SSC CHSL Tier-1 2022: Official Paper (Held On: 15 March, 2023 Shift 2) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2022 • 100 questions • 60 minutes • Answer key and solutions

Take this paper as a timed mock test

Practise under exam conditions, then review your answers after you submit.

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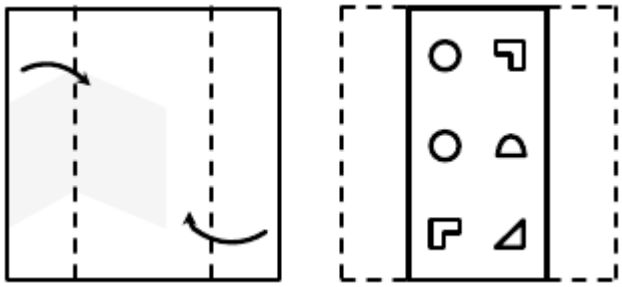
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ENGLISH LANGUAGE

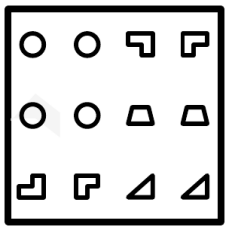
Q1. In the following question, four number pairs are given. In each pair the number on left side of (–) is related to the number of the right side of (–) with some Logic/Rule /Relation. Three pairs are similar on basis of same Logic/Rule/Relation. Select the odd one out from the given alternatives. (NOTE: Operations should be performed on the whole numbers, without breaking down the 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) 21 - 1020
(b) 17 - 1006
(c) 11 - 1010
(d) 23 - 1022

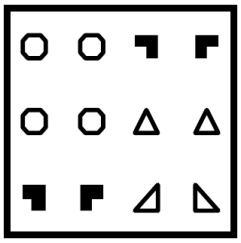
Q2. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



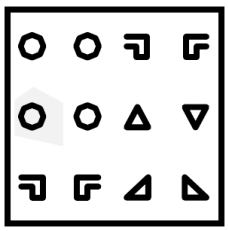
(a)



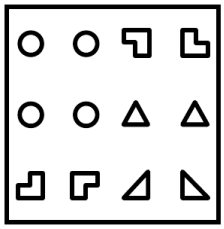
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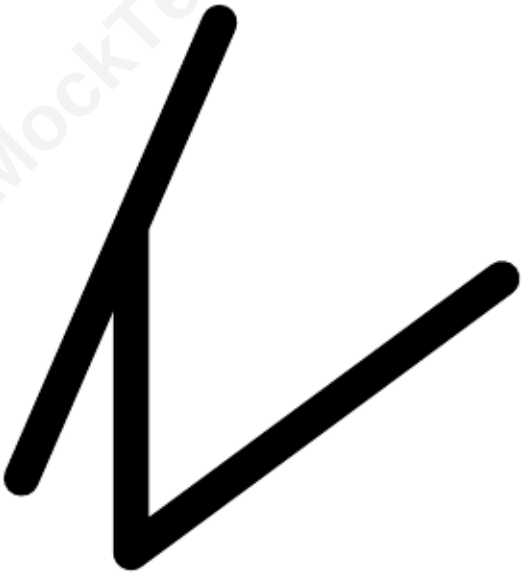
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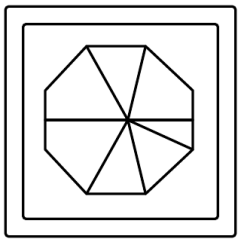
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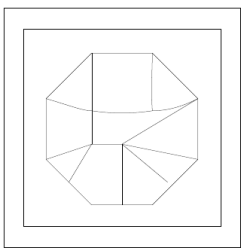
Q3. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



(a)

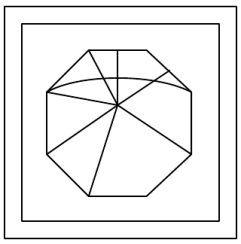


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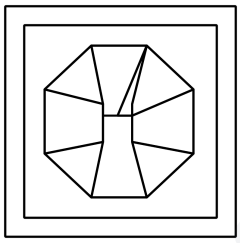


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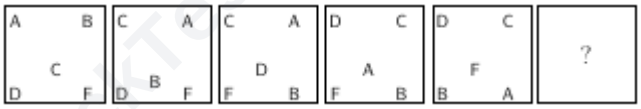
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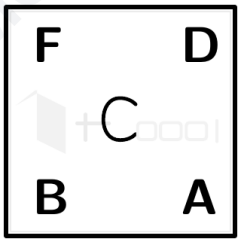
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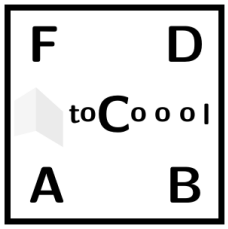
Q4. select the figure from the given options that can replace the question mark (?) in the following series.



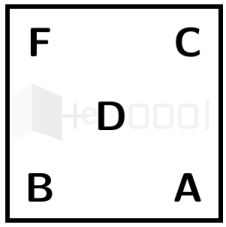
(a)



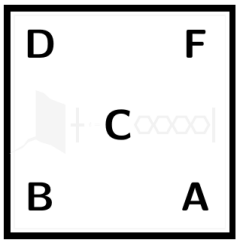
(b)



(c)

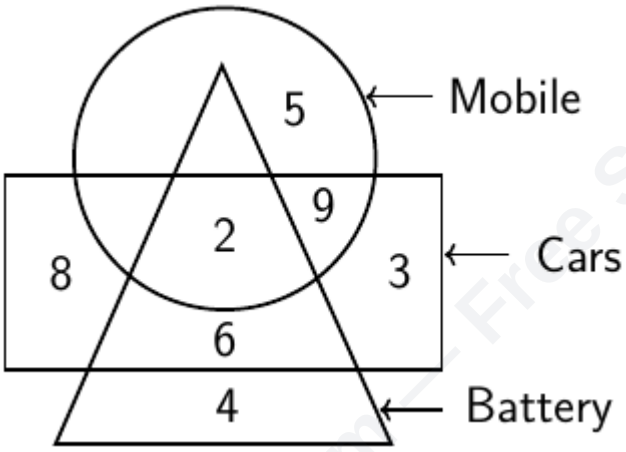


(d)



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Q5. How many mobiles are not battery?



(a) 7
(b) 5
(c) 9
(d) 14

Q6. Pointing towards a photo of a girl, Suman said, “She is the daughter of my brother’s father”. How that girl is related to Suman? (Assuming its not a photo of self).

(a) Daughter
(b) Niece
(c) Sister
(d) Sister in law

Q7. Words given on the left side of (::) are related with each other by some Logic/Rule /Relation. Select the missing word/word pair on the right side of (::) from the given alternatives based on the same Logic/Rule/Relation.

Cow : Four :: ?

(a) Crow : Two
(b) Four : Dog
(c) Tiger : Eight
(d) Parrot : Five

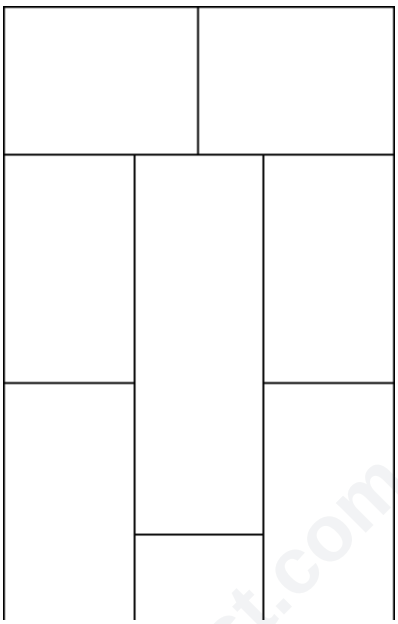
Q8. Select the word pair in which the words are related in the same way as the words are related in the following pair:

Hygrometer : Humidity :: ?

(a) Ammeter : Length
(b) Anemometer : Temperature
(c) Seismograph : Earthquake
(d) Odometer : Odour

Q9. How many quadrilaterals are there in the given figure?

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(a) 16
(b) 17
(c) 15
(d) 14

Q10. In the following question, select the missing number from the given series.

169, 196, 225, 256, ?

(a) 289
(b) 324
(c) 441
(d) 361

Q11. Select the option in which the numbers share the same relationship in set as that shared by the numbers in the given sets. (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)

(8, 6, 50)

(24, 4, 98)

(a) (2, 48, 100)
(b) (12, 8, 100)
(c) (32, 3, 144)
(d) (18, 6, 110)

Q12. In the following question some statements are given followed by some conclusions based on those statements. Taking the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion logically follows the given statements.

Statements:

I. Some C are D.

II. All D are E.

Conclusions:

I. All C are E.

II. All D are C.

III. All E are D.

(a) Only conclusion I follows
(b) None of the conclusion follows
(c) Only conclusion II follows

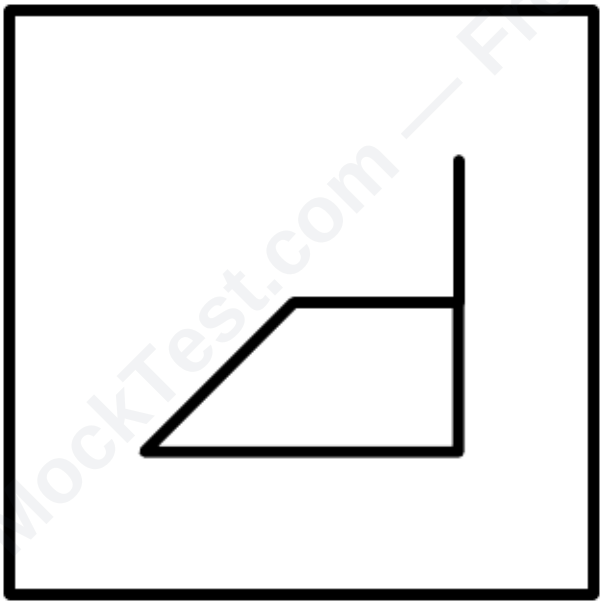
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(d) All conclusion follows

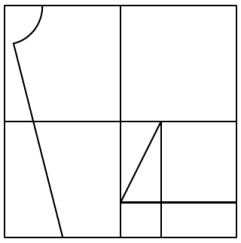
Q13. If 52 % 38 % 84 = 174 and 16 % 12 % 95 = 123, then 44 % 28 % 7 = ?

(a) 79
(b) 81
(c) 76
(d) 77

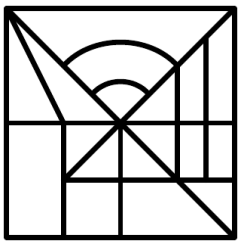
Q14. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



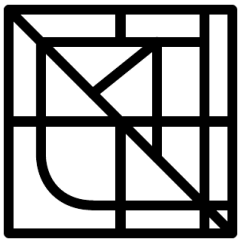
(a)



(b)

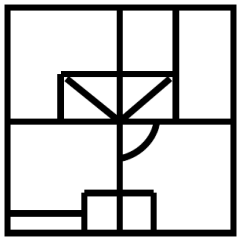


(c)



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(d)



Q15. By interchanging the given two signs which of the following equation will be correct?

• and ×

I. 5 × 12 – 15 + 20 ÷ 30 = 7

II. 51 ÷ 17 × 9 + 10 – 8 = 85

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

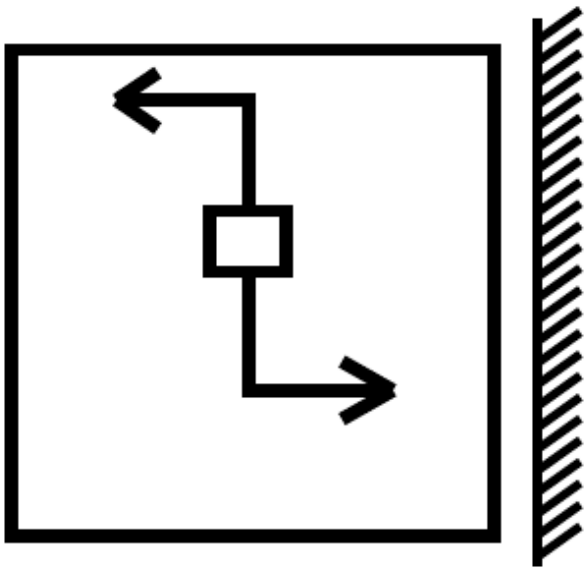
Q16. In the following question, select the odd letter/letters from the given alternatives.

(a) ZWSH
(b) FCYB
(c) PMIR
(d) GDAZ

Q17. In a certain code language, ‘HUMAN’ is coded as ‘JYSIX’. What is the code for ‘IMAGE’ in that code language?

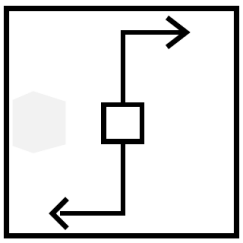
(a) KOGQO
(b) KQGOM
(c) KQGOA
(d) KQGOO

Q18. Select the correct mirror image of the given figure when the mirror is placed to its right side.

