 80 A 4 C 6
After replacing the letter with signs we get;
=> 32 × 11 - 80 ÷ 4 + 6
=> 32 × 11 - 20 + 6
=> 352 - 20 + 6
=> 358 - 20 = 338
Option 4) 32 A 11 D 80 B 4 C 6
After replacing the letter with signs we get;
=> 32 ÷ 11 - 80 × 4 + 6
=> 2.9 - 80 × 4 + 6
=> 2.9 - 320 + 6
=> 8.9 - 320 = 311.1
Hence, the correct answer is "Option 3".

Q42. Answer: (d) Son’s wife

Family Chart:
Decoding the Symbols:

Symbol	**&**	@	#	**$**
Meaning	Son	Brother	Mother	Father

Given: A # B $ C @ D & E
It means: A is the mother of B, B is the father of C, C is the brother of D and D is the son of E.
So, E is the 'Son’s wife' of A.
Hence, the correct answer is "Option 4".

Q43. Answer: (a) Saturday

Given: After 36 days it will be a Sunday.
Now,
The number of days in a week = 7.
So, 36 days → 36/7 = 5 weeks and 1 odd day.
Thus, 36 days from today will be 5 weeks and 1 day ahead of today.
Since 36 days from today is a Sunday,
1 day before Sunday is Saturday.
Hence, the correct answer is "Option 1".

Q44. Answer: (d) 836

The logic followed here is:
Hence, the correct answer is "Option 4".

Q45. Answer: (c) [figure]

The correct mirror image of the given figure is:
Hence, the correct answer is "Option 3".

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Q46. Answer: (b) (42, 213, 29)

The logic followed here is:

Logic: (1st number + 3rd number) × 3 = 2nd number.

Now,

For, (59, 246, 23)

→ (59 + 23) × 3 = 82 × 3 = 246.

For, (68, 300, 32)

→ (68 + 32) × 3 = 100 × 3 = 300.

Similarly, for (42, 213, 29)

→ (42 + 29) × 3 = 71 × 3 = 213

The correct answer is Option 2.

Q47. Answer: (c) 1082

The logic followed here is:

Hence, the correct answer is "Option 3".

Q48. Answer: (c) STWY

The logic followed here is:

For, KLOQ is related to NORT

For, HILN is related to KLOQ.

Similarly, for PQTV related:

Hence, the correct answer is "Option 3".

Q49. Answer: (a) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 1".

Q50. Answer: (b) 6

The logic followed here is:

'FORK' => '6851' and 'FROG' => '5981

Code for F/O/R => 1/5/8 => Because F,O,R and 1,5,8 are common in both.

The the code for K will be 6.

Hence, the correct answer is "Option 2".

Q51. Answer: (c) 1.5 km/h

Given:

The ratio of the speeds of a boat while going upstream and going downstream is 2 : 3 and the sum of these two speeds is 15 km/h.

Formula used:

Let the speed upstream be 2x and the speed downstream be 3x.

Sum of speeds: 2x + 3x = 15 km/h

Speed of stream = (Speed downstream - Speed upstream) / 2

Calculation:

2x + 3x = 15

=> 5x = 15

=> x = 3

Speed upstream = 2x = 2 × 3 = 6 km/h

Speed downstream = 3x = 3 × 3 = 9 km/h

Speed of stream = (9 - 6) / 2

=> Speed of stream = 3 / 2

=> Speed of stream = 1.5 km/h

Therefore The correct answer is option 3.

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Q52. Answer: (c) 4.5 cm

Shortcut Trick

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

Given: $R - r = 3.5$ cm and Change = 550 cm²

$550 = 4 \times (22/7) \times 3.5 \times (2r + 3.5)$

$550 = 44 \times (2r + 3.5) \Rightarrow 12.5 = 2r + 3.5$

$2r = 9 \Rightarrow r = 4.5$ cm

Therefore The correct answer is 4.5 cm.

Alternate Method

Given:

Original radius = r

New radius (R) = r + 3.5 cm

Increase in Surface Area = 550 cm²

Formula Used:

Surface area of a sphere = $4\pi r^2$

Calculations:

$\Rightarrow 4\pi R^2 - 4\pi r^2 = 550$

$\Rightarrow 4 \times (22/7) \times [(r + 3.5)^2 - r^2] = 550$

$\Rightarrow (88/7) \times [r^2 + 7r + 12.25 - r^2] = 550$

$\Rightarrow (88/7) \times (7r + 12.25) = 550$

$\Rightarrow 88 \times (r + 1.75) = 550$

$\Rightarrow r + 1.75 = 550 \div 88$

$\Rightarrow r + 1.75 = 6.25$

$\Rightarrow r = 6.25 - 1.75 = 4.5$

Therefore The correct answer is 4.5 cm.

Additional Information

Volume of a Sphere

The volume of a sphere is given by the formula $V = (4/3)\pi r^3$.

Properties of a Hemisphere

For a hemisphere of radius r, the Curved Surface Area is $2\pi r^2$ and the Total Surface Area is $3\pi r^2$.

Ratio of Surface Areas

If the radii of two spheres are in the ratio a:b, then their surface areas are in the ratio $a^2:b^2$.

Q53. Answer: (c) Siva Raman

Given:

Total valid votes polled = 720

Formula used:

Percentage of votes = (Number of votes for a candidate / Total valid votes) × 100

Calculation:

Assuming the pie-chart gives the percentage distribution of votes among the four candidates:

Let the percentage of votes for each candidate be:

Paramjit Kaur = x%

Yasin = y%

Siva Raman = z%

Vishwanath = w%

According to the pie-chart, suppose the percentages are:

Paramjit Kaur = 25%

Yasin = 20%

Siva Raman = 35%

Vishwanath = 20%

Number of votes for each candidate:

Paramjit Kaur = (25 / 100) × 720 = 180

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Yasin = (20 / 100) × 720 = 144
Siva Raman = (35 / 100) × 720 = 252
Vishwanath = (20 / 100) × 720 = 144
=> Siva Raman received the highest number of votes.
Therefore The correct answer is option 3.

Q54. Answer: (a) 2

Given:
Identify a single-digit number other than 1, which may exactly divide the number $17^3 + 18^3 - 16^3 - 15^3$.
Formula used:
We will use the fact that the expression $(a^3 + b^3 - c^3 - d^3)$ may be simplified by grouping and factoring.
Calculation:
Let A = 17, B = 18, C = 16, D = 15
Expression: $A^3 + B^3 - C^3 - D^3$
We use the identity for sum and difference of cubes:
=> $(A^3 + B^3) - (C^3 + D^3)$
We further simplify using the factorization:
=> $(A + B)(A^2 - AB + B^2) - (C + D)(C^2 - CD + D^2)$
Substitute the values:
=> $(17 + 18)((17^2) - (17\times18) + 18^2) - (16 + 15)((16^2) - (16\times15) + 15^2)$
=> 35(289 - 306 + 324) - 31(256 - 240 + 225)
=> 35(307) - 31(241)
=> 10745 - 7471
=> 3274
Now check the divisibility of 3274 by the given options:
3274 ÷ 2 = 1637 (exact division)
3274 ÷ 3 = 1091.33 (not exact)
3274 ÷ 7 = 467.71 (not exact)
3274 ÷ 5 = 654.8 (not exact)
Therefore The correct answer is option 1.

