SSC CHSL Tier-1 2023: Official Paper (Held On: 02 Aug 2023 Shift 1) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2023 • 100 questions • 60 minutes • Answer key and solutions

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GENERAL INTELLIGENCE AND REASONING

Q1. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the set in which the numbers are related in the same way as are the numbers of the following 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.)

(21, 66)

(32, 99)

(a) (25, 81)
(b) (36, 112)
(c) (45, 138)
(d) (24, 77)

Q2. DHJ is related to AEG in a certain way based on the English alphabetical order. In the same way, ZML is related to WJI. To which of the following is EKQ related following the same logic?

(a) HNT
(b) DJK
(c) BHN
(d) QKE

Q3. Select the number from among the given options that can replace the question mark (?) in the following series.

383, 381, 377, 369, 353, ?

(a) 325
(b) 323
(c) 322
(d) 321

Q4. Select the set in which the numbers are related in the same way as are the numbers of the following 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.)

(12, 11, 137)

(17, 21, 362)

(a) (18, 9, 165)
(b) (14, 31, 440)
(c) (21, 25, 530)
(d) (38, 7, 270)

Q5. In a certain code language,

A + B means 'A is the father of B'

A - B means 'A is the wife of B'

A × B means 'A is the brother of B'

A ÷ B means 'A is the mother of B'

Based on the above, how is G related to K if 'G ÷ H × I -J + K' ?

(a) Mother's mother
(b) Father's sister
(c) Mother
(d) Father's mother

Q6. Select the term from the given options that can replace the question mark (?) in the given series to make it logically complete.

BO 88, ?, HU 80, KX 76, NA 72

(a) DS 86
(b) DR 82
(c) ER 84
(d) ES 86

Q7. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark (?) in the following equation?

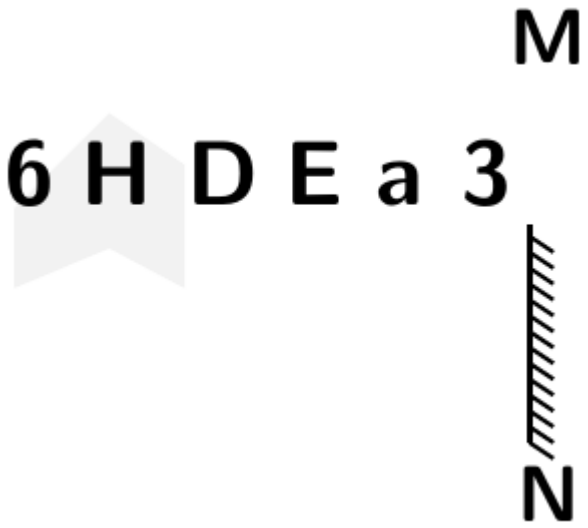
114 C 85 A 5 B 4 D 33 = ?

(a) 151
(b) 149
(c) 138
(d) 143

Q8. The position of how many letters will remain unchanged if each letter in the word AMPLIFY is arranged in alphabetical order?

(a) Three
(b) Two
(c) Four
(d) One

Q9. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.



(a)



(b)



(c)



(d)



Q10. Which of the following interchanges in two mathematical operators will balance the equation given below?

75 ÷ 15 × 8 + 14 - 5 = 67

(a) ÷ and ×
(b) • and ÷
(c) • and ×
(d) • and -

Q11. Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. You have to decide which conclusion's logically follow/s from the given statements.

Statements :

All elephants are tigers.

All tigers are horses.

No horse is a camel.

Conclusion (I) : Some horses are elephants.

Conclusion (II) : Some camels are tigers.

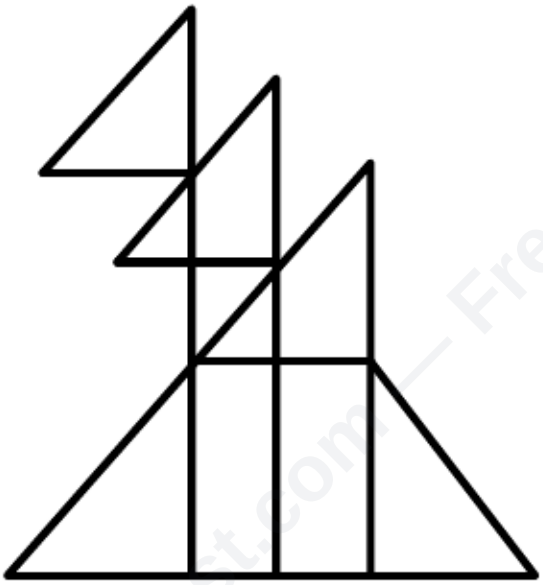
(a) Only conclusion I follows.
(b) Both conclusions I and II follow.
(c) Only conclusion II follows.
(d) Neither conclusion I nor II follows.

Q12. Three of the following four are alike in a certain way and thus form a group. Which is the one that does NOT belong to that group?