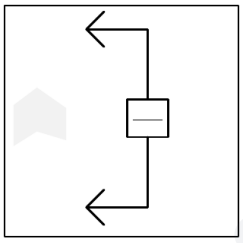


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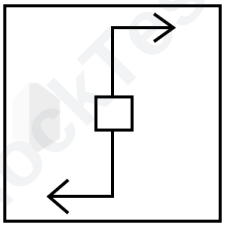
(a)



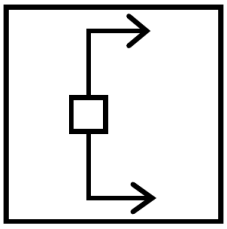
(b)



(c)



(d)



Q19. Select the option that is related to the first number in the same way as the third number is related to the fourth number and fifth number is related to sixth number.

12 : ? :: 15 : 1728 :: 11 : 512

(a) 216
(b) 81
(c) 729
(d) 6561

Q20. In a certain code language, ‘MOCK’ is coded as ‘9326’, ‘MINK’ is coded as ‘2538’, ‘LUNE’ is coded as ‘5041’, ‘LOUT’ is coded as ‘6714’. What can be the code for ‘ONM’ in that code language?

(a) 649
(b) 653
(c) 567
(d) 658

Q21. Three of the following words are alike in a certain way and one is different. Pick the word that is different from the rest.

(a) Sheep
(b) Crocodile
(c) Cow
(d) Goat

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Q22. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

RCMG, VWUW, ZQCM, DKKC, ?

(a) HFQS
(b) SMRQ
(c) HMRQ
(d) HESS

Q23. Select the correct option that indicates the arrangement of the given words in the order in which they appear in an English dictionary.

1. Advantage
2. Advice
3. Advise
4. Admirable
5. Adorable

(a) 4, 5, 3, 2, 1
(b) 4, 5, 1, 2, 3
(c) 4, 5, 1, 3, 2
(d) 4, 2, 3, 5, 1

Q24. In the following question, four number pairs are given. In each pair the number on left side of (–) is related to the number of the right side of (–) with some Logic/Rule /Relation. Three pairs are similar on basis of same Logic/Rule/Relation. Select the odd one out from the given alternatives. (NOTE: Operations should be performed on the whole numbers, without breaking down the 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) 38 - 1444
(b) 44 - 1936
(c) 42 - 1764
(d) 36 - 1266

Q25. In the following question, select the related letters from the given alternatives.

GT : HV :: HU : ?

(a) IW
(b) XW
(c) BX
(d) ZA

GENERAL INTELLIGENCE

Q26. Which among the following international boundaries is the longest?

(a) Indo-Bangladesh
(b) Indo-Myanmar
(c) Indo-China
(d) Indo-Pak

Q27. Who was the first woman of Indian origin to go to space?

(a) Nagin Cox
(b) Yogita Shah
(c) Kalpana Chawla
(d) Sirisha Bandla

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Q28. Under which article of the Indian constitution is the Prime Minister the head of the Council of Ministers?

(a) Article 52
(b) Article 377
(c) Article 60
(d) Article 74

Q29. The Indian parliament has power to impose restrictions on trade, commerce and intercourse through which article of the Indian constitution?

(a) 304
(b) 300A
(c) 303
(d) 302

Q30. Which of the following is an example of Phylum – Annelida?

(a) Hookworms
(b) Filaria worm
(c) Earthworm
(d) Roundworm

Q31. Which among the following enzymes helps in breaking down fats?

(a) Lipase
(b) Amylase
(c) Trypsin
(d) Ribonuclease

Q32. Cheetahs brought from Namibia were introduced in the Kuno National Park located in _____.

(a) Karnataka
(b) Madhya Pradesh
(c) Gujarat
(d) Rajasthan

Q33. Which among the following is an Indian martial art from Manipur?

(a) Muay Thai
(b) Kalaripayattu
(c) Thang-Ta
(d) Gatka

Q34. _____ will host the 37th edition of the National Games in October 2023.

(a) Goa
(b) West Bengal
(c) Kerala
(d) Maharashtra

Q35. Who is the governor of Reserve Bank of India as of 2022?

(a) Urjit R. Patel
(b) D. Subbarao
(c) Shaktikanta Das
(d) Raghuram Rajan

Q36. Nechiphu Tunnel, in Arunachal Pradesh, built by Border Road Organisation (BRO) and its excavation work completed in May 2022 falls under Project _____.

(a) Hirak
(b) Sampark
(c) Gaganyaan
(d) Vartak

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Q37. Ustad Bismillah Khan, an Indian musician credited with popularizing the shehnai, received which honour from Government of India in 2001?

(a) Bharat Ratna
(b) Padma Shr
(c) Padma Vibhushan
(d) Padma Bhushan

Q38. The commercial banks of India have to maintain a minimum percentage of cash, gold and other securities before lending loans to its customers. This is called the _____.

(a) Capital Adequacy Ratio
(b) Current Account and Savings Account Ratio
(c) Statutory Liquidity Ratio
(d) Cash Reserve Ratio

Q39. Which of the following pairs of "river–tributary" is correct?

I. Tapi – Manjira
II. Krishna – Ghatprabha

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

Q40. Which of the following is not a technique or a step to convert normal water to potable water?

(a) Filtration
(b) Bromination
(c) Boiling
(d) Chlorination

Q41. In a completely connected network, how many lines are required for connecting 6 nodes?

(a) 12
(b) 15
(c) 30
(d) 24

Q42. Which among the following is the largest of all the duns of the Shiwaliks mountain range in India?

(a) Patli Dun
(b) Jammudun
(c) Dehra Dun
(d) Kotli Dun

Q43. Rajaraja I, considered the most powerful Chola ruler, became king in _____.

(a) 999
(b) 979
(c) 971
(d) 985

Q44. The foundation of the Mauryan empire was laid by _____.

(a) Kalashoka
(b) Chandragupta Maurya
(c) Bindusara
(d) Ashoka

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Q45. Which of the following pair of "player – medals" is correct regarding the performance of India in the 2022 Commonwealth Games?

I. Bajrang Punia – Gold

II. Sakshi Malik – Gold

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

Q46. Sheela recalls using transistors as part of her computer.

Which generation of computers used it?

(a) Third
(b) First
(c) Fourth
(d) Second

Q47. Madhubani style of painting originated in the state of _____.

(a) Gujarat
(b) Karnataka
(c) Bihar
(d) Rajasthan

Q48. Which singer was one of the Navaratnas (Nine Jewels) in the court of Mughal Emperor Jalal ud-din Mohammad Akbar?

(a) Alla Rakha
(b) Ustad Ahmad Lahori
(c) Amir Khusrau
(d) Tansen

Q49. Swachh Toycathon Competition 2022 was launched in India by Ministry of _____.

(a) Finance
(b) Commerce and Industry
(c) Housing and Urban Affairs
(d) Culture

Q50. On which of the following dates does the summer solstice falls?

(a) 22 December
(b) 23 September
(c) 21 March
(d) 21 June

QUANTITATIVE APTITUDE

Q51. If $\sin\theta - \cos\theta = 0$, then what is the value of $\sin^2\theta + \tan^2\theta$?

(a) 1/2
(b) 1
(c) 4/5
(d) 3/2

Q52. What is the value of $(a - b)^3 - a^3 + b^3$?

(a) $3ab(a - b)$
(b) $-3ab(a + b)$
(c) $3ab(a + b)$
(d) $-3ab(a - b)$

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Q53. A, B, P and Q are points on the circumference of a circle with centre O. If angle AQB is 60°. then which of the following can be the value of angle APB?

(a) 160°
(b) 30°
(c) 90°
(d) 60°

Q54. If 7A425B is divisible by 36, then what is the value of A - B?

(a) 0
(b) 5
(c) 1
(d) 2

Q55. At a certain sum of money with the interest rate of 6% per annum for 4 years. the simple interest is Rs. 4500. Find the compound interest (compounding annually) of 2 years at the same sum when the rate of interest is 4% per annum,

(a) Rs. 1,530
(b) Rs. 1,430
(c) Rs. 1,830
(d) Rs. 1,560

Q56. The average age of 14 friends is 14 years. If the age of 15^(th) friend is added, then the average remains same. What is the age of the 15^(th) friend?

(a) 15 years
(b) 18 years
(c) 14 years
(d) 12 years

Q57. The breadth of a rectangular floor is 3/5 of its length. If the area of the floor is 60 metre², then what is the difference between the length and breadth of the floor?

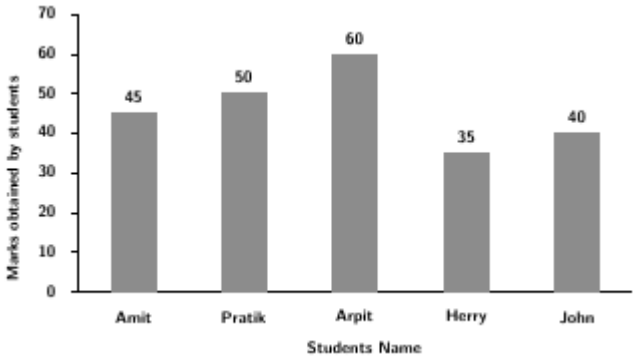
(a) 6 m
(b) 7.5 m
(c) 5 m
(d) 4 m

Q58. What is the total number of factors of the number 840 except 1 and the number itself?

(a) 29
(b) 30
(c) 28
(d) 31

Q59. The following bar graph shows the marks obtained by 5 students of a class.

What is the difference between the highest and the lowest marks?



(a) 25

(b) 60
(c) 35
(d) 15

Q60. Ram covers a distance in 8 hours and Mohan covers the same distance in 4 hours. If speed of Mohan is 10 km/hr more than Ram. then which of the following statements is/are correct?

I. Speed of Mohan is 20 km/hr.

II. Sum of their speed is 30 km/hr,

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

Q61. The marked price of a trouser is four time the cost price. To earn 64 percent profit, what should be the discount percentages?

(a) 55 percent
(b) 62 percent
(c) 65 percent
(d) 59 percent

Q62. When a number is successively decreased by 25 percent, 40 percent and 20 percent, then it becomes 32,904. What is that number?

(a) 95,600
(b) 92,800
(c) 91,400
(d) 80,500

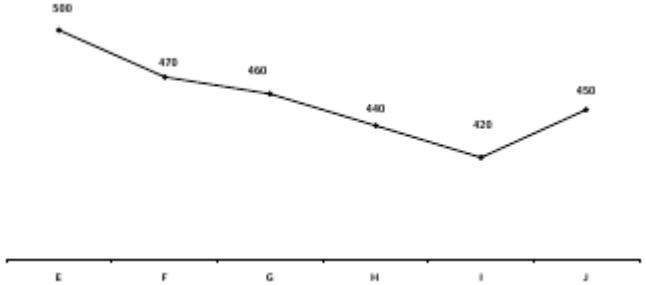
Q63. Both A and B sells their watch at the rate of Rs. 5,400 per watch. A earned a profit of 10 percent while B incurred a loss of 25 percent, What is the ratio of cost prices of A and B?

(a) 19 : 23
(b) 15 : 22
(c) 15 : 19
(d) 18 : 25

Q64. X, Y and Z invested Rs. 4,000, Rs. 6,000 and Rs. 8,000 respectively in a business. They invested the money for 3, 2 and 4 years respectively, If the total profit is Rs. 56,000, then what is the share of Y in the profit?

(a) Rs. 18,000
(b) Rs. 12,000
(c) Rs. 15,000
(d) Rs. 9,000

Q65. The line chart given below shows the production of refrigerators by 6 companies.



What is the difference between production of refrigerator by company E, F and G together and the production of refrigerator by company H, I and J together?

(a) 80
(b) 160
(c) 120

(d) 190

Q66. The following table shows quantity of stocks and their average cost.
What is the value of the total stock? (in lakh rupees)

	Quantity of stock	Average cost (Rs.)
Mobile Phones	25	15000
Cameras	80	16000
TVs	54	55000
Refrigerators	41	27000
ACs	64	24000

(a) 264
(b) 137
(c) 72.68
(d) 726.8

Q67. If sec 3A = cosec (A - 72°), then what is the value of A?
(a) 34.5 degree
(b) 30 degree
(c) 40.5 degree
(d) 25 degree

Q68. 15 taps can fill a tank in 36 minutes. How many taps will be required to fill the tank in one hour ?
(a) 12
(b) 9
(c) 8
(d) 6

Q69. Compute the expression $(299)^2$ using algebraic identities.
(a) 89301
(b) 89402
(c) 88401
(d) 89401

Q70. If in a right angled ΔPQR, tan Q = 5/12. then what is the value of cos Q?
(a) 12/5
(b) 13/5
(c) 12/13
(d) 5/13

Q71. In a triangle MNO, XA, XB and XC are perpendicular bisectors on sides MN, ON and OM respectively intersect each other at X. If angle NMO = 55 degree, then what is the value of angle NXO?
(a) 130 degree
(b) 110 degree
(c) 95 degree
(d) 125 degree

Q72. What is the value of (k-1/k)(k²+1/(k²))(k^4+1/(k^4))(k^8+1/(k^8))(k^(16)+1/(k^(16))) ?
(a) k^(64)-1/(k^(64))
(b) $(k^{32}-1/(k^{32}))/(k-1/k)$
(c) $k^{32}-1/(k^{32})$
(d) $(k^{32}-1/(k^{32}))/(k+1/k)$

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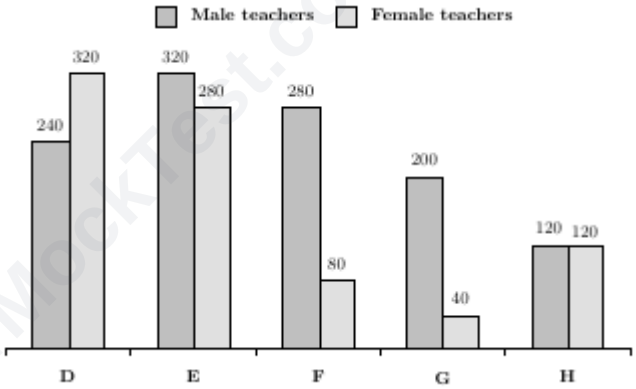
Q73. Circumference of a circle is 58π cm. There is a chord XY of length 42 cm in this circle. What is the distance of this chord XY from the centre?