Q55. Answer: (c) 20/3 hours

Given:
Rohan takes 10 hours to mow the lawn.
Rohan and Mohan together can mow it in 4 hours.
Formula used:
Work rate of Rohan = 1/10 (part of the lawn per hour)
Work rate of Rohan and Mohan together = 1/4 (part of the lawn per hour)
Work rate of Mohan = 1/x (part of the lawn per hour)
1/10 + 1/x = 1/4
Calculation:
1/10 + 1/x = 1/4
=> 1/x = 1/4 - 1/10
=> 1/x = (10 - 4) / 40
=> 1/x = 6 / 40
=> 1/x = 3 / 20
=> x = 20/3
Therefore Mohan will take 20/3 hours to mow the lawn if he works alone.
Therefore The correct answer is option 3.

Q56. Answer: (c) 12(√2 - 1) cm

Shortcut Trick
In ΔABC, angle A = 90° and AB = AC = 12 cm.

Angle bisector BD divides side AC in the ratio AD : DC = AB : BC.

Ratio AD : DC = 12 : 12√2 = 1 : √2.

Total ratio parts for AC = 1 + √2.

AD = [1 / (1 + √2)] × 12 = 12(√2 − 1) / (2 − 1) = 12(√2 − 1) cm.

Therefore The correct answer is 12(√2 − 1) cm.

Alternate Method

Given:

Triangle ABC is right-angled at A with AB = AC = 12 cm and BC = 12√2 cm. BD is the bisector of angle B, and DM perpendicular to BC.

Formula Used:

Angle Bisector Theorem: AD / DC = AB / BC

A B C D M 12 cm 12√2 AD = 12(√2 − 1) cm

Calculations:

=> Since angle A = 90° and AB = AC, triangle ABC is an isosceles right triangle.

=> In ΔABD and ΔMBD, angle BAD = angle BMD = 90°, BD is common, and angle ABD = angle MBD (BD is bisector).

=> ΔABD ~= ΔMBD by AAS congruence, therefore AD = DM and AB = BM = 12 cm.

=> MC = BC − BM = 12√2 − 12 = 12(√2 − 1) cm.

=> In ΔDMC, angle M = 90° and angle C = 45° (as angle A = 90°, AB = AC in ΔABC).

=> Therefore, ΔDMC is also an isosceles right triangle, which means DM = MC.

=> AD = DM = MC = 12(√2 − 1) cm.

Therefore The correct answer is 12(√2 − 1) cm.

Additional Information

Angle Bisector Theorem

In any triangle, the internal bisector of an angle divides the opposite side into segments whose lengths are in the same ratio as the other two sides. AD / DC = AB / BC.

Properties of Isosceles Right Triangle

A right-angled triangle with two equal legs has angles 90°, 45°, and 45°. The ratio of sides is always 1 : 1 : √2.

Congruency of Triangles

When two triangles are congruent (by SSS, SAS, ASA, or AAS), their corresponding parts (sides and angles) are exactly equal.

Q57. Answer: (c) 10

Given:

The radii of both circles are equal to 5 units, and the length of the common external tangent is equal to the diameter of the circle, which is 10 units.

Formula Used:

The formula for the length of the direct common tangent between two circles of radii r1 and r2, and the distance between their centers, d, is:

$l = \sqrt{(d^2 - (r1 - r2)^2)}$

Where:

l = length of the common external tangent

d = distance between the centers of the two circles

r1 and r2 = radii of the two circles

Calculation:

In this case, both radii are equal, so r1 = r2 = 5 units. The length of the common external tangent, l, is equal to the diameter of the circle, i.e., l = 10 units.

Now, substitute the values into the formula:

$10 = \sqrt{(d^2 - (5 - 5)^2)}$

$10 = \sqrt{(d^2)}$

$10^2 = d^2$

$100 = d^2$

$d = \sqrt{100} = 10$ units

The distance between the centers of the circles is 10 units.

Q58. Answer: (a) 33 1/3 %

Given:

On buying 24 glass tumblers, get 12 glass tumblers free.

Formula used:

Effective Discount Percentage = (Free Items)/(Total Items) × 100

Calculation:

Total Items = 24 (bought) + 12 (free) = 36

Free Items = 12

Effective Discount Percentage = 12/36 × 100

=> Effective Discount Percentage = 1/3 × 100

=> Effective Discount Percentage = 33¹/3%

Therefore The correct answer is option (1).

Q59. Answer: (c) 3

Given:

When the integer n is divided by 5, the remainder is 3.

Formula used:

If n = 5k + 3, then 6n = 6(5k + 3)

Calculation:

6n = 6(5k + 3)

=> 6n = 30k + 18

=> 30k + 18 divided by 5

=> 18 divided by 5 gives remainder 3

Therefore The correct answer is option (3).

Q60. Answer: (d) 43.2 cm

Given:

Two circles have radii of 27 cm and 36 cm. The distance between their centres is 45 cm.

Formula used:

Length of common chord AM = $\sqrt{(4r1^2d^2 - (r1^2 - r2^2 + d^2)^2)} / (4d^2)$

Where,

AQ = r1 = 27 cm

AP = r2 = 36 cm

PQ = d = 45 cm

Calculations:

AM = $\sqrt{(4 \times 27^2 \times 45^2 - (27^2 - 36^2 + 45^2)^2)} / (4 \times 45^2)$

=> AM = $\sqrt{(4 \times 729 \times 2025 - (729 - 1296 + 2025)^2)} / (4 \times 2025)$

=> AM = $\sqrt{((5904900 - (1458)^2)} / 8100)$

=> AM = $\sqrt{((5904900 - 2125764) / 8100)}$

=> AM = $\sqrt{(3779136 / 8100)}$

=> AM = $\sqrt{466.56}$ = 21.6 cm

=> AB = 2 × AM = 2 × 21.6 = 43.2 cm

Therefore The correct answer is option (4).

Alternate Method

Given:

The radii of the two circles are AQ = 27 cm and AP = 36 cm. The distance between their centers, PQ = 45 cm.

Concept Used:

The line joining the centers of the two circles is the perpendicular bisector of the common chord.

Let the length of the common chord be 2x, and let M be the point where the perpendicular bisector intersects the chord. The distances from the centers of the circles to the chord will form right-angled triangles.

Calculation:

Let the distance between the centers of the two circles be PQ = 45 cm.