(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)

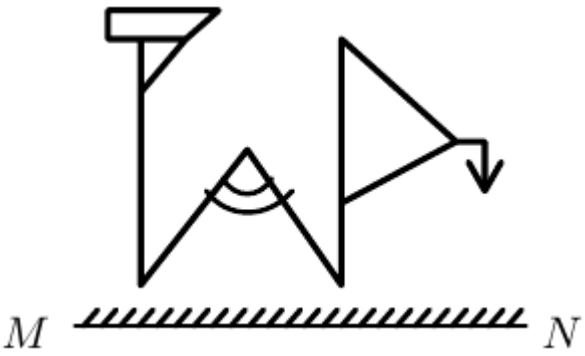
(a) 46 - 41 - 12
(b) 16 - 9 - 21
(c) 23 - 18 - 15
(d) 34 - 28 - 18

Q13. Identify the number of triangles in the given figure.

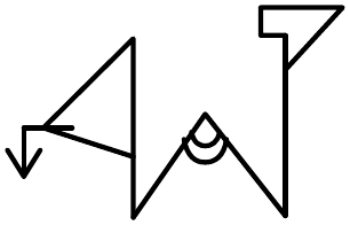


(a) 10
(b) 7
(c) 8
(d) 9

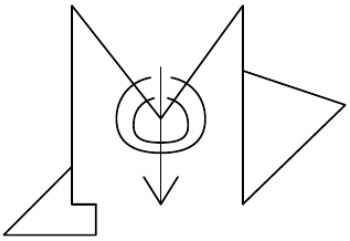
Q14. Select the correct mirror image of the given figure when the mirror is placed at MN as shown.



(a)

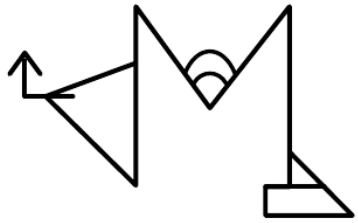


(b)

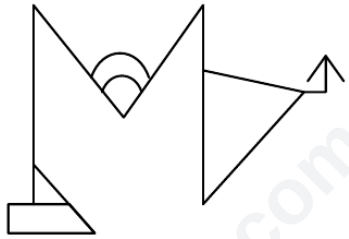


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(c)



(d)



Q15. Which of the following letter - clusters will replace the question mark (?) in the given series to make it logically complete?

EY 14, ?, IW 20, KV 24, MU 26

(a) GY 19
(b) HZ 18
(c) GX 18
(d) HY 19

Q16. In a certain code language, 'RESENT' is written as 'TGUCLR' and 'PEOPLE' is written as 'RGQNJC'. How is 'PERSON' written in the given language?

(a) RGTQML
(b) RGTQMP
(c) RGSUQL
(d) RGTUQP

Q17. Which letter - cluster should come in place of ? in the given series based on the English alphabetical order?

GBW, EZX, CXY, AVZ,?

(a) ZTB
(b) YTA
(c) XSB
(d) XRC

Q18. In a certain code language, 'will come back' is written as 'mp rq pl' and 'back to school' is written as 'jn st mp'. How is 'back' written in the given language?

(a) pl
(b) rq
(c) jn
(d) mp

Q19. If 17 April 1992 is Friday, then what will be the day of the week on 10 October 1993?

(a) Sunday
(b) Wednesday
(c) Monday
(d) Tuesday

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Q20. Select the number from among the given options that can replace the question mark (?) in the following series.

13, 24, 46, 90, 178, ?

(a) 358
(b) 352
(c) 354
(d) 356

Q21. Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does NOT belong to that group?

(a) TVR
(b) DFB
(c) WYU
(d) MZK

Q22. Find out the correct alternative that when filled in the blanks in the same sequence will make the series logically complete.

G_MA, _VOY, KTQ_, MR_U, O_US

(a) XGVSP
(b) XIWSP
(c) XOWSO
(d) XGWTQ

Q23. L is the sister of G. G is the son of M. M is married to D. D is the sister of E. E is the son of C. C is married to S. S is the sister of P.

How is L related to E?

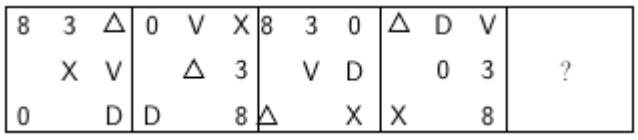
(a) Wife's sister
(b) Brother's daughter
(c) Sister's daughter
(d) Daughter

Q24. Four number pairs have been given out of which three are alike in some manner and one is different. Select the one that is different.

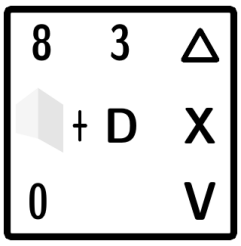
(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 - Operations on 13 such as adding / deleting / multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and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

(a) 46 - 141
(b) 55 - 168
(c) 35 - 108
(d) 29 - 88

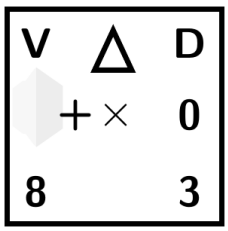
Q25. Identify the figure given in the options that when put in place of the question mark (?) will logically complete the series.