(a) 32 cm
(b) 20 cm
(c) 28 cm
(d) 24 cm

Q74. The length of a chord is 40 cm. If the angle subtended by this chord at the circumference of the circle is 90 degrees. then what will be the radius of this circle?

(a) 15 cm
(b) 25 cm
(c) 80 cm
(d) 20 cm

Q75. The bar graph given below shows the number of male teachers and female teachers in 5 schools.



L1 = The difference between the total number of male and female teachers in all 5 schools,

L2 = Total number of male and female teachers in school H.

What is the value of (L1/L2)?

(a) 2.66
(b) 1.33
(c) 0.55
(d) 4.66

GENERAL AWARENESS

Q76. Rearrange the parts of the sentence in correct order.

The Supreme Court

P. must remind the state to act constitutionally,

Q. lawfully and justly in every case across the

R. country, especially in sensitive matters involving

S. those who oppose the party in office with peaceful means

(a) PQRS
(b) PQSR
(c) QPSR
(d) QRSP

Q77. Choose the word that can substitute the given group of words.

Give off gas bubbles

(a) Buoyant
(b) Effervescent
(c) Flat

(d) Effuse

Q78. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

In black and white

(a) In writing
(b) In trouble
(c) In suspense
(d) In brief

Q79. Choose the word that can substitute the given group of words.

One who feeds on plants only

(a) Vermivorous
(b) Carnivorous
(c) Omnivorous
(d) Herbivorous

Q80. Choose the word that means the same as the given word.

Dandy

(a) Cartel
(b) Disappointment
(c) Dud
(d) Beautiful

Q81. Choose the word that is opposite in meaning to the given word.

Young

(a) Limited
(b) Silly
(c) Mature
(d) Gravity

Q82. Parts of the following sentence are given as options. Identify the part that contains a grammatical error. If there is no error, select 'No error'.

The objective was to / dispose off a cargo of cotton which/ I had brought from Mumbai port.

(a) The objective was to
(b) I had brought from Mumbai port.
(c) dispose off a cargo of cotton which
(d) No error

Q83. Find the part of the given sentence that has an error in it. If there is no error, choose ‘No error’.

This whole plot come under my uncle’s jurisdiction.

(a) No error
(b) uncle’s jurisdiction.
(c) come under my
(d) This whole plot

Q84. The given sentence is in active voice. Change the voice of the sentence. Select the correct option from the sentences given in options.

I know he will play his guitar.

(a) His guitar will be played by him is something I know.
(b) It is known to me that his guitar would be played by him.
(c) It is known to me that his guitar will be played by him.
(d) His guitar will be played by him is know to me.

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Q85. Fill in the blank with an appropriate option.

Until you confess your crime, the abdomen would _____ to grow and grow until you could not breathe.

(a) expire
(b) desist
(c) continue
(d) reckon

Q86. Choose the incorrectly spelt word.

(a) Block
(b) Grudje
(c) Flown
(d) Adhere

Q87. Select the most appropriate meaning of the given idiom.

Bite the dust

(a) To suffer defeat
(b) To grieve over
(c) To hate
(d) To eat stale food

Q88. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. In case no improvement is needed, select 'No improvement'.

(Neither of the two have cleared the) aptitude test.

(a) Neither of two have cleared the
(b) Neither of the two boys have cleared
(c) No improvement
(d) Neither of the two has cleared the

Q89. Select the most appropriate 'one word' for the expression given below.

One who is against religion.

(a) Poacher
(b) Lunatic
(c) Bandit
(d) Heretic

Q90. Choose the word that means the same as the given word.

Habitat

(a) Motion
(b) Clothed
(c) Bent
(d) Niche

Q91. Select the word that is closest in meaning (SYNONYM) to the word given below.

CAJOLE

(a) DISSUADE
(b) PERSUADE
(c) BULLY
(d) DISENCHANT

Q92. Select the most appropriate 'one word' for the expression given below.

Exclusive command or possession

(a) Sanctum
(b) Monopoly
(c) Hypergamy

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(d) Parvenu

Q93. Choose the sentence with no spelling error.

(a) Peel and pit avocados and cut into slice
(b) Peel and pit avacados and cut into slice.
(c) Peal and pitt avocados and cut into slise.
(d) Peale and pit avocados and cut into slise.

Q94. Rearrange the parts of the sentence in correct order.

P. actually move so slowly that algae grows on their fur and
Q. the forest from predators like nocturnal cats and harpy eagles
R. this can give sloths a green colour that helps them hide in
S. sloths live in tropical forests in South and Central America, and they

(a) PSQR
(b) RQPS
(c) SPRQ
(d) SRQP

Q95. Select the correct indirect form of the given sentence.

The coach said to the student, “When will you come for practice?"

(a) The coach asked the student when he will come for practice
(b) The coach asked the student when he would came for practice.
(c) The coach asked the student when he would come for practice.
(d) The coach asked the student when would he come for practice.

Directions

Direction: In the following passage some of the words have been deleted. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

A recent study that (1) ____ people’s brains at different points in their work day (2) __ high-demand tasks which require intense, constant concentration can lead to build-up of a (3) __ toxic chemical called glutamate. Normally used to (4) __ signals from nerve cells, in large quantities glutamate alters the (5) ____ of a brain region involved in planning and decision making, the lateral prefrontal cortex (lPFC).

Q96. Select the most appropriate option to fill in blank number 1.

(a) buzzed
(b) illuminated
(c) scanned
(d) answered

Q97. Select the most appropriate option to fill in blank number 2.

(a) founded
(b) found
(c) find
(d) had founded

Q98. Select the most appropriate option to fill in blank number 3.

(a) potentially
(b) utterly
(c) perpetually
(d) grandly

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Q99. Select the most appropriate option to fill in blank number 4.

(a) swipe
(b) donate
(c) send
(d) travel

Q100. Select the most appropriate option to fill in blank number 5.

(a) performance
(b) synergy
(c) radiation
(d) ensemble

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) 17 - 1006

The logic followed here is:
Logic: 1st number + 999 = 2nd number.
Now,
Option 1) 21 - 1020
→ 21 + 999 = 1020.
Option 2) 17 - 1006
→ 17 + 999 = 1016 ≠ 1006.
Option 3) 11 - 1010
→ 11 + 999 = 1010.
Option 4) 23 - 1022
→ 23 + 999 = 1022.
Here, we can see that only 'Option 2' doesn't follow the logic.
Hence, the correct answer is "17 - 1006".

Q2. Answer: (b) [figure]

When the paper is unfolded, the image we get is shown below:
Hence, the correct answer is " Option 2 ".

Q3. Answer: (d) [figure]

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

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Q4. Answer: (a) [figure]

The logic followed here is:

Step I: Letter A has shifted his place and keeping constant his place in four boxes.

Step II: Letter B has shifted his place and keeping constant his place in four boxes.

Step III: Letter C has shifted his place and keeping constant his place in four boxes.

Step IV: Letter D has shifted his place and keeping constant his place in four boxes.

Step V: Letter F has shifted his place and keeping constant his place in four boxes.

So, the complete series is:

Hence, the correct answer is "Option 1".

Q5. Answer: (d) 14

According to the given Venn diagram:

The shaded area shows the "total number of mobiles are not battery".

So, the total number of mobiles are not battery = 5 + 9 = 14.

Hence, the correct answer is "14".

Q6. Answer: (c) Sister

Family Chart:

Given: Pointing towards a photo of a girl, Suman said, “She is the daughter of my brother’s father”.

Note: (Assuming its not a photo of self).

So, the Girl is the Sister of the Suman.

Hence, the correct answer is "Option 3".

Q7. Answer: (a) Crow : Two

The logic followed here is:

Logic: The relationship in the question is "Cow: Four", which is likely referring to the number of legs a cow has.

Let's check each option as per the logic,

1) Crow : Two

→ Crow has two legs.

2) Four : Dog

→ Here, the order is incorrect.

3) Tiger : Eight

→ Tiger has four legs.

4) Parrot : Five

→ Parrot has two legs.

Here, we can see that only Option 1 follow the logic.

Hence, the correct answer is "Crow : Two".

Q8. Answer: (c) Seismograph : Earthquake

The logic followed here is:

Logic: The first word is an instrument which is used to measure the second word.

Hygrometer: Humidity

→ Hygrometer is an instrument used to measure Humidity.

Let's check each option as per the logic,

Option	Instrument	Used to measure.
1	Ammeter	Electric current
2	Anemometer	Speed or Velocity of wind
3	Seismograph	Earthquake
4	Odometer	Distance traveled by a vehicle

Here, we can see that only Option 3 follow the logic.

Hence, the correct answer is "Seismograph: Earthquake".

Q9. Answer: (a) 16

The quadrilaterals are:

So, there is '16' quadrilaterals in the given figure.

Hence, the correct answer is "16".

Q10. Answer: (a) 289

The logic followed here is:

So, '289' will complete the series.

Hence, the correct answer is "289".

Q11. Answer: (d) (18, 6, 110)

The logic followed here is:

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

Now,

For (8, 6, 50)

→ (8 × 6) + 2

→ 48 + 2 = 50.

For (24, 4, 98)

→ (24 × 4) + 2

→ 96 + 2 = 98.

Similarly, for (18, 6, 110)

→ (18 × 6) + 2

→ 108 + 2 = 110.

Hence, the correct answer is "Option 4".

Q12. Answer: (b) None of the conclusion follows

Given Statements:

I. Some C are D.

II. All D are E.

The least possible Venn diagram for the given statement is:

Conclusions:

I. All C are E - False (Because, there is only some relation given between C and E, so All C are E can be possible but not definite).

II. All D are C - False (Because, some C are D, so All D are C can be possible but not definite).

III. All E are D - False (Because, All D are E given, so All E are D can be possible but not definite).

So, None of the conclusion follows.

Hence, the correct answer is "Option 2".

Q13. Answer: (a) 79

The logic followed here is:

Logic: Consider % as '+'.

Now,

For, 52 % 38 % 84 = 174

=> 52 + 38 + 84 = 174.

For, 16 % 12 % 95 = 123

=> 16 + 12 + 95 = 123.

Similarly, for 44 % 28 % 7 = ?

=> 44 + 28 + 7 = 79.

Hence, the correct answer is "79".

Q14. Answer: (b) [figure]

The image embedded in given figure is as shown below:

Hence, "Option 2" is the correct answer.

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Q15. Answer: (a) Both I and II

BODMAS Table:

Given equation I: 5 × 12 – 15 + 20 ÷ 30 = 7

Now, if '+ and ×' are interchanged, then:

=> 5 + 12 – 15 × 20 ÷ 30 = 7

=> 5 + 12 – 10 = 7

=> 17 - 10 = 7

= 7 = 7.

LHS = RHS.

Given equation II: 51 ÷ 17 × 9 + 10 – 8 = 85

Now, if '+ and ×' are interchanged, then:

=> 51 ÷ 17 + 9 × 10 – 8 = 85

=> 3 + 9 × 10 – 8 = 85

=> 3 + 90 – 8 = 85

=> 93 - 8 = 85

= 85 = 85

LHS = RHS.

Here, 'Both I and II' are the correct after interchanging the given symbol.

Hence, the correct answer is "Option 1".

Q16. Answer: (d) GDAZ

The logic followed here is:

Option 1) ZWSH

Option 2) FCYB

Option 3) PMIR

Option 4) GDAZ

Here, 'GDAZ' is odd among the given options.

Hence, the correct answer is "Option 4".

Q17. Answer: (d) KQGOO

The logic followed here is:

‘HUMAN’ is coded as ‘JYSIX’,

Similarly, for 'IMAGE'

So, 'IMAGE' is coded as 'KQGOO'.

Hence, the correct answer is "Option 2".

Q18. Answer: (c) [figure]

The correct mirror image of the given figure when the mirror is placed at right side:

Hence, "Option 3" is the correct answer.

Q19. Answer: (c) 729

The logic followed here is:

Logic: $(1st\ number - 3)^3 = 2nd\ number$.

Now,

For, 15 : 1728

=> $(15 - 3)^3$

=> $12^3 = 1728$.

For, 11 : 512

=> (11 - 3)3

=> 83 = 512.

Similarly, for 12 : ?

=> (12 - 3)3

=> 93 = 729.

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Hence, the correct answer is "Option 3".

Q20. Answer: (b) 653

The logic followed here is:
'MOCK' is coded as '9326',
'MINK' is coded as '2538',
'LUNE' is coded as '5041',
'LOUT' is coded as '6714',
Here,
Code for 'O' is '6'.
Code for 'N' is '5'.
Code for 'M' and 'K' is either '2' or '3'.
So, Code for 'ONM' is '653 or 652'
Here, According to the option '653' will be the code for 'ONM'.
Hence, the correct answer is "653".