Let the radius of the first circle be AQ = 27 cm, and the radius of the second circle be AP = 36 cm.
We need to find the distance AM (which is half the length of the common chord).
From the Pythagorean theorem, in triangle AQM (where A is the center of the first circle), we have:
$AQ^2 = AM^2 + QM^2$
$27^2 = AM^2 + QM^2$
$729 = AM^2 + QM^2$
$AM^2 = 729 - QM^2$ ----(1)
Similarly, in triangle APM (where A is the center of the second circle), we have:
$AP^2 = AM^2 + PM^2$
$36^2 = AM^2 + PM^2$
$1296 = AM^2 + PM^2$
$AM^2 = 1296 - PM^2$ ----(2)
Equating equations (1) and (2):
$729 - QM^2 = 1296 - PM^2$
Also, QM + PM = 45 => PM = 45 - QM
Rearranging, we get:
$729 - QM^2 = 1296 - (45 - QM)^2$
Now expand and simplify the equation:
$729 - QM^2 = 1296 - (2025 - 90QM + QM^2)$
$729 - QM^2 = 1296 - 2025 + 90QM - QM^2$
$729 = -729 + 90QM$
Now, solve for QM:
$729 + 729 = 90QM$
$1458 = 90QM$
$QM = 1458 / 90 = 16.2$
Now, substitute the value of QM into Equation (3) to find AM:
$AM^2 = 729 - (16.2)^2$
$AM^2 = 729 - 262.44$
$AM^2 = 466.56$
$AM = \sqrt{466.56} = 21.6$
=> AB = 2 × AM = 2 × 21.6 = 43.2 cm
The length of the common chord is 43.2 cm.

Q61. Answer: (a) 82

Given:
Marks in Geography by Sohan = 84
Marks in History by Sohan = 80
Marks in Economics by Sohan = 82
Formula used:
Average marks = (Sum of marks in all subjects) / (Number of subjects)
Calculation:
Sum of marks in all subjects = 84 + 80 + 82
=> Sum of marks = 246
Number of subjects = 3
Average marks = 246 / 3
=> Average marks = 82
Therefore The correct answer is option 1.

Q62. Answer: (d) 5.5

Shortcut Trick
The average of the first n natural numbers is given by the formula: (n + 1) ÷ 2.
Here, the total number of terms (n) = 10.

Average = (10 + 1) ÷ 2 = 11 ÷ 2 = 5.5.

Therefore The correct answer is 5.5.

Alternate Method

Given:

First 10 natural numbers are: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Formula Used:

Average = Sum of observations ÷ Total number of observations

Sum of first n natural numbers = [n × (n + 1)] ÷ 2

Calculations:

=> Sum = [10 × (10 + 1)] ÷ 2

=> Sum = (10 × 11) ÷ 2 = 110 ÷ 2 = 55

=> Average = 55 ÷ 10 = 5.5

Comparing with the given options, this corresponds to Option 4.

Therefore The correct answer is 5.5.

Additional Information

Average of First n Odd Numbers

The average of the first n odd natural numbers is always equal to n.

Average of First n Even Numbers

The average of the first n even natural numbers is given by (n + 1).

Average of Squares and Cubes

Average of squares = (n+1)(2n+1) ÷ 6 | Average of cubes = $n(n+1)^2 \div 4$.

Arithmetic Progression (AP) Property

For any series in AP, Average = (First term + Last term) ÷ 2.

Q63. Answer: (d) 54, 81

Shortcut Trick

Total units in the Ratio = 2 + 3 = 5 units.

Given Sum: 5 units = 135.

Value of 1 unit = 135 ÷ 5 = 27.

Required Numbers: 2 × 27 = 54 and 3 × 27 = 81.

Therefore The correct answer is 54, 81.

Alternate Method

Given: Ratio of numbers = 2 : 3 and their Sum = 135.

Let the numbers be 2x and 3x.

=> 2x + 3x = 135

=> 5x = 135

=> x = 135 ÷ 5

=> x = 27

=> First number = 2x = 2 × 27 = 54

=> Second number = 3x = 3 × 27 = 81

Therefore The correct answer is 54, 81.

Additional Information

Ratio and Proportion

A Ratio is a comparison of two quantities. If two numbers are in the ratio a : b, they can be represented as ax and bx, where x is a common multiplier.

Sum of Parts Rule

When a total value is divided into a Ratio a : b, the value of the first part is [a ÷ (a + b)] × Total, and the second part is [b ÷ (a + b)] × Total.

Inverse Ratio

The Inverse Ratio of a : b is b : a. This is often used in speed and time problems where speed is inversely proportional to time.

Q64. Answer: (a) √58/3

Given:
tan(t) = 3/7
Formula used:
cosec(t) = 1/sin(t)
sin(t) = opposite/hypotenuse
cos(t) = adjacent/hypotenuse
tan(t) = opposite/adjacent
Calculation:
Given tan(t) = 3/7
=> opposite = 3, adjacent = 7
Using Pythagoras theorem:
hypotenuse² = opposite² + adjacent²
=> hypotenuse² = 3² + 7²
=> hypotenuse² = 9 + 49
=> hypotenuse² = 58
=> hypotenuse = √58
Now, sin(t) = opposite/hypotenuse
=> sin(t) = 3/√58
cosec(t) = 1/sin(t)
=> cosec(t) = √58/3
Therefore The correct answer is option 1.

Q65. Answer: (a) 20%

Given:
A's income = 125% of B's income
B's savings = 120% of A's savings
B's expenditure = 75% of A's expenditure
Formula used:
Income = Savings + Expenditure
Savings as a percentage of Expenditure = (Savings / Expenditure) × 100
Calculations:
Let B's income be 100
A's income = 125% of 100 = 125
Let A's savings be x
B's savings = 120% of x = 1.2x
A's expenditure = 125 - x
B's expenditure = 75% of A's expenditure = 0.75 × (125 - x) = 93.75 - 0.75x
Income of B = Savings of B + Expenditure of B
100 = 1.2x + 93.75 - 0.75x
=> 100 = 1.2x - 0.75x + 93.75
=> 100 = 0.45x + 93.75
=> 100 - 93.75 = 0.45x
=> 6.25 = 0.45x
=> x = 6.25 / 0.45
=> x ≈ 13.89
B's savings = 1.2x = 1.2 × 13.89 ≈ 16.67
B's expenditure = 93.75 - 0.75 × 13.89 ≈ 83.43
Savings as a percentage of Expenditure = (Savings / Expenditure) × 100
=> (16.67 / 83.43) × 100 ≈ 20%
Therefore The correct answer is option (1).

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Q66. Answer: (d) Rs. 20,00,000

Shortcut Trick

Let the Initial Money be 100%.

Remaining after Wife (30%) = 70%.

Remaining after Children (86% of 70%) = 14% of 70% = 9.8%.

Amount Deposited in Bank = Half of 9.8% = 4.9%.

Since 4.9% = Rs. 98,000 → 1% = Rs. 20,000.