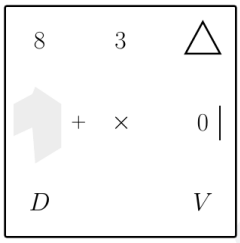
(a)



(b)



(c)



(d)



GENERAL AWARENESS

Q26. Who was awarded the Nobel Prize in Physics in 1909 along with Karl Ferdinand Braun for the development of practical wireless telegraphy?

(a) Heinrich Rudolf Hertz
(b) John Michell
(c) Wilhelm Rontgen
(d) Guglielmo Marconi

Q27. Pandit Shivkumar Sharma is remembered for his mastery in playing _____.

(a) Tabla
(b) Sarod
(c) Sitar
(d) Santoor

Q28. Women SHG member appointed as a banking agent is called _____.

(a) Bank Mitra
(b) Bank Dost
(c) Bank Sakhi
(d) Bank NGO

Q29. Which potassium acid salt is obtained as a by - product of alcohol manufacture during the fermentation process?

(a) Potassium citrate
(b) Potassium bitartrate
(c) Potassium nitrate
(d) Potassium hydrogen adipate

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Q30. Mundari dance is associated with the tribal community of which Indian state?

(a) Mizoram
(b) Karnataka
(c) Arunachal Pradesh
(d) Jharkhand

Q31. In 2014, Bandhan Financial Services, microlender with Headquarters at _____, was granted in - principal approval by RBI to start a universal bank.

(a) Kolkata
(b) Mumbai
(c) Pune
(d) Lucknow

Q32. What is the width of the court for double matches in Lawn Tennis?

(a) 38 feet
(b) 36 feet
(c) 34 feet
(d) 32 feet

Q33. Match the following statements:

List I	List II		
a)	Champakkulam boat race	i)	Gujarat
b)	Somnath fair	ii)	Haryana
c)	Surajkund fair	iii)	Rajasthan
d)	Baneshwar fair	iv)	Kerala

(a) a - iv, b - iii, c - i, d - ii
(b) a - iii, b - i, c - iv, d - ii
(c) a - iv, b - ii, c - i, d - iii
(d) a - iv, b - i, c - ii, d - iii

Q34. Mid - latitude deserts (BWK) are found between 35° and _____ N and S, which are poleward of subtropical high - pressure areas.

(a) 70°
(b) 60°
(c) 79°
(d) 40°

Q35. Panchpatmali deposits in Koraput district are the deposits of which of the following minerals?

(a) Iron ore
(b) Copper
(c) Manganese
(d) Bauxite

Q36. Which of the following Anglo - Maratha wars resulted in merging the Peshwas' territories with the Bombay Presidency?

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

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Q37. Which of these is the correct reason for a good to be identified as a final good?

(a) It is not processed by a consumer after purchase.
(b) It cannot be recycled or re - used.
(c) It is in the last stage of the product life cycle.
(d) It is not processed further by a producer.

Q38. The lofty gates erected in the courtyard of the temples in south India were called _____.

(a) mandap
(b) ardhmandap
(c) vimana
(d) gopuram

Q39. Which of the following crops is the only genetically modified (GM) crop approved for commercial cultivation in India?

(a) Bt Brinjal
(b) Mustard
(c) Bt Cotton
(d) Tomato

Q40. Which of the following players won the orange cap in IPL - 2023?

(a) Yashasvi Jaiswal
(b) Shubman Gill
(c) Faf du Plessis
(d) Devon Conway

Q41. The Constitution (Scheduled Castes and Scheduled Tribes) Orders (Second Amendment) Bill, 2022 has recognised the _____community as a Schedule Tribe in some parts of Uttar Pradesh.

(a) Erukala
(b) Bhils
(c) Gonds
(d) Chenchus

Q42. When the general interest rate reaches a very low level, which of the following statements will be correct?

(a) Most people will expect the interest rate to rise in the future.
(b) Most people will prefer to hold bonds.
(c) Most people will speculate a further decline in the rate of interest.
(d) Any increase in the money supply will cause the interest rate to fall further.

Q43. Which of the following government schemes provides skill development training to youth in India?

(a) Pradhan Mantri Jan Dhan Yojana
(b) Pradhan Mantri Kaushal Vikas Yojana
(c) Deendayal Antyodaya Yojana
(d) Pradhan Mantri Garib Kalyan Anna Yojana

Q44. Who is known as the founder of Widow Remarriage Association (1861)?

(a) Dr. Atma Ram Pandurang
(b) RG Bhandarkar
(c) Dwarkanath Tagore
(d) Mahadev Govind Ranade

Q45. Which state in India has the highest number of aluminium smelting plants?

(a) Odisha
(b) Tamil Nadu
(c) Maharashtra
(d) Uttar Pradesh

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Q46. As of February 2023, how many times Aditi Ashok has overall won the LET (Ladies European Tour) title?

(a) Four
(b) Five
(c) Three
(d) Six

Q47. Which of the following Articles of the Indian Constitution prohibits forced labour and prevents exploitation?

(a) Article 20
(b) Article 19
(c) Article 25
(d) Article 23

Q48. In 1956, which of the following awards did Rukmini Devi Arundale, an eminent Bharatanatyam dancer, receive?