Q21. Answer: (b) Crocodile

The logic followed here is:
Option 1) Sheep → Sheep is a type of animal.
Option 2) Crocodile → Crocodile is not type of animal, it belongs to reptile category.
Option 3) Cow → Cow is a type of animal.
Option 4) Goat → Goat is a type of animal.
Therefore, the word that is different from the rest is "Crocodile".
Hence, the correct answer is "Option 2".

Q22. Answer: (d) HESS

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

Q23. Answer: (b) 4, 5, 1, 2, 3

The correct dictionary order for the give words are:
4. Admirable
5. Adorable
1. Advantage
2. Advice
3. Advise
So, the correct sequence is '4, 5, 1, 2, 3'.
Hence, the correct answer is "Option 2".

Q24. Answer: (d) 36 - 1266

The logic followed here is:
Logic: (1st number)2 = 2nd number.
Now, checking the options:
Option 1) 38 - 1444 → (38)2 = 1444.
Option 2) 44 - 1936 → (44)2 = 1936.
Option 3) 42 - 1764 → (42)2 = 1764.
Option 4) 36 - 1266 → (36)2 = 1296 ≠ 1266.
So, '36 - 1266' is odd among the given options.
Hence, the correct answer is "Option 4".

Q25. Answer: (a) IW

The logic followed here is:
GT : HV
Similarly, for HU : ?

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So, 'HU : IW' would be the related letters.

Hence, the correct answer is "Option 1".

Q26. Answer: (a) Indo-Bangladesh

The correct answer is Option 1.

Key Points

• The international border between India and Bangladesh is currently considered the longest land border between two countries. It spans approximately 4,096 kilometers (2,545 miles) in length.

• The border between India and Bangladesh is a complex and diverse boundary that runs across various states and regions, and it is an important aspect of the bilateral relations between the two countries.

Additional Information

• The international border between India and Myanmar (formerly known as Burma) is approximately 1,643 kilometers (1,020 miles) in length.

• It stretches from the tri-junction of India, Myanmar, and Bangladesh in the east to the tri-junction of India, Myanmar, and China in the north.

• The border runs through the northeastern states of India, including Arunachal Pradesh, Nagaland, Manipur, and Mizoram.

• It is an important border for trade, cultural exchanges, and regional cooperation between India and Myanmar.

• The international border between India and China, often referred to as the Line of Actual Control (LAC), stretches approximately 3,488 kilometers (2,167 miles) in length.

• It spans from the easternmost point of the Indian state of Jammu and Kashmir in the west to the tri-junction of India, China, and Myanmar in the east.

• The border passes through various regions, including Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.

• The Indo-China border is a disputed boundary, and both countries have experienced tensions and conflicts along certain sectors of the border over the years.

• The international border between India and Pakistan, known as the Line of Control (LoC), spans approximately 2,300 kilometers (1,430 miles).

• It runs from the northernmost point of India in the state of Jammu and Kashmir, extends westward across the states of Punjab and Rajasthan, and ends at the Arabian Sea in the state of Gujarat.

• The Indo-Pak border is a heavily guarded and sensitive boundary due to the historical and ongoing conflicts between the two countries.

• It is monitored and patrolled by security forces from both India and Pakistan.

Q27. Answer: (c) Kalpana Chawla

The correct answer is Option 3.

Key Points

• The first woman of Indian origin to go to space is Kalpana Chawla.

• She was born on March 17, 1962, in Karnal, Haryana, India.

• Kalpana Chawla was an astronaut and the first woman of Indian descent to travel to space.

• She achieved this milestone as a mission specialist on the Space Shuttle Columbia during the STS-87 mission in 1997.

• Tragically, she lost her life along with six other crew members when the Space Shuttle Columbia disintegrated during re-entry on February 1, 2003.

• Kalpana Chawla's contribution and dedication to space exploration continue to inspire people around the world.

Q28. Answer: (d) Article 74

The correct answer is Option 4.

Key Points

• Article 74(1) states that "There shall be a Council of Ministers with the Prime Minister at the head to aid and advise the President who shall, in the exercise of his functions, act in accordance with such advice."

• Therefore, Article 74 establishes the Council of Ministers with the Prime Minister as its head.

• The Prime Minister provides advice to the President, who acts in accordance with that advice while performing their functions.

Additional Information

• Article 52 of the Indian Constitution pertains to the position of the President of India.

• "There shall be a President of India who shall be the Head of State and exercise powers, duties, and functions in accordance with the Constitution and shall be vested with all powers relating to the executive, including the powers enumerated in the Constitution."

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• Article 52 establishes the President as the Head of State in India.

• It outlines that the President holds powers, duties, and functions as per the Constitution and is vested with executive powers, including those specifically mentioned in the Constitution.

• The President is the highest constitutional authority in the country.

• Section 377 refers to a previously existing provision in the Indian Penal Code (IPC), which criminalized certain sexual activities deemed "unnatural offenses.

Q29. Answer: (d) 302

The correct answer is Option 4.

Key Points

• The power to impose restrictions on trade, commerce, and intercourse within India is granted to the Indian Parliament under Article 301 of the Indian Constitution.

• Article 301 states that "Subject to the other provisions of this Part, trade, commerce and intercourse throughout the territory of India shall be free."

• However, Article 302 allows the Parliament to impose reasonable restrictions on the freedom of trade, commerce, and intercourse in the interest of public order, morality, or health, or to protect the rights of indigenous tribal communities.

• Therefore, while there is a guarantee of free trade and commerce, the Indian Parliament has the authority to impose restrictions under certain circumstances outlined in the Constitution.

Q30. Answer: (c) Earthworm

The correct answer is Option 3.

Key Points

• An example of the phylum Annelida is the earthworm.

• Earthworms belong to the class Clitellata within the phylum Annelida.

• They are segmented worms characterized by their long, cylindrical bodies divided into numerous repeated segments.

• Earthworms are commonly found in soil and play a vital role in the ecosystem by enhancing soil fertility through their burrowing and decomposition activities.

Additional Information

• Hookworms are parasitic worms that infect the small intestine of humans and other animals.

• There are two main species of hookworm that commonly infect humans: Ancylostoma duodenale and Necator americanus.

• These worms are named for their hook-like mouthparts, which they use to attach to the intestinal lining and feed on blood.

• Hookworm infection occurs when a person comes into contact with contaminated soil or feces that contain hookworm larvae.

• The larvae can penetrate the skin, usually through bare feet, and migrate through the bloodstream to reach the lungs.

• From there, they are coughed up and swallowed, eventually reaching the small intestine where they mature into adult worms. Adult hookworms then attach to the intestinal wall and start feeding on blood, which can lead to iron deficiency anemia.

• Filaria worms, also known as filarial nematodes, are a group of parasitic worms that belong to the family Filariidae.

• These worms are responsible for causing a group of diseases known as filariasis or lymphatic filariasis.

• Filariasis is a tropical and subtropical disease that affects millions of people worldwide, particularly in regions such as Africa, Southeast Asia, and the Pacific Islands.

• Roundworms, also known as nematodes, are a diverse group of worms that belong to the phylum Nematoda.

• They are among the most common animals on Earth and can be found in a wide range of environments, including soil, freshwater, and marine habitats.

• Some roundworms are free-living, while others are parasitic and can infect plants, animals, and humans.

Q31. Answer: (a) Lipase

The correct answer is Lipase.

Key Points

• Lipase

• Lipases are enzymes that help in breaking down fats in the body.

• They are primarily produced by the pancreas and are secreted into the small intestine.

• The main function of lipases is to hydrolyze, or split, fats into their individual components: glycerol and fatty acids.

• When you consume food, the fats remain undigested until they reach the small intestine.

• In the small intestine, lipases break down the complex fat molecules into simpler forms.

• These simpler forms can be absorbed into the bloodstream.

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Additional Information

• Amylase

• Amylase is a type of enzyme that helps digest carbohydrates.

• It is produced mainly in the pancreas and the salivary glands.

• The role of amylase starts in the mouth.

• This process continues in the small intestine, where pancreatic amylase further breaks down carbohydrates into simple sugars, like glucose.

• These can then be absorbed by the intestine and used by the body for energy.

• Trypsin

• Trypsin is a type of protease enzyme, which means it's responsible for breaking down proteins.

• It is produced in the pancreas in an inactive form called trypsinogen.

• When food reaches the small intestine, trypsinogen is activated and converted into trypsin.

• The main role of trypsin is to hydrolyze or break down proteins into smaller units called peptides or amino acids, which can be readily absorbed by the intestinal lining.

• Specifically, trypsin cleaves peptide chains mainly at the carboxyl side of the amino acids lysine and arginine.

• By breaking proteins down into smaller, absorbable units, trypsin is instrumental in the overall protein digestion process.

• Ribonuclease

• Ribonuclease, often abbreviated as RNase, is a type of enzyme that's integral to the process of RNA metabolism in cells.

• The primary role of ribonucleases is to cleave RNA molecules.

• They can break down RNA into smaller components, a process essential in biological functions like protein synthesis and RNA splicing.

• There are many types of ribonucleases, each with its specific function and target.

• For example, RNase A, RNase H, and RNase P are some common types, and they each act on different RNA molecules or bonds within those molecules.

Q32. Answer: (b) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• Prime Minister Narendra Modi will release Cheetahs in Kuno National Park in Madhya Pradesh on September 17, under Project Cheetah.

• Project Cheetah is the world’s first inter-continental large wild carnivore translocation project.

• Cheetahs that will be introduced are from Namibia and have been brought under an MoU signed earlier this year.

• They will help in the restoration of open forest and grassland ecosystems in India.

• Eight cheetahs, five females and three males will be brought to Gwalior from Namibia in a special Boeing 747-400 aircraft, covering over 8,000km distance in over 20 hours.

• A team from Namibia’s Cheetah Conservation Foundation (CCF) will also be with the animals.

• This will help conserve biodiversity and enhance the ecosystem services like water security, carbon sequestration, and soil moisture conservation.

• The Cheetah Reintroduction Project is supported by Indian Oil and steered by National Tiger Conservation Authority (NTCA), and will formally take off on September 17.

• Indian Oil will support NTCA with Rs. 50.22 crores, as part of its CSR, to take this project forward.

• Indian Oil’s financial support would be directed towards Cheetah introduction endeavors, Habitat management, protection, eco-development, staff training, and veterinary healthcare.

Additional Information

• In India, the cheetah was officially declared extinct in 1952.

• Under the Species Recovery Programme of the Indian government, species that become extinct are restored in their historic natural habitat.

• Some such landmark projects include the Restoration of tigers in the Panna Tiger Reserve and the reintroduction of gaur (Indian Bison) in Bandhavgarh.

Q33. Answer: (c) Thang-Ta

The correct answer is Thang-Ta.

Key Points

• Thang-ta

• Thang-ta is a martial art form mainly practised in the state of Manipur.

• Here Thang refers to a ‘Sword’ and Ta refers to ‘Spear’.

• In this martial art form when unarmed combat is involved or no weapon is used while performing it, then it is known as Sarit Sarak.

• It is also known as HUYEN LALLONG and CHEBI GATKA.

Additional Information

• Muay Tha

• Muay Thai, also known as Thai boxing, is a combat sport of Thailand that uses stand-up striking along with various clinching techniques.

• This discipline is known as the "Art of eight limbs", as it is characterised by the combined use of fists, elbows, knees, and shins.

• Kalaripayattu

• Kalaripayattu is a martial art.

• It originated in Kerala from the 3rd century BC to the 2nd century AD.

• The place where this martial art is practised is called a 'Kalari'.

• It is considered to be among the oldest martial arts still in existence.

• Gatka

• Gatka is a form of martial arts performed by the Sikhs of Punjab.

• It is a style of fighting which uses wooden sticks.

• It originated in the 15th century but has undergone a revival in the 20th century and is now usually performed as a sword-dance at various Sikh festivals.

Q34. Answer: (a) Goa

The correct answer is Goa.

Key Points

• Goa will host the 37th edition of the National Games in October 2023.

• The Indian Olympic Association (IOA) confirmed the decision on October 8, 2022.

• The games will be held in various locations across Goa, including Panaji, Margao, and Vasco da Gama.

• The National Games are a quadrennial sporting event that is held in India.

• The 37th edition of the National Games will be the first time that Goa will host the event.

Additional Information

Goa is a state in western India.

It is located on the coast of the Arabian Sea and is bordered by Maharashtra to the north, Karnataka to the east.

Q35. Answer: (c) Shaktikanta Das

The correct answer is Shaktikanta Das.

Key Points

• The current Governor is Shaktikanta Das

• Raghuram Rajan was the 23rd Governor of the Reserve Bank of India

• The organizational structure of RBI is via the Central Board of Directors (CBD). The Transfer of Public Ownership Act provides for the constitution of CBD and Local Board by the Central Government. The CBD can have a maximum of 20 members. Besides these members, RBI has one Governor, and four Deputy Governors appointed by the Central Government. Their tenure in office is 5 years for Governor and 4 years for Deputy governor. Also in the organizational structure are Executive Directors.

• Presently Shri Shaktikanta Das is the 25th Governor of the Reserve Bank of India since December 2018, who took over the charge from Dr. Urjit Patel. To start with the first person appointed as the Governor of RBI was Sir Osborne Smith.