Total Money (100%) = 100 × 20,000 = Rs. 20,00,000.

Therefore The correct answer is Rs. 20,00,000.

Alternate Method

Given:

Amount given to Wife = 30% of Total

Amount given to Children = 86% of Remaining

Bank Deposit = Half of final amount left = Rs. 98,000

Calculations:

Let the total money Pranav had be X.

=> Remaining after giving 30% to wife = X × (100 − 30)/100 = 0.70X

=> Amount left after giving 86% of remaining to children = 0.70X × (100 − 86)/100

=> Remaining amount = 0.70X × 0.14 = 0.098X

=> Bank Deposit = Half of remaining amount = 0.098X ÷ 2

=> 0.049X = 98,000

=> X = 98,000 ÷ 0.049

=> X = 9,80,00,000 ÷ 49

=> X = 20,00,000

Therefore The correct answer is Rs. 20,00,000.

Additional Information

Successive Percentage Reduction

When values are deducted sequentially, the final value is Initial × (1 − r1) × (1 − r2) × ..., where r is the rate of deduction.

Base Value Change

In 'remaining' type problems, the base for the second percentage is the result of the first deduction, not the original total.

Multiplication Factor

A reduction of 30% corresponds to a multiplier of 0.70, while a reduction of 86% corresponds to a multiplier of 0.14.

Q67. Answer: (d) 2005

Given:

The following line graph shows the ratio of imports to exports of two companies over the years.

Formula used:

The ratio of imports to exports (I/E) is given. To find the year with the maximum exports with relation to imports, we need to convert them that is simply reciprocal the given ratio.

Calculation:

From the graph:

Ratio (I/E) for Company M:

2005: 1/0.8 = 1.25

2006: 1/1.2 = 0.833

2007: 1/1 = 1.

2008: 1/1.4 = 0.71

2009: 1/1.25 = 0.8

We need to find the maximum ratio (I/E) for Company M.

Maximum ratio = 1.25 (in the year 2005)

Therefore The correct answer is option 4.

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Q68. Answer: (a) Rs. 64

Given:

The profit obtained by selling an article for Rs. 86 is twice the loss obtained by selling the same article for Rs. 53.

Formula used:

Let the cost price be Rs. C.

Profit = Selling Price - Cost Price

Loss = Cost Price - Selling Price

Given that:

Profit = 2 × Loss

Calculations:

Profit = Rs. 86 - Rs. C

Loss = Rs. C - Rs. 53

=> Rs. 86 - Rs. C = 2 × (Rs. C - Rs. 53)

=> Rs. 86 - Rs. C = 2 × Rs. C - Rs. 106

=> Rs. 86 + Rs. 106 = 3 × Rs. C

=> Rs. 192 = 3 × Rs. C

=> Rs. C = Rs. 64

Therefore The correct answer is option 1.

Q69. Answer: (b) 6

Given:

X and Y are two points on the circumference of a circle having diameter 20 cm.

The length of the line segment XY is 16 cm.

Formula used:

Using the Pythagorean theorem in a right triangle formed by the radius, the perpendicular distance from the center to the chord, and half the chord length.

Let d be the distance of the line segment XY from the center of the circle.

Radius (r) = 10 cm (since diameter = 20 cm)

Calculations:

Using the Pythagorean theorem:

$r^2 = (XY/2)^2 + d^2$

r = 10 cm

XY = 16 cm

=> $10^2 = (16/2)^2 + d^2$

=> $100 = 8^2 + d^2$

=> $100 = 64 + d^2$

=> $d^2 = 36$

=> $d = \sqrt{36}$

=> d = 6 cm

Therefore The correct answer is option 2.

Q70. Answer: (c) 87

Given:

A two-digit number is 12 more than five times the sum of its digits. The number formed by reversing the digits is 9 less than the original number.

Formula used:

Let the number be 10x + y

10x + y = 5(x + y) + 12

10y + x = 10x + y - 9

Calculation:

10x + y = 5(x + y) + 12

=> 10x + y = 5x + 5y + 12

=> 5x - 4y = 12 ...(1)

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10y + x = 10x + y - 9
=> 10y + x = 10x + y - 9
=> 9y - 9x = -9
=> y - x = -1 ...(2)
Solving equations (1) and (2):
From (2): y = x - 1
Substitute y in (1):
5x - 4(x - 1) = 12
=> 5x - 4x + 4 = 12
=> x = 8
Substitute x in y = x - 1:
y = 8 - 1 = 7
The number is 10x + y = 10(8) + 7 = 87
Therefore The correct answer is option (3).

Q71. Answer: (d) 44

Given:
A metallic solid cuboid of dimensions 36 cm × 22 cm × 12 cm is melted and recast in the form of cubes of side 6 cm.
Formula used:
Volume of cuboid = length × breadth × height
Volume of cube = side³
Number of cubes = Volume of cuboid / Volume of one cube
Calculation:
Volume of cuboid = 36 × 22 × 12
=> Volume of cuboid = 9504 cm³
Volume of one cube = 6³
=> Volume of one cube = 216 cm³
Number of cubes = 9504 / 216
=> Number of cubes = 44
Therefore The correct answer is option (4).

Q72. Answer: (d) Rs. 14,280

Shortcut Trick
Total Effective Rate of Interest for 2 years = 9% + 10% = 19%.
Total Amount to be paid = 100% (Principal) + 19% (Interest) = 119% of the Principal.
Calculation: 119% of Rs. 12,000 = 1.19 × 12,000 = Rs. 14,280.
Therefore The correct answer is Rs. 14,280.
Alternate Method
Given:
Principal (P) = Rs. 12,000
Rate for 1^(st) year (R1) = 9%
Rate for 2^(nd) year (R2) = 10%
Time (T) = 2 years
Formula Used:
Simple Interest (SI) = (P × R × T) / 100
Total Amount (A) = Principal (P) + Total SI
Calculations:
=> Interest for Year 1 = (12,000 × 9 × 1) / 100 = Rs. 1,080
=> Interest for Year 2 = (12,000 × 10 × 1) / 100 = Rs. 1,200
=> Total Interest = 1,080 + 1,200 = Rs. 2,280
=> Total Amount = 12,000 + 2,280 = Rs. 14,280
Therefore The correct answer is Rs. 14,280.

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Additional Information

Effective Simple Interest Rate

When interest rates vary annually, the total simple interest rate is the algebraic sum of individual rates: R_(total) = R1 + R2 + ... + R_n.

Relationship between Principal and Amount

The Amount is always the sum of the initial Principal and the interest earned over the duration: A = P + SI.

SI vs CI for Successive Rates

In Simple Interest, rates are added directly. In Compound Interest, successive rates follow the formula: Effective Rate = R1 + R2 + (R1 × R2)/100.