(a) Jnanpith Award
(b) Saraswati Samman
(c) Kabir Puraskar
(d) Padma Bhushan

Q49. In which year did John Alexander Newlands propound a new concept of the 'Law of Octaves' proposing the periodicity of chemical elements arranged in order of atomic weight?

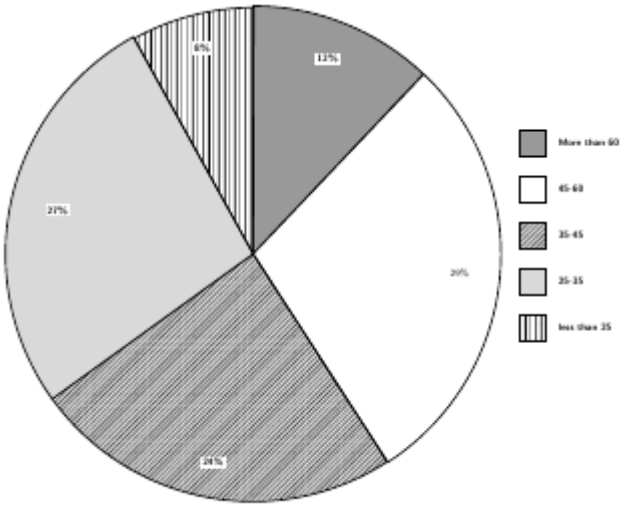
(a) 1860
(b) 1865
(c) 1873
(d) 1870

Q50. In India which of the following is a Gandhian principle of Directive Principles of State Policy?

(a) To Separate judiciary from executive
(b) To organise village panchayat
(c) To secure uniform civil code
(d) To provide equal pay for equal work

QUANTITATIVE APTITUDE

Q51. Study the given pie-chart and table and answer the question that follows.



The pie - chart shows the percentage distribution of age groups of visitors to a park in a month.
The table shows the male, female distribution of the visitors in terms of the percentage.

Age	Male Percentage	Female Percentage
More than 60	58	42

45 - 60	80	20
35 - 45	81	19
25 - 35	60	40
Less than 25	45	55

If 2000 male visitors and 1500 female visitors were there in all, then the ratio of the number of male visitors the age group 25 - 35, to the female visitors of the age group 45 - 60 is:

(a) 71 : 45
(b) 57 : 41
(c) 63 : 47
(d) 81 : 29

Q52. A shopkeeper marks his goods at 80% more than their cost price and allows a discount of 48% on the marked price. His loss percentage is:

(a) 2 1/5 %
(b) 7 3/5 %
(c) 6 2/5 %
(d) 3 1/5 %

Q53. The three sides of a triangle are 9, 24 and S units. Which of the following is correct?

(a) $15 < S < 33$
(b) $15 \leq S < 33$
(c) $15 < S \leq 33$
(d) $15 \leq S \leq 33$

Q54. If $2x + 2/x = 5$, then the value of $(x^3 + 1/(x^3) + 2)$ will be:

(a) 81/11
(b) 81/7
(c) 71/8
(d) 81/8

Q55. Bhushan's monthly income is Rs.45,000 and his monthly expenditure is 33,000. If his monthly income is increased by 22% while monthly expenditure is increased by 11%, then what is his new monthly savings (in Rs.)?

(a) 18,270
(b) 18,690
(c) 18,000
(d) 19,000

Q56. If $x + 1/x = 7$, then the value of $x^2 + 1/(x^2)$ is :

(a) 49
(b) 51
(c) 47
(d) 5

Q57. Two circles of radii 12 cm and 13 cm are concentric. The length of the chord of the larger circle which touches the smaller circle is:

(a) 8 cm
(b) 18 cm
(c) 10 cm
(d) 12 cm

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Q58. If sinA + sin²A = 1, then the value of the expression (cos² A + cos^4A) is _____.

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

Q59. The average age of 6 members of a family is 25 years. If the youngest member is 4 years old, then what was the average age of family just before the birth of the youngest member?

(a) 27.2 years
(b) 24.8 years
(c) 32.8 years
(d) 25.2 years

Q60. If cotθ = 9/17, find the value of cosec²θ.

(a) 19/17
(b) 208/289
(c) 8/17
(d) 181/289

Q61. How long (in years) will a sum of money invested at 6% per annum simple interest to increase its value by 40%?

(a) 62/3
(b) 52/3
(c) 61/3
(d) 41/3

Q62. A tangent AB at point A of a circle of radius 6 cm meets a line through the centre O at point B. If OB = 10 cm, then the length of AB (in cm) is equal to:

(a) 5
(b) 6
(c) 4
(d) 8

Q63. Suhas, a 3.15 m tall tree, and an 11.25 m tall building are positioned such that their feet on the ground are collinear and the tree is located between Suhas and the building. The tree is located at a distance of 45 m from the building. Further, the eyes of Suhas, the top of the tree, and the top of the building fall in one line, and the eyes of Suhas are at a height of 1.8 m from the ground. At what distance (in m) from Suhas is the tree located?

(a) 6
(b) 5
(c) 7.5
(d) 9

Q64. Find the third proportional of 25 and 45.