• The RBI Act provides that CBD conducts one meeting every quarter and at least 6 meetings in a year.

• Important details about the Governors of RBI:

• Shaktikanta Das: He is the current Governor of RBI. He took office on 12th December 2018. He is the 25th governor of RBI.

• Raghuram Rajan: He was the former governor of RBI from 4 September 2013 to 4 September 2016.

• Y.V Reddy: He was the former governor of RBI from 6 September 2003 to 5 September 2008.

• Urjit Patel: He was the former governor of RBI from 4 September 2016 to 11 December 2018.

Q36. Answer: (d) Vartak

The correct answer is Vartak.

Key Points

• Project Vartak is a project of the Border Roads Organisation (BRO) under the Ministry of Defence of India.

• It was formed on 7 May 1960 as a provision of the 2nd Border Roads Development Board Meeting with the then Prime Minister of India Jawahar Lal Nehru as Project Tusker, which was later renamed to Project Vartak in 1963.

• The initial task of this project was to construct and maintain roads between Bhalukpong and Tenga.

• It is the first established project of the Border Roads Organisation.

• Its task was later expanded to construct and maintain roads in Arunachal Pradesh and adjoining districts of Assam.

• Project Vartak has been involved in the construction of several strategic tunnels in Arunachal Pradesh.

• These tunnels are being built to improve connectivity and reduce the travel time between important military and civilian locations in the state.

• Some of the key achievements of Project Vartak include:

• Construction of the Sela Tunnel, the longest bi-lane tunnel in the world at an altitude above 13,000 feet.

• Construction of the Nechiphu Tunnel, which is a 500-meter-long tunnel that is being built at an altitude of 10,000 feet.

• Construction of several other strategic tunnels in Arunachal Pradesh.

• Improvement of connectivity and security in Arunachal Pradesh.

• Boosting of socio-economic development of Arunachal Pradesh.

• Project Vartak is a vital project that is playing a significant role in improving connectivity and security in Arunachal Pradesh.

• The construction of these tunnels is a significant achievement and will go a long way in the socio-economic development of the state.

Additional Information

Gaganyaan

• The Union Cabinet approved the Gaganyaan project under which a three-member crew will be sent to space for at least seven days.

• The total cost of the Gaganyaan Programme is Rs. 9023.00 crores.

• The Gaganyaan Programme envisages undertaking the demonstration of human spaceflight to Low Earth Orbit (LEO) in the short term and will lay the foundation for a sustained Indian human space exploration programme in the long run.

• The objective of the Gaganyaan programme is to demonstrate the indigenous capability to undertake human space flight missions to LEO.

• As part of this programme, two unmanned missions and one manned mission are approved by the Government of India (GoI).

• Gaganyaan is the Indian crewed orbital spacecraft by ISRO.

• The preliminary studies and technological development for the mission started in 2006.

• The mission is set to launch three Indian astronauts as soon as 2023, which was earlier scheduled in 2021 but got delayed due to the pandemic.

• The major new technologies required for the Gaganyaan program are as follows:

• Human-rated launch vehicle

• Crew escape systems

• Habitable orbital module

• Life support system

• Crew selection and training and associated crew management activities

Q37. Answer: (a) Bharat Ratna

The correct answer is Bharat Ratna.

Key Points

• Bismillah Khan became the first Indian to be invited to perform at the prestigious Lincoln Centre Hall in the United States of America.

• He also took part in the World Exposition in Montreal, the Cannes Art Festival, and in the Osaka Trade Fair.

• So well known did he become internationally that an auditorium in Teheran was named after him — Tahar Mosiquee Ustaad Bismillah Khan.

• National awards like the Padma Shri, the Padma Bhushan, and the Padma Vibhushan were conferred on him.

• In 2001, Ustad Bismillah Khan was awarded India’s highest civilian award, the Bharat Ratna.

Additional Information

Padma Awards

• The Padma Awards are one of the highest civilian honours of India announced annually on the eve of Republic Day.

• The Awards are given in three categories:

• Padma Vibhushan (for exceptional and distinguished service)

• Padma Bhushan (distinguished service of higher order)

• Padma Shri (distinguished service).

• The award seeks to recognize achievements in all fields of activities or disciplines where an element of public service is involved.

• The Padma Awards are conferred on the recommendations made by the Padma Awards Committee, which is constituted by the Prime Minister every year.

• The nomination process is open to the public. Even self-nomination can be made.

Q38. Answer: (c) Statutory Liquidity Ratio

The correct answer is Statutory Liquidity Ratio.

Key Points

Statutory liquidity ratio(SLR) is a government term where commercial banks are mandated to have a specific proportion of deposits in the form of liquid assets by the Reserve Bank of India(RBI).

• It is determined by the RBI.

• It is used to control inflation and fuel growth, by decreasing or increasing the money supply.

• Liquid Assets, Net Demand and Time Liabilities (NDTL) and SLR Limit are the three components of SLR under Section 24 and Section 56 of the Banking Regulation Act 1949.

• Liquid Assets: Here assets like gold, security bonds can be easily converted to cash.

• Net Demand and Time Liabilities (NDTL): It refers to the total demand and time liabilities (deposits) of the public that are held by the banks with other banks.

• Demand deposits consist of all liabilities, which the bank needs to pay on demand. They include current deposits, demand drafts etc.

• Time deposits consist of deposits that will be repaid on maturity.

• SLR Limit in India was a maximum of 40% and minimum of 20.75%. However, the Reserve Bank of India (RBI) amended the Banking Regulation Act in January 2017 to remove the floor rate of 20.75% for SLR. This means that the RBI can now set the SLR at any level between 0% and 40%.

• The RBI will incur a penalty on a bank if it does not keep the required SLR ratio.

• SLR is calculated using the given formula: SLR rate = (liquid assets / (demand + time liabilities)) × 100%

Additional Information

Cash reserve ratio

• Cash Reserve Ratio (CRR) is a monetary policy tool used by central banks, including the Reserve Bank of India (RBI), to regulate and control the money supply in the economy.

• CRR is the percentage of total deposits that commercial banks are required to keep as reserves with the central bank. It is a portion of the bank's demand and time liabilities.

• The primary objective of implementing CRR is to ensure the liquidity and stability of the banking system while controlling inflation and managing credit growth.

• When the central bank increases the CRR, it reduces the amount of money available for lending by commercial banks. This helps in reducing excess liquidity in the economy, controlling inflationary pressures, and curbing excessive credit expansion.

• On the other hand, when the central bank decreases the CRR, it increases the amount of money available for lending by commercial banks. This can stimulate credit growth, promote economic activity, and ease liquidity conditions in the economy.

Q39. Answer: (b) Only II

The correct answer is Only II.

Key Points

• Manjira

• It originates in the Balaghat range of hills in Maharashtra and enters Karnataka before entering the state of Telangana.

• It is the tributary of the river Godavari. Therefore statement 1 is incorrect.

• Ghataprabha River:

• It originates from the Western Ghats and is one of the important tributaries of the Krishna river. Therefore II statement is correct.

• It flows 283 km before joining the Krishna River at Chikksangam.

• Hidkal dam was constructed across the Ghataprabha river.

Additional Information

• The Krishna river is an east-flowing river that originates in Mahabaleshwar, Maharashtra.

• It flows from Maharashtra, Karnataka, Telangana, and Andhra Pradesh.

• The length of the river is around 1401 km long.
• It is the fourth largest river in India after Ganga, Godavari, and Brahmaputra.
• The left bank tributaries of Krishna are Bhima, Dindi, Paleru, and Musi.
• Whereas its right bank tributaries are Koyana, Panchganga, Dudhganga, Malprabha, Ghatprabha, and Tungabhadra.
• Tungabhadra is the largest tributary river of Krishna.

Q40. Answer: (b) Bromination

The correct answer is Bromination.

Key Points

• Bromination: It is not used as a technique to convert normal water to potable water.
• While bromine can be used as a disinfectant, it is generally employed in specific industrial or specialized applications, such as swimming pools, spas, or certain water treatment processes.
• Bromine's usage for general potable water treatment is not as prevalent as chlorine.

Additional Information

• Filtration: Filtration is a common technique used to remove solid particles, sediments, and larger contaminants from water. It involves passing the water through a filtration medium or membrane that traps impurities and allows clean water to pass through.
• Boiling: Boiling water is an effective method to kill most types of pathogens, including bacteria, viruses, and parasites. When water is brought to a rolling boil for a certain duration (usually around one minute), it helps in rendering the water safe for consumption by destroying harmful microorganisms.
• Chlorination: Chlorination is a widely used method for disinfecting and purifying water. It involves adding a small amount of chlorine, usually in the form of chlorine gas or chlorine compounds like sodium hypochlorite or calcium hypochlorite, to the water. Chlorine acts as a disinfectant, killing bacteria, viruses, and other harmful microorganisms, thus making the water safe to drink.

Q41. Answer: (b) 15

Correct Answer 15.

Key Points

• The formula for the number of edges in a complete graph with 'n' nodes is given by:
• E = (n * (n - 1)) / 2
• where E represents the number of edges.
• Substituting 'n' with 6 in the formula, we get:
• E = (6 * (6 - 1)) / 2
• E = (6 * 5) / 2
• E = 30 / 2
• E = 15
• Therefore, in a completely connected network with 6 nodes, 15 lines or edges are required to connect all the nodes.

Q42. Answer: (c) Dehra Dun

Correct Answer Dehra Dun

Key Points:

• Dehra dun, also known as dehradun, is the largest dun (valley) in the shiwalik mountain range in india.
• It is located in the state of uttarakhand in northern india.
• Dehra dun serves as the capital city of uttarakhand.
• The city is situated in the doon valley, which is the largest dun in the shiwaliks.
• The doon valley is surrounded by the shiwalik mountain range on one side and the himalayas on the other.
• Dehra dun is known for its scenic beauty, with lush greenery, rolling hills, and picturesque landscapes.
• The city has a pleasant climate, attracting visitors and serving as a popular tourist destination.
• Dehra dun acts as a gateway to various hill stations in uttarakhand, including mussoorie and nainital.
• The region is also known for its educational institutions, including prestigious schools and colleges.
• Dehra dun holds historical significance and has been inhabited since ancient times.

Q43. Answer: (d) 985

The correct answer is 985.

Key Points:

• Rajaraja I, a Chola emperor, ruled between 985 and 1014 CE.

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• He is known for restoring the Chola hegemony and securing its dominance throughout the Indian Ocean during his time as the most powerful Tamil king in South India.

• He ruled over a sizable portion of northern Sri Lanka, the Chera country, and the Pandya country.

• Also, he bought Lakshadweep, the Thiladhunmadulu atoll, and a portion of the Maldives' northernmost islands in the Indian Ocean.

Additional Information:Pallava:

• Around the fourth century AD, the South saw the rise of the Pallavas, who reached the pinnacle of their supremacy in the seventh century AD.

• For over 500 years, they were able to maintain their hegemony.

Pandya:

• The Pandyan dynasty, commonly known as the Pandyas of Madurai, was one of the three major kingdoms of Tamilakam, or South India, together with the Chera and Chola dynasties.

Chalukya:

• During the sixth through the twelfth centuries, the Chalukya dynasty, a Classical Indian monarchy, ruled over a sizable portion of southern and central India.

• They held power as three interconnected but separate dynasties during this time.

Q44. Answer: (b) Chandragupta Maurya

The correct answer is Chandragupta Maurya

Key Points:

• The Mauryan Empire was the first pan-India empire formed around 322 BCE and ended in 185 BCE.

• It spanned central and northern India as well as over parts of modern-day Iran.

• The chronological order of the rulers of the Mauryan empire is:

• The empire was founded by Chandragupta Maurya in 322 BCE.

• The second ruler was Bindusara who ruled from 297 Bc to 273 BC.

• Ashoka was the most popular ruler of the dynasty who ruled from 268 to 232 BCE.

• Brihadratha was the last ruler of the Mauryan dynasty ruled from 187–185 BCE

Additional Information:Mauryan Empire

• The Maurya dynasty (321–185 BC) was a powerful dynasty in ancient India.

• The Maurya dynasty ruled India for 137 years.

• The credit for its establishment is given to Chandragupta Maurya and his minister Chanakya (Kautilya).

• This empire started from the plains of the Ganges river (today's Bihar and Bengal) in the state of Magadha in the east.

• Its capital was Pataliputra (near present-day Patna city).

• Chandragupta Maurya established this empire in 321 BC and rapidly expanded his empire towards the west.

• The Mauryan Empire grew and thrived during the Iron Age.

• He took advantage of the differences between several small regional kingdoms that had arisen after Alexander's invasion.

• By 316 BC, the Maurya dynasty had occupied the whole of North Western India.

• The Maurya dynasty expanded on a large scale in the reign of the Chakravarti emperor Ashoka.

• Due to Emperor Ashoka, the Maurya Empire became the greatest and most powerful and became famous all over the world.

Q45. Answer: (d) Both I and II

The correct answer is Both I and II

Key Points:

• Bajrang Punia won the gold medal in the men's 65kg freestyle wrestling category at Birmingham 2022.

• He defeated Puerto Rico’s Sebastian Rivera 11-9 to secure India’s second medal of the event.

• With this, Bajrang became the 1st Indian to win 4 medals at the world wrestling championships.