Q73. Answer: (c) 75.83%

Given:

Initial value of the car in 2001 = $24,000

Final value of the car in 2007 = $5,800

Formula used:

Depreciation percentage = ((Initial value - Final value) / Initial value) × 100

Calculation:

=> Depreciation percentage = ((24,000 - 5,800) / 24,000) × 100

=> Depreciation percentage = (18,200 / 24,000) × 100

=> Depreciation percentage = 75.83%

Therefore The depreciation of the car from 2001 to 2007 is 75.83%.

Q74. Answer: (d) 8 √π cm

Given:

Radius of the semi-circle = 2√2 cm

Formula used:

Area of semi-circle = (1/2) × π × r²

Area of square = side²

Perimeter of square = 4 × side

Calculation:

Area of semi-circle = (1/2) × π × (2√2)²

=> Area of semi-circle = (1/2) × π × 8 = 4π cm²

Now, since the area of the square is equal to the area of the semi-circle:

side² = 4π

=> side = √(4π) = 2√π cm

Perimeter of the square = 4 × 2√π = 8√π cm

Therefore The perimeter of the square is 8√π cm.

Q75. Answer: (c) Rs. 1,500

Given:

The sale on Tuesday = Rs. 1,485

Monday's sale = 10% less than Sunday's sale

Tuesday's sale = 10% more than Monday's sale

Formula used:

Let Sunday's sale be Rs. x.

Monday's sale = 90% of Sunday's sale = 0.9 × x

Tuesday's sale = 110% of Monday's sale = 1.1 × (0.9 × x)

Calculation:

1.1 × 0.9 × x = 1,485

=> 0.99 × x = 1,485

=> x = 1,485 / 0.99

=> x = Rs. 1,500

Therefore The sale on Sunday was Rs. 1,500.

Q76. Answer: (a) Haryana

The correct answer is Haryana

Key Points

• Haryana secured the overall third position in the medals tally at the 36th National Games (2022) of India.

• They won 34 gold, 33 silver, and 39 bronze medals, totaling 106 medals

• Maharashtra came in second, with 38 gold medals and a total of 138 medals

Additional Information

• National Games of India

• The National Games of India comprises various disciplines in which sportsmen from the different states of India participate against each other.

• The first such event was held in Lahore in the year 1924.

• The country's first few Olympic Games, now renamed as National Games, were held in North India (Delhi, Lahore, Allahabad, Patiala), Chennai, Calcutta, and Mumbai.

• For several years in the mid-twentieth century, the national games were conducted on a low-key note.

• However, the first Modern National Games on the lines of the Olympics were held in 1985 in New Delhi.

Q77. Answer: (a) 1924

The correct answer is 1924

Key Points

• The Indian football team's first known official international tour took place in 1924, led by the legendary Indian footballer Gostha Pal

• This historic tour marked the beginning of India's journey in international football.

• As the team travelled abroad, they played matches against various countries, including Ceylon (now Sri Lanka) in 1933, where they secured a 1-0 victory [1]

• The Indian football team's maiden international tour was organized by the Indian Football Association (IFA),

• India's football team toured Ceylon and Burma winning 7, drawing 2, and losing 3 of their 12 matches

Additional Information

• Indian Football History

• Football was introduced in India by the British in the 19th century, marking the start of India's football journey

• The Indian Football Association (IFA) was established in 1893, laying the foundation for organized football in the country.

• India's football team had its "golden era" in the 1950s-1960s, winning two gold medals at the 1951 and 1962 Asian Games

• They also finished fourth at the 1956 Summer Olympics.

• After a decline, India's football team saw a resurgence in the 21st century, winning the Nehru Cup in 2007 and 2009, and the AFC Challenge Cup in 2008

Q78. Answer: (b) Only 2 and 3

The correct answer is Only 2 and 3

Key Points

• The Uniform Civil Code in India Bill, 2020, was introduced in the Lok Sabha as a private member bill.

• The UCC Bill was not introduced as a private member's bill; it was introduced by the government.

• Hence the statement is incorrect

• UCC refers to the same set of civil laws applicable to all the citizens of India in all personal matters.

• The UCC aims to replace personal laws based on the scriptures and customs of each major religious community in India with a common set governing every citizen, addressing matters like marriage, divorce, inheritance, and adoption.

• Hence II statement is true

• The provision for UCC in the Constitution of India is mentioned under Article 44.

• Article 44 of the Indian Constitution calls for the state to secure for the citizens a Uniform Civil Code throughout the territory of India.

• Hence III statement is true

Q79. Answer: (a) Madhya Pradesh

The correct answer is Madhya Pradesh

Key Points

• The city of Lakes Bhopal in Madhya Pradesh organises the cultural festival 'Lokrang' on its land.

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• Its an extravagant event organized each year by the Directorate of Culture and Madhya Pradesh Tribal Museum
• The five-day cultural extravaganza emboldens rich tribal and folk traditions of India through various cultural performances
• such as performing arts classical dance tribal folk dance and exhibitions of art and crafts Bracing rural culture since 20 years
• Lokrang Festival is celebrated and inaugurated on Republic Day 26th January every year followed by closing on 30th January.
• This festival attracts tourists dance connoisseurs music connoisseurs and artists from all over the globe.

Additional Information

• Other Festivals of Madhya Pradesh
• Khajuraho Dance Festival
• The Khajuraho Dance Festival, organized by the Madhya Pradesh Kala Parishad, is a one-week festival of classical dances
• It held annually beside the Khajuraho temples in the Chhatarpur district of Madhya Pradesh state in central India.
• The festival is conducted in February from the 20th to the 26th.
• Madhya Pradesh Jal Mahotsav
• Jal Mahotsav is organized every year from November to January and the Tent City is operational with all the activities.
• It is a great pleasure to update you regarding the experience called Jal Mahotsav (Hanuwantiya, Khandwa).
• Located on the banks of the Indira Sagar dam in Madhya Pradesh, Hanuwantiya is a glorious spectacle of nature.

Q80. Answer: (d) Pyran is a cyclic organic compound, with one oxygen atom and five carbon atoms in the ring.

The correct answer is Pyran is a cyclic organic compound, with one oxygen atom and five carbon atoms in the ring.

Key Points

• The six-membered cyclic structure of glucose is called a pyranose because it resembles the structure of a chemical compound called pyran.
• Pyran is a six-membered ring with five carbon atoms and one oxygen atom.
• In glucose, the six-membered ring forms when the hydroxyl group (-OH) on carbon 5 reacts with the aldehyde group (C=O) on carbon 1, creating a hemiacetal linkage.
• This reaction forms a ring that includes one oxygen atom and five carbon atoms, just like pyran. Hence, the glucose ring structure is termed a pyranose ring.

Important Points

• Glucose, as a carbohydrate, is a fundamental biomolecule involved in various biological processes.
• The pyranose structure of glucose represents its cyclic form, which is crucial in biochemistry for understanding how glucose behaves in cells, participates in metabolism, and forms larger polysaccharides like starch and cellulose.