(a) 85
(b) 65
(c) 81
(d) 76

Q65. Study the given table and answer the question that follows.

The table indicates the number of students studying in three disciplines in four different colleges.

Disciplines	Colleges			
A	B	C	D	
Commerce	520	550	515	690
Management	212	234	289	390

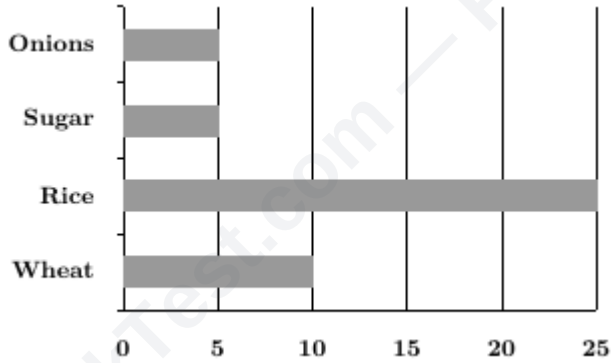
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Agriculture	234	567	456	876

Which college has the minimum number of students in Commerce?

(a) A
(b) B
(c) C
(d) D

Q66. The following bar graph indicates the sales of various items in a shop for one day. Study the bar graph carefully and answer the question that follows.



Find the ratio between the sale of wheat and rice and also the ratio between the sale of sugar and onions, respectively.

(a) 1 : 2 and 1 : 1
(b) 1 : 1 and 2 : 1
(c) 2 : 1 and 1 : 2
(d) 1 : 1 and 1 : 1

Q67. If a right circular cone of height 24 cm has the circumference of its base 42 π cm, then the volume of the cone is (use π = 22/7).

(a) 15211 cm^3
(b) 11088 cm^3
(c) 12034 cm^3
(d) 21011 cm^3

Q68. A dishonest shopkeeper professes to sell grains at the cost price, but he uses a weight of 920 gm for 1 kg weight. Find his gain percentage (round up to two decimal places).

(a) 7.90%
(b) 8.70%
(c) 8.50%
(d) 7.80%

Q69. A can finish a work in 15 days, B can finish the same work in 25 days. They work together for 5 days. The rest of the work is finished by A and C in 4 days. Then C alone can finish the work in:

(a) 18 days
(b) 24 days
(c) 20 days
(d) 21 days

Q70. Zeenat and Nasreen participate in a circular race of 1.2 km. They start the race at a speed of 18 km/h and 27 km/h. respectively, from the same point at the same time. After how much time (in minutes) will they meet at the starting point for the first time, if they are running in the same direction?

(a) 9
(b) 7
(c) 10
(d) 8

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Q71. Which of the following numbers is NOT divisible by 11?

(a) 1735624
(b) 752563
(c) 1661308
(d) 1904529

Q72. In a show room, the marked prices of various items are displayed in such a manner that after giving a 10% discount to the customers, the owner of the show room earns a profit of 20%. What is the ratio of the marked price and cost price of each item?

(a) 3 : 4
(b) 4 : 3
(c) 5 : 2
(d) 2 : 5

Q73. If 5x + 3y = 15 and 2xy = 6, then the value of 5x - 3y is:

(a) $3\sqrt{3}$
(b) $3\sqrt{5}$
(c) $3\sqrt{2}$
(d) $3\sqrt{4}$

Q74. $(\cos\theta)/(\sec\theta-1)+(\cos\theta)/(\sec\theta+1)$ is equal to :

(a) $2\sec^2\theta$
(b) $2\cot^2\theta$
(c) $2\cos^2\theta$
(d) $2\sin^2\theta$

Q75. A certain amount of money was lent for a period of 1 year 9 months at a rate of 10% per annum compounded annually. If the compound interest is Rs. 1,460, find the amount of money lent.

(a) Rs. 8,200
(b) Rs. 7,500
(c) Rs. 6,000
(d) Rs. 8,000

ENGLISH COMPREHENSION

Q76. Select the most appropriate option to substitute the underlined segment in the following sentence.

With the harsh words of the boss, Srujan felt sad, but his colleague’s words created insult to injury.

(a) attached insult to injury
(b) provoked insult to injury
(c) added injury to insult
(d) added insult to injury

Q77. Select the option that correctly expresses the following sentence in passive voice.

The child will recite the poem.

(a) By child poem will be recited.
(b) The poem will be recited by the child.
(c) The poem is recited by the child.
(d) The poem will recite by the child.

Q78. Parts of the following sentence have been given as options. Select the option that contains an error.

You need to acknowledge the itinary and accommodation details of your journey as per the given calendar.

(a) calendar
(b) accommodation
(c) acknowledge

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(d) itinary

Q79. Choose the correct meaning of the underlined word in the given sentence.

When I was in Class 5, I won the first prize in extempore at my school.

(a) A short piece of writing on a subject
(b) A sports event
(c) A speech delivered without prior preparation or rehearsal
(d) A dramatic performance on stage

Q80. Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.

A. fell before me
B. a carcass of an animal
C. when suddenly
D. my heart skipped a beat

(a) BACD
(b) CDBA
(c) ABCD
(d) DCBA

Q81. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.