• Earlier on Sept 14, Vinesh Phogat won bronze in the women’s 53kg competition.

• Sakshi Malik emerged victorious in the Women's Wrestling Freestyle 62Kg category at the 2022 Birmingham Commonwealth Games, securing the gold medal.

• The accomplished Indian wrestler defeated Canada's Ana Godinez Gonzalez in an impressive final match.

Additional Information:

Birmingham City has been chosen to host the 2022 Commonwealth Games.

• The 2022 Commonwealth Games, officially known as the XXII Commonwealth Games and commonly known as Birmingham

2022.

• It is an international multi-sport event for members of the Commonwealth that is scheduled to be held in Birmingham, England.

• This is to be the third time England has hosted the Games after London in 1934 and Manchester in 2002.

• The Games are expected to take place between 28 July and 8 August 2022.

• The city was announced as the host by the Commonwealth Games Federation (GCF) at a press conference at the Arena Academy in Birmingham on 21 December 2017.

Q46. Answer: (d) Second

The correct answer is Second.

Key Points

• Second-generation computers (1955-1964) were made of transistors.

• The second generation of computers, which used transistors instead of vacuum tubes, were released in the late 1950s and early 1960s as interest in computer technology grew quickly.

• The second generation of computers, however, was entirely built using transistors rather than vacuum tubes.

Additional Information

Generation	Hardware	Main Computers
1st	Vacuum Tube	EDSAC, EDVAC, UNIVAC
2nd	Transistor	IBM-700, IBM-1401
3rd	Integrated Chips	IBM-360, IBM-370, NCR-395
4th	Very Large Scale Integrated Circuit	IBM 4341, DEC 10, STAR 1000
5th	Ultra Large Scale Integration technology	Robotics, Neural Networks

Q47. Answer: (c) Bihar

The correct answer is Bihar.

Key Points

• Madhubani painting is the folk painting of Bihar.

• Jitwarpur village of Madhubani district is the main centre.

• In this painting, the Kohbar (traditional room of the married couple) in the folklore of the Bihar region is drawn as a painting.

• In this style of folk painting, the scenes of Ramayana and the images of Hindu God-Goddesses are depicted on the canvas.

• Mahasundari Devi is a famous artist of Madhubani painting.

Additional Information

• Madhubani painting, also referred to as Mithila Art (as it flourishes in the Mithila region of Bihar), is characterized by line drawings filled in with bright colours and contrasts or patterns.

• This style of painting has been traditionally done by the women of the region, though today men are also involved to meet the demand.

• These paintings are popular because of their tribal motifs and use of bright earthy colours.

• These paintings are done with mineral pigments prepared by the artists.

• The work is done on freshly plastered or a mud walls.

Q48. Answer: (d) Tansen

The correct answer is Tansen.

Key Points

• Tansen was an Indian musician and poet who was an important figure in the North Indian tradition of Hindustani classical music.

• His renditions of ragas, a musical form intended to invoke emotion or nature, were said to tame animals and turn day into night, while his voice could replicate the roar of a lion or the chirp of a bird.

• His real name was Ramtanu Pandey.

• He was greatly esteemed for his dhrupad and raga compositions and for his vocal performances.

• Tansen was the title given to him by Raja Vikramjit of Gwalior.

• Akbar gave the title of Kanthabharan Vanivilas to Tansen.

Important Points

1. Birbal (Administrator)

2. Abul Fazl (Scholar and statesman)
3. Faizi (Scholar and statesman)
4. Todarmal (Finance Minister)
5. Bhagwandas (Manasabdar)
6. Man Singh (Manasabdar)
7. Tansen (Musician)
8. Abdur Rahim Khanekhana (Statesman)
9. Mulla do Pyaja (Advisor)

Additional Information

• Akbar (1556 to 1605)

• Akbar was the third Mughal emperor (1556 to 1605) and son of Humayun.

• Akbar succeeds in the throne at just 13 years old due to the death of Humayun.

• The kingdom Akbar inherited was little more than a collection of frail fiefs, under the regency of Bairam Khan.

• Akbar introduced the Mansabdari system.

• The Navratnas of Akbar were as follows: Raja Birbal, Tansen, Abul Fazal, Faizi, Raja Man Singh, Raja Todar Mal, Mullah Do Piaza, Fakir Aziao-Din, Abdul Rahim Khan-I-Khana.

• Abul Fazl started the writing of Akbarnama in 1589.

• It is the most detailed history of the reign of Akbar.

Q49. Answer: (c) Housing and Urban Affairs

The correct answer is Housing and Urban Affairs.

In News

• The Swachh Toycathon Competition 2022 was launched in India by the Ministry of Housing and Urban Affairs (MoHUA).

• The competition was launched as part of the Swachh Amrit Mahotsav, a nationwide campaign to commemorate the 75th anniversary of India's independence.

• The Swachh Toycathon Competition aimed to promote innovation and circularity in the design and manufacturing of toys, and to encourage the use of recycled materials in toy production.

• The competition was open to individuals, groups, and start-ups from all over India.

• The winners of the competition were awarded cash prizes and incubation support from IIT Kanpur.

Q50. Answer: (d) 21 June

The correct answer is 21 June.

Key Points

• The longest day in the year is 21 June which is generally termed Summer Solstice.

• The summer solstice which is generally termed as an estival solstice or midsummer occurs when one of the Earth's poles has its maximum tilt toward the Sun.

• It happens twice annually, once in each hemisphere (Northern and Southern).

• For that hemisphere, the summer solstice is when the Sun reaches its apex position in the sky and is the day with the longest period of daylight.

• Within the Arctic Circle (for the northern hemisphere) or Antarctic Circle (for the southern hemisphere), there is incessant daylight around the summer solstice.

• On the summer solstice, the earth's maximum axial tilt toward the Sun is 23.44°.

Additional Information

• In addition to, the Sun's declination from the celestial equator is 23.44°.

• The summer solstice occurs during the summer period.

• This is the June solstice in the Northern Hemisphere and the December solstice in the Southern Hemisphere.

• Depending on the shift of the calendar, the summer solstice happens sometime between June 20 and June 22 in the Northern Hemisphere and between December 20 and December 23 in the Southern Hemisphere.

• The same dates on the contrary hemisphere are referred to as the winter solstice.

Q51. Answer: (d) 3/2

Given:

$\sin(\theta) - \cos(\theta) = 0$

Concept Used:

$\sin^2 \theta + \cos^2 \theta = 1$

$\tan \theta = \sin \theta/\cos \theta$

Calculation:

$\sin \theta - \cos \theta = 0$

$\sin \theta = \cos \theta$

$\sin^2 \theta = \cos^2 \theta$

Using the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$, we can rewrite the equation as:

$\sin 2 \theta = 1 - \sin 2 \theta$

$2\sin 2 \theta = 1$

$\sin 2 \theta = 1/2$

Now, let's find the value of $\tan^2(\theta)$:

$\sin \theta - \cos \theta = 0$

$\sin \theta = \cos \theta$

$\sin \theta/\cos \theta = 1$

$\tan \theta = 1$

$\tan^2 \theta = 1$

Substitute the values in $\sin 2 \theta + \tan 2 \theta$

$\sin 2 \theta + \tan 2 \theta = 1/2 + 1 = 3/2$

Therefore Option 4 is the correct answer.

Q52. Answer: (d) -3ab(a - b)

Shortcut Trick

Expand the expression using the algebraic identity: $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$.

Substitute this expansion into the given expression: $[a^3 - b^3 - 3ab(a - b)] - a^3 + b^3$.

Cancel the identical terms with opposite signs: $a^3 - a^3 = 0$ and $-b^3 + b^3 = 0$.

The remaining term is $-3ab(a - b)$.

Therefore The correct answer is -3ab(a - b).

Alternate Method

Given:

Expression = $(a - b)^3 - a^3 + b^3$

Formula Used:

The standard cubic expansion identity is: $(x - y)^3 = x^3 - 3x^2y + 3xy^2 - y^3$

This can also be written as: $(x - y)^3 = x^3 - y^3 - 3xy(x - y)$

Calculations:

$\Rightarrow (a - b)^3 - a^3 + b^3$

$\Rightarrow [a^3 - 3a^2b + 3ab^2 - b^3] - a^3 + b^3$

$\Rightarrow a^3 - a^3 - b^3 + b^3 - 3a^2b + 3ab^2$

$\Rightarrow 0 + 0 - 3a^2b + 3ab^2$

$\Rightarrow -3ab(a - b)$

Therefore The correct answer is -3ab(a - b).

Additional Information

Cubical Identity (Sum)

$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$ or $a^3 + 3a^2b + 3ab^2 + b^3$.

Difference of Cubes

$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$.

Sum of Cubes

$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$.

Q53. Answer: (d) 60°

Given:

A, B, P, and Q are points on the circumference of a circle with center O.

Angle AQB is 60°.

Concept Used:

Angles made by same chord on the circumference of the circle are equal.

Calculation:

Angle AQB = 60° makes by chord AB on the circumference of the circle.

Also angle APB makes by the same chord AB on the circumference of the circle.

So by the property of chord

Angle AQB = angle APB = 60°

Therefore Option 4 is the correct answer.

Q54. Answer: (b) 5

Shortcut Trick

For 7A425B to be divisible by 36, it must be divisible by both 4 and 9.

Divisibility by 4: The last two digits '5B' must be divisible by 4, so B = 2 or 6.

Divisibility by 9: The sum of digits (18 + A + B) must be a multiple of 9.

If B = 2, the sum is 20 + A → A = 7 (as 27 is divisible by 9).

Then, A − B = 7 − 2 = 5 (matches the options).

Therefore The correct answer is 5.

Alternate Method

Given:

The number 7A425B is divisible by 36.

Concept Used:

If a number is divisible by 36, it must be divisible by its co-prime factors, 4 and 9.

Divisibility rule of 4: The number formed by the last two digits must be divisible by 4.

Divisibility rule of 9: The sum of all the digits must be divisible by 9.

Calculations:

=> Check divisibility by 4:

=> The last two digits are 5B.

=> For 5B to be divisible by 4, the possible values for B are 2 (since 52 ÷ 4 = 13) or 6 (since 56 ÷ 4 = 14).

=> Check divisibility by 9 with B = 2:

=> The number becomes 7A4252.

=> Sum of digits = 7 + A + 4 + 2 + 5 + 2 = 20 + A.

=> For 20 + A to be divisible by 9, the next multiple of 9 is 27.

=> 20 + A = 27 → A = 7.

=> Value of A − B = 7 − 2 = 5.

=> Check divisibility by 9 with B = 6:

=> The number becomes 7A4256.

=> Sum of digits = 7 + A + 4 + 2 + 5 + 6 = 24 + A.

=> For 24 + A to be divisible by 9, the next multiple is 27.

=> 24 + A = 27 → A = 3.

=> Value of A − B = 3 − 6 = −3 (Not given in the options).

=> Therefore, A = 7 and B = 2 is the correct pair.

Therefore The correct answer is 5.

Additional Information

Divisibility Rule of 8

A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

Divisibility Rule of 11

A number is divisible by 11 if the difference between the sum of digits at odd places and the sum of digits at even places is either 0 or a multiple of 11.

Co-prime Factors

To check divisibility by composite numbers like 36, 72, or 88, check the divisibility by their co-prime factors (e.g., 4 and 9 for 36, 8 and 9 for 72, 8 and 11 for 88).

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Q55. Answer: (a) Rs. 1,530

Given:
Rate1 = 6%
Time1 = 4 years
Simple Interest = Rs. 4500
Time2 = 2 years
Rate2 = 4%
Concept Used:
Simple Interest = PRT/100
Compound Interest = P(1 + R/100)^T - P
Calculation:
Simple Interest = PRT/100
4500 = (P × 6 × 4)/100
P = (4500 × 100)/(6 × 4)
P = 750 × 25
P = Rs. 18750
Compound Interest = P(1 + R/100)^T - P
Compound Interest = 18750(1 + 4/100)² - 18750
Compound Interest = 18750(26/25)2 - 18750
Compound Interest = 18750 × 676/625 - 18750
Compound Interest = 20280 - 18750
Compound Interest = 1530
Therefore Option 1 is the correct answer.

Q56. Answer: (c) 14 years

Given:
Average age of 14 friends = 14 years
Calculation:
The average age of 14 friends is 14 years.
The sum of the ages of all 14 friends = 14 × 14 = 196 years.
Now, if the age of the 15th friend is added, the average remains the same.
Let's denote the age of the 15th friend as "x" years.
The sum of ages of all 15 friends (including the 15th friend) would be 196 years + x years.
According to the given condition, the average remains the same. The new average is still 14 years.
We can set up an equation using the concept of averages:
(196 + x) / 15 = 14
Simplifying the equation:
196 + x = 14 × 15
196 + x = 210
x = 210 - 196
x = 14
Therefore, the age of the 15th friend is 14 years.
Therefore Option 3 is the correct answer.

Q57. Answer: (d) 4 m

Shortcut Trick
Ratio of Length to Breadth = 5 : 3
Let Length = 5x and Breadth = 3x
Area = 5x × 3x = 15x² = 60 => x² = 4 => x = 2
Difference between length and breadth = 5x − 3x = 2x
Difference = 2 × 2 = 4 m
Therefore The correct answer is 4 m.