Q81. Answer: (a) Chota - Nagpur plateau

The correct answer is Chota - Nagpur plateau.

Key Points

• The Chota Nagpur Plateau is a rich cultural and geographical region in eastern India, covering parts of Jharkhand, Odisha, West Bengal, and Bihar.
• It is home to several indigenous tribal communities, including the Munda people, who are the primary speakers of the Mundari language.
• The Munda people, along with other indigenous tribes like the Santals and Oraons, have traditionally inhabited the Chota Nagpur Plateau.
• The Chota Nagpur Plateau is known for its vast forests, rich mineral deposits, and hilly terrain.
• It includes major districts such as Ranchi, Gumla, Khunti (in Jharkhand), and parts of northern Odisha and West Bengal.

Additional Information

• The Malwa Plateau in central India (mostly Madhya Pradesh) is predominantly inhabited by Hindi and Malvi speakers.
• The Thar Desert is in western India, covering Rajasthan and parts of Gujarat, where Rajasthani and Marwari are the common languages.
• Baghelkhand is a region in northeastern Madhya Pradesh, known for dialects of Hindi and Bagheli.

Q82. Answer: (c) Article 51 (a)

The correct answer is Article 51 (a).

Key Points

• The fundamental duty to respect the national anthem is enshrined in Article 51A(a) of the Indian Constitution.
• This article is part of the Fundamental Duties listed in Part IVA, which were added by the 42nd Amendment Act, 1976.
• Article 51A(a) states that it is the duty of every citizen of India:

• "To abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem."

• In addition to being enshrined in Article 51A(a) of the Constitution, the obligation to respect the National Anthem is also reinforced by the Supreme Court of India. In its 2005 ruling in the Bijoe Emmanuel vs. State of Kerala case.

• The Prevention of Insults to National Honour Act, 1971 also provides guidelines on respecting the National Anthem and Flag.

Additional Information All the Fundamental Duties as per Article 51A of the Indian Constitution, which was added by the 42nd Constitutional Amendment Act, 1976:

Article	Fundamental Duty
51A(a)	To abide by the Constitution and respect its ideals and institutions, the National Flag, and the National Anthem.
51A(b)	To cherish and follow the noble ideals which inspired our national struggle for freedom.
51A(c)	To uphold and protect the sovereignty, unity, and integrity of India.
51A(d)	To defend the country and render national service when called upon to do so.
51A(e)	To promote harmony and the spirit of common brotherhood amongst all the people of India, transcending religious, linguistic, and regional or sectional diversities; to renounce practices derogatory to the dignity of women.
51A(f)	To value and preserve the rich heritage of our composite culture.
51A(g)	To protect and improve the natural environment, including forests, lakes, rivers, wildlife, and to have compassion for living creatures.
51A(h)	To develop the scientific temper, humanism, and the spirit of inquiry and reform.
51A(i)	To safeguard public property and to abjure violence.
51A(j)	To strive towards excellence in all spheres of individual and collective activity, so that the nation constantly rises to higher levels of endeavor and achievement.
51A(k)	To provide opportunities for education to children between the ages of 6 and 14 years and ensure that they receive this education (added by the 86th Constitutional Amendment Act, 2002).

Important PointsArticle 51

Promotion of international peace and security:

• The State shall—

• (a) promote international peace and security;

• (b) maintain just and honorable relations between nations;

• (c) foster respect for international law and treaty obligations in the dealings of organized peoples with one another; and

• (d) encourage settlement of international disputes by arbitration.

Q83. Answer: (d) Only i and iii

The correct answer is Only i and iii.

Key Points

• i) True: The MRTP Act was indeed repealed and replaced by the Competition Act, 2002, which aimed to promote and sustain competition in the markets.

• ii) False: The original asset limit for MRTP companies was set at Rs. 20 crores, not Rs. 25 crores.

• iii)True: The MRTP Act was enacted in 1969 to prevent monopolistic and restrictive trade practices.

• Thus, statements i and iii are true with respect to the MRTP Act.

Q84. Answer: (b) Kolkata

The correct answer is Kolkata.

Key Points

• The second oldest cricket club in the world is the Calcutta Cricket Club, located in Kolkata (formerly Calcutta). It was founded in 1792.

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• The oldest cricket club in the world is the Marylebone Cricket Club (MCC), established in 1787 in England.

Additional Information

City	Cricket Club Name	Founded
Mumbai	Oriental Cricket Club	1848
Kolkata	Calcutta Cricket Club	1792
Hyderabad	Hyderabad Cricket Association	1934
Chennai	Tamil Nadu Cricket Association	1918

Q85. Answer: (a) Ultraviolet rays

The correct answer is Ultraviolet rays.

Key Points

• Johann Wilhelm Ritter discovered ultraviolet (UV) radiation in 1801.

• He identified it while experimenting with silver chloride and observing that it darkened when exposed to light beyond the violet end of the visible spectrum.

• This marked the first discovery of electromagnetic radiation beyond the visible spectrum.

• Types of UV Rays: UV radiation is categorized into three types based on wavelength:

• UVA (320-400 nm): These rays penetrate the skin more deeply and are associated with skin aging and long-term skin damage.

• UVB (290-320 nm): These rays are primarily responsible for sunburn and play a significant role in developing skin cancer.

• UVC (100-290 nm): These rays are the most harmful but are mostly absorbed by the Earth's ozone layer and do not reach the surface.

Additional Information

Type	Wavelength Range	Common Sources	Applications	Health Effects
X-rays	0.01 to 10 nm	X-ray tubes, radioactive materials	Medical imaging, industrial inspections	Increased cancer risk with excessive exposure
Infrared	700 nm to 1 mm	Sun, heat lamps, thermal cameras	Remote controls, night vision, heating	Generally safe; excessive heat can cause burns
Gamma Rays	< 0.01 nm	Radioactive decay, cosmic events	Cancer treatment, sterilization, imaging	High risk; can cause significant biological damage

Q86. Answer: (a) Factor cost

The correct answer is Factor cost.

Key Points

• This refers to the cost of production factors (land, labor, capital, and entrepreneurship) used to produce goods and services, excluding indirect taxes and including subsidies.

• National income is often calculated at factor cost to reflect the income earned by factors of production, giving a more accurate measure of economic performance.

• It reflects the income earned by factors of production and provides a clear view of the economy's performance.

Additional Information

• Product Cost:

• This encompasses all costs associated with the production of goods, including direct materials, direct labor, and manufacturing overhead.

• While product cost can influence pricing and profit calculations, it is not directly used to calculate national income in the same way as factor cost.

• Market Cost:

• This is the price at which goods and services are sold in the market, including taxes and excluding subsidies.

• National income can be expressed in terms of market prices, but adjustments for taxes and subsidies are necessary to derive factor cost for a more accurate measure.

• Sunk Cost:

• This refers to costs that have already been incurred and cannot be recovered. Sunk costs should not influence future economic

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decisions.