A) So then why are not Silicon Valley entrepreneurs clamouring to decode the ancient wisdom?
B) The failure rate in finding a new drug is as high as 95%.
C) Because these once - thriving cultures are now reduced to an endangered tribe.
D) According to industry data, it takes $2.6 billion and, on average, fourteen years to develop a new drug.

(a) BADC
(b) DCBA
(c) DBAC
(d) ACDB

Q82. Select the most appropriate synonym of the given word.

Resentment

(a) Calmness
(b) Happiness
(c) Anger
(d) Relaxation

Q83. Select the option with the correct spelling that can replace the underlined word in the given sentence.

Kasturi acts as a liason between patients and staff.

(a) liaision
(b) laision
(c) liaison
(d) liaisan

Q84. Select the most appropriate ANTONYM of the given word.

Meagre

(a) Regional
(b) Racial
(c) Stupid
(d) Generous

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Q85. Select the most appropriate synonym for the underlined word in the following sentence.

The politician’s pompous rhetoric during the campaign failed to garner much support from the public.

(a) Conciliatory
(b) Benign
(c) Supercilious
(d) Diplomatic

Q86. Parts of a sentence are given below in jumbled order. Select the option that arranges the parts in the correct order to form a meaningful sentence.

A. In accordance with hierarchical status

B. Of the services rendered

C. Rewards are given

D. And are not related to the economic value

(a) A, B, D, C
(b) A, D, B, C
(c) C, A, D, B
(d) C, B, A, D

Q87. Select the option that expresses the given sentence in positive degree of comparison.

She is the dullest child in the class.

(a) She is very duller in the class.
(b) Dullest child in the class is she.
(c) No other child in the class is as dull as she.
(d) In the class of all she is dull.

Q88. Select the most appropriate ANTONYM of the underlined word.

Wealthier countries are obligated to fulfil a commitment made in the Paris Agreement to provide $100 billion a year in international climate finance

(a) feeble
(b) drape
(c) breach
(d) hale

Q89. Select the most appropriate idiom for the underlined segment in the following sentence.

Brave people never hide at the moment of decision.

(a) When the crunch comes
(b) Beat the clock
(c) A hell of time
(d) Turn back the hands of time

Q90. Select the option that expresses the given sentence in active voice.

French is taught to us by Miss Glenn.

(a) Miss Glenn taught us French.
(b) Miss Glenn teach us French.
(c) Miss Glenn teaches us French.
(d) Miss Glenn is teaching us French.

Q91. Select the option that will improve the underlined part of the given sentence.

Adyasha would have been looked gorgeous in ethnic apparel.

(a) was looked
(b) would have looked
(c) had looking
(d) would be looked

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Q92. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

Babbal is / a oldest member / in our / Black Ice Club.

(a) in our
(b) Black Ice Club
(c) Babbal is
(d) a oldest member

Q93. Parts of a sentence are given below in jumbled order, except the first part. Arrange the parts in the correct order to form a meaningful sentence.

Such poststructuralist pronouncements…

A. not only in the Anglo - American academia

B. on the literature of the Third World,

C. however, are a common feature of the literary theory practiced

D. but also in the Third - World countries

(a) ABCD
(b) ADCB
(c) BCAD
(d) CABD

Q94. Select the most appropriate ANTONYM of the given word.

Fundamental

(a) Impact
(b) Neutral
(c) Least
(d) Link

Q95. Select the most appropriate homophone to fill in the blank.

Even animals find it difficult to _____ the loss of their loved ones.

(a) bear
(b) wear
(c) where
(d) bare

Directions

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Unemployment arises from a variety of _____ (1). One which is always recurring and the effects of which we have had a recent example, is the disorganisation of industry resulting from a long war; this is a serious _____ (2) admitting of no easy_____ (3) at the best of times. Again there is the unemployment which followed a marked diminution in the _____ (4) of any raw product, such as cotton; fewer hands are required in the mills and the factories. We may call this cause of bad harvests. Similar, but more serious is the effect of changes in industry due to the invention of machinery which does more work and require _____ (5) hands. Yet another cause is strike or lockout and this is more to be deplored because such a stoppage is due to a very trivial matter, perhaps the men are working half an hour longer than what their Union permits.

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

(a) causes
(b) thoughts
(c) things
(d) types

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

(a) difference
(b) discussion
(c) nature

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(d) problem

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

(a) key
(b) clue
(c) answer
(d) solution

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

(a) material
(b) quality
(c) quantity
(d) cloth

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

(a) fewer
(b) more
(c) many
(d) a lot of

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) (45, 138)

The logic followed here is:
Logic: (1st number × 3) + 3 = 2nd number.
Now,
For, (21, 66)
=> (21 × 3) + 3
=> 63 + 3 = 66.
For, (32, 99)
=> (32 × 3) + 3
=> 96 + 3 = 99.
Similarly, for (45, 138)
=> (45 × 3) + 3
=> 135 + 3 = 138.
Hence, the correct answer is "Option 3".

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Q2. Answer: (c) BHN

The logic followed here is:
For, DHJ is related to AEG
For, ZML is related to WJI
Similarly, for EKQ
So, 'EKQ' will be related to 'BHN'.
Hence, the correct answer is "Option 3".