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Alternate Method
Given:
Area of rectangular floor = 60 m²
Breadth = 3/5 of length
Formula Used:
Area of Rectangle = Length × Breadth
Length = 10 m
Breadth = 6 m
Area = 60 sq. m
Difference = 10 − 6 = 4 m
Calculations:
=> Let the length of the rectangular floor be L meters.
=> Therefore, the breadth (B) = 3L / 5 meters.
=> Area = L × (3L / 5)
=> 3L² / 5 = 60
=> 3L² = 60 × 5 = 300
=> L² = 100
=> L = 10 m
=> Breadth = (3 × 10) / 5 = 6 m
=> Difference between length and breadth = 10 − 6 = 4 m
Therefore The correct answer is 4 m.
Additional Information
Perimeter of a Rectangle
The total distance around the outside of a rectangle. Formula: Perimeter = 2 × (Length + Breadth).
Diagonal of a Rectangle
A straight line joining opposite corners of a rectangle. Calculated using Pythagoras theorem: Diagonal = √(Length² + Breadth²).
Square vs Rectangle
A square is a special geometric rectangle where all four sides are equal. Its Area = side² and Perimeter = 4 × side.

Q58. Answer: (b) 30

Given:
The number is 840
Concept used:
A given natural number can be expressed as 2a.3b.5c.7d..... and so on
Where a, b, c, d ..... and so on are whole numbers
Total number of factors = (a + 1) × (b + 1) × (c + 1) × (d + 1) ..... and so on
Total number of odd factors = (b + 1) × (c + 1) × (d + 1) ..... and so on
Total number of even factors = a × (b + 1) × (c + 1) × (d + 1) ..... and so on
Calculation:
840 = 2 × 2 × 2 × 3 × 5 × 7
=> 840 = 23.31.51.71
Total number of factors = (3 + 1) × (1 + 1) × (1 + 1) × (1 + 1)
Therefore Total number of factors of 840 are 32.
Number of factors of 840 except 1 and 840 itself = 32 - 2 = 30
So, there are 30 factors of 840 except 1 and 840 itself.
Therefore Option 2 is the correct answer.

Q59. Answer: (a) 25

Calculation:
Highest marks obtained by the students in the class = 60
Lowest marks obtained by the students in the class = 35
Difference = 60 - 35 = 25

Therefore Option 1 is the correct answer.

Q60. Answer: (b) Both I and II

Given:

Ram covers a distance in 8 hours.

Mohan covers the same distance in 4 hours.

Speed of Mohan is 10 km/hr more than Ram.

Concept Used:

Distance = Speed × Time

Calculation:

Let speed of Ram = x km/h

Speed of Mohan = (x + 10) km/h

Distance covered by Ram in 8 hours = x × 8 = 8x km

Distance covered by Mohan in 4 hours = (x + 10) × 4 = 4x + 40 km

Since both Ram and Mohan cover the same distance, we can set up an equation:

8x = 4x + 40

Simplifying the equation:

8x - 4x = 40

4x = 40

x = 10

Therefore, the speed of Ram is 10 km/hr, and the speed of Mohan is x + 10 = 10 + 10 = 20 km/hr.

Now, let's check the given statements:

I. Speed of Mohan is 20 km/hr. - This statement is correct based on our calculations.

II. Sum of their speed is 30 km/hr. - The sum of the speeds of Ram and Mohan is 10 km/hr (Ram's speed) + 20 km/hr (Mohan's speed) = 30 km/hr. This statement is also correct.

Therefore, both statements I and II are correct.

Therefore Option 2 is the correct answer.

Q61. Answer: (d) 59 percent

Shortcut Trick

Let Cost Price (CP) = 100 units → Marked Price (MP) = 400 units (given 4 times).

Desired Profit = 64% → Selling Price (SP) = 100 + 64 = 164 units.

Discount = MP − SP = 400 − 164 = 236 units.

Discount % = (236 ÷ 400) × 100 = 59%.

Therefore The correct answer is 59 percent.

Alternate Method

Given:

Ratio of Marked Price (MP) to Cost Price (CP) = 4 : 1

Profit percentage = 64%

Formula Used:

1. Selling Price (SP) = CP × (100 + Profit%) ÷ 100

2. Discount % = [(MP − SP) ÷ MP] × 100

Calculations:

=> Let the Cost Price (CP) of the trouser be Rs. 100.

=> Marked Price (MP) = 4 × CP = 4 × 100 = Rs. 400.

=> Since Profit is 64%, Selling Price (SP) = 100 + 64 = Rs. 164.

=> Discount = MP − SP = 400 − 164 = Rs. 236.

=> Discount % = (236 ÷ 400) × 100

=> Discount % = 236 ÷ 4 = 59%.

Therefore The correct answer is 59 percent.

Additional Information

Relationship between CP, MP, Profit, and Discount

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The direct formula relating these terms is: MP ÷ CP = (100 + Profit%) ÷ (100 − Discount%).

Successive Discounts

If two discounts d1% and d2% are given, the equivalent single discount is [d1 + d2 − (d1 × d2 ÷ 100)]%.

Marked Up Percentage

The percentage by which the MP is higher than the CP: Markup% = [(MP − CP) ÷ CP] × 100.

Q62. Answer: (c) 91,400

Calculation:

Let the number be A.

According to question,

(100 - 25)/100 × (100 - 40)/100 × (100 - 20)/100 × A = 32904

75/100 × 60/100 × 80/100 × A = 32904

3/4 × 3/5 × 4/5 × A = 32904

9/25 × A = 32904

A = 32904 × 25/9

A = 3656 × 25

A = 91400

Therefore Option 3 is the correct answer.

Q63. Answer: (b) 15 : 22

Shortcut Trick

When the Selling Price (SP) is the same for two articles, the ratio of their Cost Prices (CP) is inversely proportional to their Selling Price percentages (100 ± Profit/Loss%).

SP percentage for A = 100 + 10 = 110%

SP percentage for B = 100 − 25 = 75%

Ratio of CP_A : CP_B = 75 : 110 = 15 : 22

Therefore The correct answer is 15 : 22.

Alternate Method

Given:

Selling Price (SP) of watch A and watch B = Rs. 5,400

Profit percentage for A = 10%

Loss percentage for B = 25%

Formula Used:

Cost Price (CP) = [SP × 100] ÷ (100 ± Profit/Loss %)

Calculations:

=> Cost Price of watch A (CP_A) = (5400 × 100) ÷ (100 + 10)

=> CP_A = 540000 ÷ 110 = 54000 ÷ 11

=> Cost Price of watch B (CP_B) = (5400 × 100) ÷ (100 − 25)

=> CP_B = 540000 ÷ 75 = 7200

=> Ratio of CP_A to CP_B = (54000 ÷ 11) : 7200

=> Ratio = (540 ÷ 11) : 72

=> Ratio = 540 : (72 × 11)

=> Ratio = 540 : 792

=> Dividing both sides by 36: 15 : 22

Therefore The correct answer is 15 : 22.

Additional Information

Cost Price and Selling Price Relation

If an article is sold at a profit of P%, then SP = CP × (100 + P)/100. If sold at a loss of L%, then SP = CP × (100 − L)/100.

Constant Selling Price Rule

When the Selling Price of two items is the same, the ratio of their Cost Prices is the inverse ratio of their respective multiplying factors (1 + g/100) or (1 − l/100).

Profit and Loss Percentage

Profit% = (Profit ÷ CP) × 100 and Loss% = (Loss ÷ CP) × 100. Both are always calculated on the Cost Price unless stated

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otherwise.

Q64. Answer: (b) Rs. 12,000

Shortcut Trick

Profit ratio = (Capital of X × Time) : (Capital of Y × Time) : (Capital of Z × Time)

Profit ratio = (4000 × 3) : (6000 × 2) : (8000 × 4) = 12 : 12 : 32 = 3 : 3 : 8

Total profit ratio = 3 + 3 + 8 = 14 parts.

Share of Y = (3 ÷ 14) × 56000 = Rs. 12000

Therefore The correct answer is Rs. 12,000.

Alternate Method

Given:

X's investment = Rs. 4,000 for 3 years

Y's investment = Rs. 6,000 for 2 years

Z's investment = Rs. 8,000 for 4 years

Total profit = Rs. 56,000

Formula Used:

Profit Ratio = P1 : P2 : P3 = (C1 × T1) : (C2 × T2) : (C3 × T3)

X

4000 × 3 yrs

Y

6000 × 2 yrs

Z

8000 × 4 yrs

Profit Ratio → 12 : 12 : 32 = 3 : 3 : 8

Total Parts = 14 => Total Profit = Rs. 56,000

Y's Share = 3/14 × 56000 = Rs. 12,000

Calculations:

=> Profit Ratio = (4000 × 3) : (6000 × 2) : (8000 × 4)

=> Profit Ratio = 12000 : 12000 : 32000

=> Dividing by 4000, we get the ratio as 3 : 3 : 8

=> Sum of ratio parts = 3 + 3 + 8 = 14 parts

=> Value of 14 parts = 56000

=> Value of 1 part = 56000 ÷ 14 = 4000

=> Y's share = 3 parts = 3 × 4000 = 12000

Therefore The correct answer is Rs. 12,000.

Additional Information

Simple Partnership

If all partners invest their capital for the same time period, the profit is shared exactly in the ratio of their invested capitals.

Compound Partnership

If the partners invest their capitals for different time periods, the profit is shared in the ratio of the product of capital and the time duration of their investment: P1 : P2 = C1×T1 : C2×T2.

Working vs Sleeping Partner

A working partner manages the business and usually receives a fixed salary or a certain percentage of the total profit, after which the remaining profit is distributed among all partners according to their investments.

Q65. Answer: (c) 120

Calculation:

Production of refrigerator by company E, F and G together = 470 + 460 + 500 = 1430

Production of refrigerator by company H, I and J together = 440 + 420 + 450 = 1310

Difference = 1430 - 1310 = 120

Therefore Option 3 is the correct answer.

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Q66. Answer: (c) 72.68

Calculation:

Value of the total stock = 25 × 15000 + 80 × 16000 + 54 × 55000 + 41 × 27000 + 64 × 24000

375000 + 1280000 + 2970000 + 1107000 + 1536000

7268000 = 72.68 lakh

Therefore Option 3 is the correct answer.

Q67. Answer: (c) 40.5 degree

Given:

sec 3A = cosec (A - 72°)

Concept Used:

cosec A = sec (90 - A)

Calculation:

sec 3A = cosec (A - 72°)

sec 3A = sec [90 - (A - 72°)]

sec 3A = sec (162° - A)

3A = 162 - A

4A = 162

A = 40.5°

Therefore Option 3 is the correct answer.

Q68. Answer: (b) 9

Shortcut Trick

The total capacity of the tank is the product of the number of taps and the time taken: 15 × 36 = 540 tap-minutes.

To find the number of taps for a new time of 60 minutes (1 hour), divide the total capacity by the new time.

Required taps = 540 ÷ 60 = 9.

Therefore The correct answer is 9.

Alternate Method

Given:

Initial number of taps (M1) = 15

Initial time (T1) = 36 minutes

Required time (T2) = 1 hour = 60 minutes

Formula Used:

For a constant work (filling the same tank), the formula is: M1 × T1 = M2 × T2

Case	Time (min)	Total Work	Efficiency (Taps)
Initial	36	540	15
Required	60	9	

Calculations:

=> Total Work = 15 × 36 = 540 units

=> M2 × 60 = 540

=> M2 = 540 ÷ 60

=> M2 = 9

Therefore The correct answer is 9.

Additional Information

Inverse Proportion

For a constant task, the number of resources (taps/men) is inversely proportional to the time taken. If time increases, fewer taps are needed.

Pipes and Cisterns

This concept follows the same logic as Time and Work, where the rate of filling is the efficiency of the pipe or tap.

Chain Rule Formula

The general formula for such problems is M1 × D1 × H1 ÷ W1 = M2 × D2 × H2 ÷ W2, where W represents the work done.

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Q69. Answer: (d) 89401

Formula Used:

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

Calculation:

(299)2

We can write it as,

$(300 - 1)^2$

Expand it using identity

$300^2 + 1 - 2 \times 300 \times 1$

90000 + 1 - 600

89401

Therefore Option 4 is the correct answer.

Q70. Answer: (c) 12/13

Given:

tan Q = 5/12

Concept Used:

tan A = Perpendicular/Base

cos A = Base/Hypotenuse

Pythagoras Theorem

$Hypotenuse^2 = Base^2 + Perpendicular^2$

Calculation:

tan Q = 5/12 = Perpendicular/Base

Perpendicular = 5

Base = 12

Apply Pythagoras Theorem

Hypotenuse2 = Base2 + Perpendicular2

Hypotenuse2 = 122 + 52

Hypotenuse2 = 144 + 24

Hypotenuse = 13

cos Q = Base/Hypotenuse = 12/13

Therefore Option 3 is the correct answer.

Q71. Answer: (b) 110 degree

Given:

In a triangle MNO, XA, XB and XC are perpendicular bisectors on sides MN, ON and OM respectively intersect each other at X.

angle NMO = 55°

Concept Used:

If O is the circumcenter of the triangle ABC then the angle made at the circumcenter by joining any two vertices of the triangle is twice the angle at the third vertex of the triangle i.e. the angle made at the circumference at the circle.