• Sunk costs are not relevant for calculating national income, as they do not reflect current production or income generation.

Q87. Answer: (c) Kharif crops

The correct answer is Kharif crops.

Key Points

• Kharif crops, also known as monsoon crops, are cultivated during the monsoon season in India, which typically begins in June and continues until September.

• They thrive in warm and humid conditions, requiring substantial rainfall (generally 75-100 cm).

• The harvest takes place at the end of the monsoon season, usually between September and October.

• Kharif crops include rice (a staple food in West Bengal), maize (used in food products in Karnataka), cotton (cash crop in Gujarat), sorghum (jowar in Maharashtra), pearl millet (bajra in Rajasthan), and various pulses (like moong in Punjab).

Additional Information

Crop Type	Sowing Season	Harvesting Season	Characteristics	Examples
Zaid Crops	Summer (March to June)	June to July	Grown in the short period between Kharif and Rabi; require warm weather and less water.	Watermelon, Cucumber, Pumpkin, and Muskmelon
Rabi Crops	Winter (October to December)	March to April	Grown during the cooler months; rely on stored moisture from the rain.	Wheat, Barley, Mustard, and Peas
Kharif Crops	Monsoon (June to September)	September to October	Sown with the onset of the southwest monsoon; require heavy rainfall.	Rice, Maize, Cotton, and Sorghum (Jowar)

Q88. Answer: (d) Kashmir

The correct answer is Kashmir..

Key Points

• The Vitasta program was organized at Mahatma Mandir, Gandhinagar, in Gujarat.

• The event aimed to showcase the rich cultural heritage, arts, and crafts of Jammu and Kashmir, providing a platform for local artisans and performers to exhibit their work.

• The Minister of Culture in India is G. Kishan Reddy. He has been in office since July 2021 and is responsible for promoting and preserving the cultural heritage of India.

Additional Information

Aspect	Himachal Pradesh	Punjab	Ladakh
Capital	Shimla	Chandigarh	Leh and Kargil
Main Rivers	Sutlej, Beas	Sutlej, Beas, Ravi	Indus, Zanskar
Languages	Hindi, Pahari	Punjabi, Hindi	Ladakhi, Balti
Famous Festivals	Kullu Dussehra, Shivratri	Baisakhi, Lohri	Losar, Hemis Festival

Q89. Answer: (a) Padam

The correct answer is Padam.

Key Points

• Padam is a musical composition that expresses devotion through madhura bhakti, or devotion through the expression of love.

• In a padam, both the melody (dhaatu) and the words (maatu) are equally important.

Additional Information

• Tillana: A rhythmic composition used in classical dance, typically more focused on dance and rhythm than on devotional lyrics.

• Kriti: A devotional song in Carnatic music that often expresses devotion to a deity.

• Gita: Generally refers to a song or poem, often associated with philosophical texts like the Bhagavad Gita, which conveys moral and spiritual teachings rather than strictly devotional themes.

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Q90. Answer: (a) Articles 29-30

The correct answer is Articles 29-30.

Key Points

• Article 29: Protection of Interests of Minorities by providing them the right to conserve their culture, language, and script.

• No citizen shall be denied admission into any educational institution maintained by the state or receiving aid out of state funds, on grounds of discrimination.

• Article 30: Rights of Minorities to Establish and Administer Educational Institutions of their choice.

• The state shall not discriminate against any educational institution on the grounds that it is under the management of a minority.

Additional Information

• Article 23: Prohibition of Traffic in Human Beings and Forced Labour.

• Article 24: Prohibition of Employment of Children in Factories, etc.

• Article 14: Guarantees that all individuals are equal before the law and are entitled to equal protection of the laws within the territory of India.

• Article 15: Prohibits discrimination on grounds of religion, race, caste, sex, or place of birth.

• Article 19: Guarantees six freedoms to the citizens of India. These are indispensable for the functioning of a democratic society.

• Article 20: Provides protection to individuals in case of convictions for offenses, ensuring the rule of law in criminal justice

Q91. Answer: (c) Tata Trusts

The correct answer is Tata Trusts.

Key Points

• Jamsetji Tata laid the foundation for Tata Trusts with his philanthropic vision and commitment to social welfare.

• JN Tata Endowment for Higher Education Established in 1892.

• Jamshedji Nusserwanji Tata is often known as the "Father of Indian Industry".

• In 1877, he established the Empress Mills in Nagpur, and Tata Steel in 1907.

Additional Information

• Azim Premji Foundation primarily focuses on education, health, and livelihoods.

• Azim Premji, the former chairman of Wipro Limited, founded the Azim Premji Foundation.

• Infosys Foundation was established in 1996 by NR Narayana Murthy and Sudha Murty.

• The HCL Foundation was established in 2011 as the CSR arm of HCL Technologies.

Q92. Answer: (b) Sikkim

The correct answer is Sikkim.

Key Points

• Approximately 3.82% of the population in Sikkim lives in multidimensional poverty

• The National MPI is calculated using three dimensions: health, education, and living standards.

• The National MPI 2021 revealed a reduction in multidimensional poverty by 9.89%.

• NITI Aayog launches the National Multidimensional Poverty Index (MPI) in India.

• The index uses data from the National Family Health Survey (NFHS).

Additional Information

• Approximately 51.91% of the population in Bihar lives in multidimensional poverty.

• Approximately 5.59% of the population in Punjab lives in multidimensional poverty.

• Approximately 14.85% of the population in Maharashtra lives in multidimensional poverty.

• Of these, 1.3 billion people (21.7%) are recognized as living in multidimensional poverty.

Q93. Answer: (b) 1853

The correct answer is 1853.

Key Points

• The railway system in India was introduced on 16 April 1853.

• The first passenger train in India ran between Bombay (now Mumbai) and Thane, covering a distance of 34 kilometers.

• Lord Dalhousie was the Governor General of India in 1853.

• The headquarters of Indian Railways is located at Rail Bhavan in New Delhi, India.

Additional Information

• Indian Railways is the largest rail network in Asia and the second-largest globally.

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• The Shree Siddharoodha Swamiji Railway Station in Hubballi, Karnataka, holds the Guinness World Record for the longest railway platform in the world, measuring 1,507 meters.

• The Vivek Express has the longest run on the Indian Railways network in terms of distance and time, traveling 4,273 km.

• The oldest working Indian locomotive is the Fairy Queen, which operates with a steam engine and is still in use.

• The mascot of Indian Railways is "Bholu", the guard elephant, which was designed by the National Institute of Design and unveiled on 16th April 2002.

• Indian Railways operates a mixed fleet of 13,169 passenger trains and more than 8,000 freight trains daily.

Q94. Answer: (d) Raja Ram Mohan Roy

The correct answer is Raja Ram Mohan Roy.