Q3. Answer: (d) 321

The logic followed here is:
So, '321' will complete the series.
Hence, the correct answer is "Option 4".

Q4. Answer: (c) (21, 25, 530)

The logic followed here is:
Logic: (1st number × 2nd number) + 5 = 3rd number.
Now,
For, (12, 11, 137)
=> (12 × 11) + 5
=> 132 + 5 = 137.
For, (17, 21, 362)
=> (17 × 21) + 5
=> 357 + 5 = 362.
Similarly, for (21, 25, 530)
=> (21 × 25) + 5
=> 525 + 5 = 530.
Hence, the correct answer is "Option 3".

Q5. Answer: (a) Mother's mother

Family Chart:
Decoding the Symbols:

Symbol	•	•	×	÷
Meaning	Father	Wife	Brother	Mother

Given: G ÷ H × I -J + K
It means: G is the Mother of H, H is the Brother of I, I is the Wife of J, J is the Father of K.
So, G is the 'Mother's mother' of K.
Hence, the correct answer is "Option 1".

Q6. Answer: (c) ER 84

The logic followed here is:
So, 'ER 84' will replace the question mark in the given series.
Hence, the correct answer is "Option 3".

Q7. Answer: (b) 149

Given equation: 114 C 85 A 5 B 4 D 33 = ?
Decoding the given information :

Symbol	**A**	**B**	**C**	**D**
Means	÷	×	•	•

Now, replacing the sign from left to right and using BODMAS rule, we get :
New equation : 114 + 85 ÷ 5 × 4 - 33 = ?
Calculation :

=> 114 + 85 ÷ 5 × 4 - 33 = ?

=> 114 + 17 × 4 - 33 = ?

=> 114 + 68 - 33 = ?

=> 182 - 33 = 149.

Hence, the correct answer is "Option 2".

Q8. Answer: (a) Three

Given word: AMPLIFY

Now, arranging in alphabetical order:

we get,

Given Word	A	M	P	L	I	F	Y
Alphabetical order	A	F	I	L	M	P	Y

Here, the letter 'A', 'L', and 'Y' will remain unchanged after arranged in alphabetical order.

Hence, the correct answer is "Three".

Q9. Answer: (a) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 1".

Q10. Answer: (c) • and ×

Given equation: 75 ÷ 15 × 8 + 14 - 5 = 67

BODMAS Table:

Let's check each option one by one.

Option 1) ÷ and ×

Given: 75 ÷ 15 × 8 + 14 - 5 = 67

After interchanging the signs we get;

=> 75 × 15 ÷ 8 + 14 - 5 = 67

=> 75 × 1.875 + 14 - 5 = 67

=> 140.625 + 14 - 5 = 67

=> 154.625 - 5 = 67

=> 149.625 ≠ 67

=> LHS ≠ RHS

Option 2) - and ÷

Given: 75 ÷ 15 × 8 + 14 - 5 = 67

After interchanging the signs we get;

=> 75 - 15 × 8 + 14 ÷ 5 = 67

=> 75 - 15 × 8 + 2.8 = 67

=> 75 - 120 + 2.8 = 67

=> 77.8 - 120 = 67

=> -42.2 ≠ 67

=> LHS ≠ RHS

Option 3) - and ×

Given: 75 ÷ 15 × 8 + 14 - 5 = 67

After interchanging the signs we get;

=> 75 ÷ 15 - 8 + 14 × 5 = 67

=> 5 - 8 + 14 × 5 = 67

=> 5 - 8 + 70= 67

=> 75 - 8 = 67

=> 67 = 67

=> LHS = RHS

Option 4) + and -

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Given: 75 ÷ 15 × 8 + 14 - 5 = 67
After interchanging the signs we get;
=> 75 ÷ 15 × 8 - 14 + 5 = 67
=> 5 × 8 - 14 + 5 = 67
=> 40 - 14 + 5 = 67
=> 45 - 14 = 67
=> 31 ≠ 67
=> LHS ≠ RHS
Hence, the correct answer is "Option 3".

Q11. Answer: (a) Only conclusion I follows.

Given Statements:
All elephants are tigers.
All tigers are horses.
No horse is a camel.
The least possible Venn diagram for the given statement is:
Conclusions:
I. Some horses are elephants - True (All Elephants are the part of Horse, it also gives some horses are elephants).
II. Some camels are tigers - False (Because, All the tigers are Horse and No horse are Camel, it gives no Camel are tigers).
So, Only conclusion I follows.
Hence, the correct answer is "Option 1".

Q12. Answer: (a) 46 - 41 - 12

The logic followed here is:
Logic: (1st number - 2nd number) × 3 = 3rd number.
Now, checking the options:
Option 1) 46 - 41 - 12 → (46 - 41) × 3 → 5 × 3 = 15 ≠ 12.
Option 2) 16 - 9 - 21 → (16 - 9) × 3 → 7 × 3 = 21.
Option 3) 23 - 18 - 15 → (23 - 18) × 3 → 5 × 3 = 15.
Option 4) 34 - 28 - 18 → (34 - 28) × 3 → 6 × 3 = 18.
So, '46 - 41 - 12' odd among the given options.
Hence, the correct answer is "Option 1".