Calculation:

angle NXO is the angle made at the circumcenter of the triangle.

So,

angle NXO = 2 × angle NMO

angle NXO = 2 × 55°

angle NXO = 110°

Therefore Option 2 is the correct answer.

Mistake Points Don't assume that CX will pass through vertex N

As a perpendicular bisector does not assert that.

hence we can not say angle AXC has a vertically opposite angle (i.e. angle NXO)

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Q72. Answer: (d) $(k^{32}-1/(k^{32}))/(k+1/k)$

Given:

(k-1/k)(k²+1/(k²))(k^4+1/(k^4))(k^8+1/(k^8))(k^(16)+1/(k^(16)))

Formula used:

(a - b)(a + b) = a2 - b2

Calculation:

(k-1/k)(k²+1/(k²))(k^4+1/(k^4))(k^8+1/(k^8))(k^(16)+1/(k^(16)))

Divide and multiply by k+1/k

((k-1/k)(k+1/k)(k²+1/(k²))(k^4+1/(k^4))(k^8+1/(k^8))(k^(16)+1/(k^(16))))/(k+1/k)

Using (a - b)(a + b) = a2 - b2

((k²-1/(k²))(k²+1/(k²))(k^4+1/(k^4))(k^8+1/(k^8))(k^(16)+1/(k^(16))))/(k + 1/k)

((k^4-1/(k^4))(k^4+1/(k^4))(k^8+1/(k^8))(k^(16)+1/(k^(16))))/(k + 1/k)

((k^8-1/(k^8))(k^8+1/(k^8))(k^(16)+1/(k^(16))))/(k + 1/k)

((k^(16)-1/(k^(16)))(k^(16)+1/(k^(16))))/(k + 1/k)

$(k^{32}-1/(k^{32}))/(k+1/k)$

Therefore Option (4) is the correct answer.

Q73. Answer: (b) 20 cm

Given:

Circumference of a circle is 58π cm.

Chord XY of length 42 cm.

Concept Used:

Circunference = 2πr

Calculation:

Circunference = 2πr

2πr = 58π

r = 29 cm

In triangle XOP

XP = 21 cm

OX = 29 cm

Apply Pythagoras theorem

$OX^2 = OP^2 + XP^2$

$29^2 = OP^2 + 21^2$

$OP^2 = 841 - 441$

$OP^2 = 400$

OP = 20

Distance of this chord XY from the centre is 20 cm

Therefore Option 2 is the correct answer.

Q74. Answer: (d) 20 cm

Given:

The length of the chord is 40 cm.

Concept used:

If an angle subtended by a chord on the circumference of a circle is 90 degrees, then the chord is the circle's diameter.

The diameter is the double radius.

Calculation:

Let O be the circle's center, and let C is the point on the circumference.

Using, If an angle subtended by a chord on the circumference of a circle is 90 degrees, then the chord is the circle's diameter.

So, MN is the diameter.

MN = 2(OM)

40 = 2(OM)

OM = 20

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Therefore Option 4 is the correct answer.

Q75. Answer: (b) 1.33

Calculation:

Total Number of Males = 240 + 320 + 280 + 200 + 120 = 1160

Total Number of Females = 320 + 280 + 80 + 40 + 120 = 840

L1 = The difference between the total number of male and female teachers in all 5 schools,

L1 = 1160 - 840 = 320

L2 = Total number of male and female teachers in school H.

L2 = 120 + 120 = 240

(L1/L2) = 320/240 = 1.33

Therefore Option 2 is the correct answer.

Q76. Answer: (a) PQRS

The correct answer is: 'PQRS'.

Key Points

• The sentence begins with P, stating that the Supreme Court must remind the state to act constitutionally.

• Then, Q follows, emphasizing that the state should also act lawfully and justly.

• R comes next, indicating that the Supreme Court's reminder should be particularly focused on sensitive matters.

• Finally, S concludes the sentence by specifying that these sensitive matters involve those who oppose the party in office with peaceful means.

Therefore, the correct answer is: 'PQRS'.

Q77. Answer: (b) Effervescent

The solution is in Hindi. Read it online.

Q78. Answer: (a) In writing

The solution is in Hindi. Read it online.

Q79. Answer: (d) Herbivorous

The solution is in Hindi. Read it online.

Q80. Answer: (d) Beautiful

The solution is in Hindi. Read it online.

Q81. Answer: (c) Mature

The solution is in Hindi. Read it online.

Q82. Answer: (c) dispose off a cargo of cotton which

The correct answer is 'Option 3'.

Key Points

• The part of the sentence that contains a grammatical error is: Dispose off a cargo of cotton which

• In the phrase "dispose off", the preposition "off" is incorrect.

• The correct phrase should be "dispose of".

• Dispose of: This means to get rid of by throwing away or giving or selling to someone else.

Therefore, the corrected sentence would be: "The objective was to dispose of a cargo of cotton which I had brought from Mumbai port."

Q83. Answer: (c) come under my

The correct answer is 'Option 3'.

Key Points

• The part of the sentence that contains a grammatical error is: come under my

• The verb "come" should be in its past form "came" or "comes" in the present form to match the singular subject "This whole plot."

• Comes under: This phrase means to be controlled or governed by.

The corrected sentence would be*: "This whole plot comes under my uncle’s jurisdiction."*

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Q84. Answer: (c) It is known to me that his guitar will be played by him.

The correct answer is 'Option 3'.

Key Points

• The given sentence "I know he will play his guitar" is in the active voice, where the subject "I" is performing the action of knowing.

• To change it to the passive voice, we need to make the object of the active sentence (his guitar) the subject of the passive sentence, and the subject of the active sentence (he) becomes the object in the passive sentence.

• "It" becomes the subject of the passive sentence, "is known" is the passive verb construction, and "to me" indicates the agent or the person who knows.

• "That his guitar will be played by him" is the passive clause with "his guitar" as the subject, "will be played" as the passive verb construction, and "by him" as the agent or the person performing the action.

Therefore, the correct passive transformation is: "It is known to me that his guitar will be played by him."

Q85. Answer: (c) continue

The correct answer is 'Option 3' i.e. 'Continue'.

Key Points

• In this context, the verb "continue" is the most suitable choice because the sentence is describing a process that will keep on happening (the abdomen growing) until a certain condition (the confession of the crime) is met.

• The verb "continue" means to persist in an activity or process.

Therefore, the correct sentence is: Until you confess your crime, the abdomen would continue to grow and grow until you could not breathe.

Key Points

• Here is a brief explanation of the other options:

• Expire: This generally means to come to an end or die, which doesn't fit the context of the sentence.

• Desist: This means to stop doing something, which contradicts the intended meaning of the sentence.

• Reckon: This means to think or believe something, which doesn't make sense in this context.

Q86. Answer: (b) Grudje

The solution is in Hindi. Read it online.

Q87. Answer: (a) To suffer defeat

The solution is in Hindi. Read it online.

Q88. Answer: (d) Neither of the two has cleared the

The correct sentence is 'Option 4' i.e. 'Neither of two has cleared the'.

Key Points

• The original sentence is grammatically incorrect because the subject "Neither of the two" is singular, but the verb "have cleared" is in the plural form.

• The verb should be in agreement with the subject, which requires using the singular form "has cleared."

• Option 4 corrects this error by using the singular form of the verb, "has cleared," which agrees with the singular subject "Neither of the two." Therefore, the correct sentence is: 'Neither of the two has cleared the aptitude test'.

Q89. Answer: (d) Heretic

The solution is in Hindi. Read it online.

Q90. Answer: (d) Niche

The solution is in Hindi. Read it online.

Q91. Answer: (b) PERSUADE

The solution is in Hindi. Read it online.

Q92. Answer: (b) Monopoly

The solution is in Hindi. Read it online.

Q93. Answer: (a) Peel and pit avocados and cut into slice

The solution is in Hindi. Read it online.

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Q94. Answer: (c) SPRQ

The correct answer is 'Option 3'.

Key Points

• In this arrangement, the sentence begins by introducing the subject "sloths" in Part S.

• It then explains how sloths' slow movement leads to the growth of algae on their fur (Part P), which gives them a green color (Part R) that aids in their camouflage and helps them hide in the forest (Part Q).

The rearranged sentence is:

• S. Sloths live in tropical forests in South and Central America, and they

• P. actually move so slowly that algae grows on their fur and

• R. this can give sloths a green color that helps them hide in

• Q. the forest from predators like nocturnal cats and harpy eagles.

Therefore, the correct arrangement is: 'SPRQ'

Q95. Answer: (c) The coach asked the student when he would come for practice.

The correct answer is 'Option 3'.

Key Points

• In the original sentence, the coach is asking the student about a future event ("When will you come for practice?").

• In indirect speech, we generally use reporting verbs like "asked" to convey the speaker's words.

• In the indirect form, we need to make changes to the pronouns, verb tense, and word order. Here's the breakdown of the correct answer:

• The reporting verb "said" changes to "asked" to indicate a question.

• The pronoun "you" changes to "he" to match the third-person perspective of the coach.

• The verb "will come" changes to "would come" to shift from direct to indirect speech.

• The word order in the question changes from "When will you come for practice?" to "when he would come for practice."

Therefore, the correct sentence is: "The coach asked the student when he would come for practice.'

Q96. Answer: (c) scanned

The solution is in Hindi. Read it online.

Q97. Answer: (b) found

The correct answer is 'Option 2' i.e. 'Found'.

Key Points

• The context implies that the study discovered or observed something about people's brains during high-demand tasks.

• Option 2) "found" is the correct answer because it is the past tense of the verb "find."

• It indicates that the study discovered or observed certain aspects or effects on people's brains during high-demand tasks.

• This choice aligns with the context of the sentence.

Therefore, the correct sentence is: A recent study that Scanned people’s brains at different points in their work day found high-demand tasks which require intense, constant concentration can lead to build-up of a potentially toxic chemical called glutamate.

Additional Information

• "founded" is unrelated to the action of studying or observing people's brains.

• "find" is the infinitive form of the verb, and it does not fit grammatically in the context of the sentence.

• "had founded" is incorrect because it uses the past perfect tense, which is not necessary in this context.

Q98. Answer: (a) potentially

The correct answer is "Option 1' i.e. 'Potentially'.

Key Points

• The context suggests that the study found a potentially toxic chemical called glutamate accumulating during high-demand tasks.

• Option 1) "potentially" is the correct answer because it signifies the possibility or likelihood of toxicity.

• It accurately describes the nature of the toxic chemical called glutamate and aligns with the context of the sentence.

Therefore, the correct sentence is: A recent study that Scanned people’s brains at different points in their work day found high-demand tasks which require intense, constant concentration can lead to build-up of a potentially toxic chemical called glutamate.

Additional Information

• Option 2) "utterly" does not convey the meaning of potential toxicity. It means completely or entirely, which is not suitable in this context.

• Option 3) "perpetually" means continuously or constantly, which does not align with the idea of a potentially toxic chemical. It implies an ongoing state rather than the possibility of toxicity.

• Option 4) "grandly" means in a splendid or magnificent manner, which is not appropriate in the context of discussing a potentially toxic chemical.

Q99. Answer: (c) send

The correct answer is 'Option 3' i.e. "Send'.

Key Points

• In the given passage, it is mentioned that glutamate is a chemical normally used to (blank number 4) signals from nerve cells.

• Glutamate is an important neurotransmitter involved in the transmission of signals between nerve cells in the brain.

• Option 3) "send" is the correct answer because it accurately represents the action of glutamate in sending or transmitting signals from nerve cells.

• Glutamate acts as an excitatory neurotransmitter, facilitating the communication between neurons.

Therefore, the correct sentence is: Normally used to send signals from nerve cells, in large quantities glutamate alters the performance of a brain region involved in planning and decision making, the lateral prefrontal cortex (lPFC).

Additional Information

• Option 1) "swipe" does not accurately describe the action of glutamate in transmitting signals. "Swipe" is typically associated with physical motions and does not fit in the context of neurotransmission.

• Option 2) "donate" does not align with the function of glutamate in the nervous system. "Donate" means giving or contributing, which is unrelated to the transmission of signals between nerve cells.

• Option 4) "travel" is not the appropriate term to describe the action of glutamate in signal transmission. While signals do travel in the brain, the specific role of glutamate is to transmit or send those signals.

Q100. Answer: (a) performance

The correct answer is 'Option 1' i.e. 'Performance'.

Key Points

• In the given passage, it is mentioned that in large quantities, glutamate alters the (blank number 5) of a brain region involved in planning and decision making, specifically the lateral prefrontal cortex (lPFC).

• The word "performance" best fits the context as it refers to the functioning, capability, or efficiency of a brain region.

Therefore, the correct sentence is: Normally used to send signals from nerve cells, in large quantities glutamate alters the performance of a brain region involved in planning and decision making, the lateral prefrontal cortex (lPFC).

Additional Information

• Option 2) "synergy" refers to the interaction or cooperation of multiple elements to produce a combined effect. While synergy can be important in brain function, it is not directly related to the alteration of a brain region.

• Option 3) "radiation" is unrelated to the functioning or alteration of a brain region in this context. "Radiation" typically refers to the emission or transmission of energy in the form of electromagnetic waves or particles.

• Option 4) "ensemble" refers to a group of individuals or elements working together as a whole. While the brain consists of various interconnected regions, "ensemble" does not accurately describe the alteration of a specific brain region.

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