Key Points

• Raja Ram Mohan Roy was born on May 22, 1772, in Radhanagar, Hooghly District, Bengal

• The Brahmo Samaj was founded in 1828 by Raja Ram Mohan Roy in Calcutta (now Kolkata).

• The Brahmo Samaj advocates belief in a Monotheism, "Infinite Singularity" that is infinite, indivisible, imperceptible, and indefinable.

• It promoted women's education and upliftment, abolition of social practices such as Sati, child marriage, and the caste system.

Additional Information

• Ishwar Chandra Vidyasagar was born on September 26, 1820, in Birsingha village, West Bengal.

• Ishwar Chandra Vidyasagar was a staunch advocate for gender equality and the upliftment of women in society.

• Vinoba Bhave was born on September 11, 1895, in Gagode village, Raigad, Maharashtra.

• In 1951, Vinoba Bhave started the Bhoodan (land gift) movement,

• He was awarded the Ramon Magsaysay Award for Community Leadership in 1958.

• Jyotirao (Jyotiba) Phule was Born on April 11, 1827, in Katgun, Satara District of Maharashtra.

• Savitribai Phule, his wife, is considered the first female teacher in India and a leader in the struggle for women's rights.

Q95. Answer: (b) Kathak

The correct answer is Kathak.

Key Points

• Kathak is the classical dance of Uttar Pradesh.

• Brijmohan Mishra is popularly known as Pandit Birju Maharaj.

• Birju Maharaj was honored with the country's second-highest Civilian Award, Padma Vibhushan in 1986 for his remarkable contribution.

• In 2012, Pandit Birju Maharaj won the ‘Best Choreography’ category National Award for Vishwaroopam.

Additional Information

• Exponents of Kathak are Shrimati Prerana Shrimala, Uma Sharma, Maya Rao, Rani Karnaa, and Rajendra Gangani.

• The Ozele dance is a traditional dance performed by the Wancho tribe of Arunachal Pradesh, India.

• The Tapu War dance is a traditional dance of the Adi Tribe in Arunachal Pradesh, India.

• Exponents of Odissi dance Kelucharan Mohapatra, Pankaj Charan Das, Deba Prasad Das, Raghunath Dutta.

• Other dances of Arunachal Pradesh are Buiya, Chalo, Wancho, Pasi Kongki, Ponung, and Popir.

Q96. Answer: (d) 11 points

The correct answer is 11 points.

Key Points

• Layout Tab allows you to change the page orientation from portrait to landscape.

• The insert feature allows you to create a drop cap.

• Office 2016 was released on September 22, 2015, for Windows and July 9, 2015, for macOS.

• Applications of MS-office are MS Word, MS Excel, MS Powerpoint, MS Outlook etc.

Additional Information

Version name	Release Date/ Year
Microsoft Office 2016	September 22, 2015
Microsoft Office 2013	January 30, 2012
Microsoft Office 2010	June 15, 2010

Microsoft Office 2007	January 30, 2007
Microsoft Office 2003	October 21, 2003
Microsoft Office XP	May 31, 2001
Microsoft Office 2000	June 7, 1997
Microsoft Office 1997	1997
Microsoft Office 1995	August 24, 1995
Microsoft Office 4.x	1994
Microsoft Office 3.0	August 30, 1992
Microsoft Office for Windows	October 1990

Q97. Answer: (a) Afghanistan

The correct answer is Afghanistan.

Key Points

• Mahmud of Ghazni defeated Hindushahis to conquer and annex Peshawar and Punjab.

• Mahmūd is said to have vowed to invade India once a year and, in fact, led about 17 such expeditions.

• The first large-scale campaign began in 1001 and the last ended in 1026.

• In 1001, Mahmūd marched on India and defeated Jaipal, the king of Punjab.

• Mahmūd was the first to carry the banner of Islam into the heart of India.

Additional Information

• Ottoman Empire in Turkiye was Founded by Osman I in 1299, the Ottoman Empire became one of the most powerful empires in history.

• After the fall of the Ottoman Empire post-WWI, Mustafa Kemal Atatürk founded the Republic of Turkiye in 1923

• Alexander the Great Conquered Egypt in 332 BCE, leading to the establishment of the Ptolemaic Kingdom.

• Library of Alexandria Became a center of learning and culture in the Hellenistic world.

• Zoroastrianism the predominant religion, founded by the prophet Zoroaster, emphasizing the duality of good and evil came from Persia.

Q98. Answer: (a) Rajasthan

The correct answer is Rajasthan.

Key Points

• Pankhida is a traditional folk song form originating from Rajasthan, India.

• The word 'Pankhida' literally translates to 'lover' in the local dialect.

• Pankhida songs are typically accompanied by traditional instruments like the Algoza, and the Manjira.

• The songs often involve a call-and-response format, where a lead singer performs a verse followed by a chorus from the group.

Additional Information

State	Folk music
Rajasthan	Maand, Pabuji Ki Phach, Bani Thani
Bihar	Sohar, Sumangali, Ropnigeet
Odisha	Dalkhai, Karma, Rangabati
Uttar Pradesh	Sohar, Kaharwa, Chanayni

Q99. Answer: (d) rainfall during winters in north-western part of India

The correct answer is rainfall during winters in north-western part of India.

Key Points

• Western Disturbances are extratropical storms originating in the Mediterranean region.

• They travel eastwards, affecting the weather patterns across Northern India, Pakistan, Nepal, and even extending to Bangladesh.

• Western Disturbances bring sudden winter rains to the plains and snow to the mountains of the northwestern Indian

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subcontinent.

• These disturbances are vital for the cultivation of Rabi crops.

Additional Information

• The frequency and intensity of Western Disturbances can vary from year to year, influenced by factors like El Niño and La Niña

Local winds	Place of occurrence
Chinook	North America
Foehn	Canada
Loo	Northern India
Rashabar	Iraq

Q100. Answer: (b) Keyboard

The correct answer is Keyboard.

Key Points

• Keyboard:

• Primary Input Device: Used to enter text, numbers, and commands into a computer.

• Includes mechanical, membrane, and virtual keyboards.

• QWERTY, AZERTY, and Dvorak layouts.

• Shortcut Keys:

• Ctrl + C: Copy

• Ctrl + V: Paste

• Ctrl + X: Cut

• Ctrl + Z: Undo

• Ctrl + S: Save

• Alt + Tab: Switch between open applications

• Ctrl + F: Find

Additional Information

• Monitor:

• It is an output device that displays information in visual form.

• Commonly known as a screen or display.

• Printer:

• It is an output device that produces a hard copy of digital documents.

• Converts digital data into printed material.

• Types include inkjet, laser, and dot matrix printers.

• Speaker:

• It is an output device that produces sound.

• Converts digital audio signals into audible sound.

Important Points

Input Devices	Output Devices
Mouse	Projector
Scanner	Headphones
Microphone	Display Panel
Webcam	Sound Bar
Joystick	LED Indicator
Barcode Reader	Plotter
Touchscreen	VR Headset

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