Q13. Answer: (a) 10

The triangles are:
So, there are '10' triangles in the given figure.
Hence, the correct answer is "10".

Q14. Answer: (d) [figure]

The correct mirror image of the given figure is:
Hence, the correct answer is "Option 4".

Q15. Answer: (c) GX 18

The logic followed here is:
So, 'GX 18' will replace the question mark in the given series.
Hence, the correct answer is "Option 3".

Q16. Answer: (a) RGTQML

The logic followed here is:
'RESENT' is written as 'TGUCLR',
‘PEOPLE' is written as 'RGQNJC’
Similarly, for 'PERSON'
So, 'PERSON' will be coded as 'RGTQML'.
Hence, the correct answer is "Option 1".

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Q17. Answer: (b) YTA

The logic followed here is:

So, 'YTA' will replace the question mark in the given series.

Hence, the correct answer is "Option 2".

Q18. Answer: (d) mp

Given:

'will come back' is written as 'mp rq pl',

'back to school' is written as 'jn st mp'.

Here, 'back' will be coded as 'mp'.

Hence, the correct answer is "Option 4".

Q19. Answer: (a) Sunday

Given: 17 April 1992 is Friday.

then, 17 April 1993 will be Friday + 1 = Saturday.

So, the number of days between 17 April 1993 to 10 October 1993

= 13(April) + 31(May) + 30(June) + 31(July) + 31(August) + 30(September) + 10(October)

= 176 days → 176/7 = 25 week and 1 odd day.

So, 10 October 1993 = Saturday + 1 = Sunday.

Hence, the correct answer is "Option 1".

Mistake Points Yes, 1992 was a leap year but we have counted from 17th April that's why it is treated as normal year because 29th February is not counted in this year.

Q20. Answer: (c) 354

The logic followed here is:

So, '354' will complete the series.

Hence, the correct answer is "Option 3".

Q21. Answer: (d) MZK

The logic followed here is:

Option 1) TVR

Option 2) DFB

Option 3) WYU

Option 4) MZK

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

Hence, the correct answer is "Option 4".

Q22. Answer: (b) XIWSP

The logic followed here is:

So, 'XIWSP' will replace the question mark in the given series.

Hence, the correct answer is "Option 2".

Q23. Answer: (c) Sister's daughter

Family Chart:

Given:

L is the sister of G, G is the son of M, M is married to D.

D is the sister of E, E is the son of C, C is married to S, S is the sister of P.

So, L is 'Sister's daughter' of E.

Hence, the correct answer is "Option 3".

Q24. Answer: (d) 29 - 88

The logic followed here is:

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

Now, checking the options:

Option 1) 46 - 141 → (46 × 3) + 3 → 138 + 3 = 141.

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Option 2) 55 - 168 → (55 × 3) + 3 → 165 + 3 = 168.

Option 3) 35 - 108 → (35 × 3) + 3 → 105 + 3 = 108.

Option 4) 29 - 88 → (29 × 3) + 3 → 87 + 3 = 90 ≠ 88.

So, '29 - 88' odd among the given options.

Hence, the correct answer is "Option 4".

Q25. Answer: (a) [figure]

The logic followed here is:

1st to 2nd image:

2nd to 3rd image:

3rd to 4th image:

4th to 5th image:

So, the complete series will be:

Hence, the correct answer is "Option 1".

Q26. Answer: (d) Guglielmo Marconi

The correct answer is Guglielmo Marconi.

Key Points

• Guglielmo Marconi was awarded the Nobel Prize in Physics in 1909 along with Karl Ferdinand Braun for the development of practical wireless telegraphy.

• Marconi is widely recognized as the father of modern wireless communication.

• He conducted extensive experiments and research on radio waves and developed a practical system of wireless telegraphy that revolutionized communication.

Additional Information

• Heinrich Rudolf Hertz was a German physicist.

• He discovered the existence of electromagnetic waves, which laid the foundation for the development of wireless communication.

• John Michell was an English physicist and geologist.

• He made significant contributions to the field of astronomy and gravitation.

• Wilhelm Rontgen was a German physicist.

• He discovered X-rays, which revolutionized medical diagnosis.

Q27. Answer: (d) Santoor

The correct answer is Santoor.

Key Points

• Pandit Shivkumar Sharma is remembered for his mastery in playing the Santoor, a musical instrument that originated in the Kashmir Valley.

• The Santoor is a type of hammered dulcimer that is played by striking the strings with a pair of wooden mallets.

• Pandit Shivkumar Sharma is credited with popularizing the Santoor as a solo instrument in Indian classical music.

• He has also collaborated with other musicians from different genres and countries, including the Grateful Dead and the Kronos Quartet.

Additional Information

• Tabla:

• The word "tabla" comes from the Arabic word "tabl," which denotes a drum or flat-surfaced instrument that faces upward.

• It serves as both a solo performance instrument and a crucial rhythmic accompaniment for solo and instrumental music ensembles.

• Sarod:

• The sarod is a plucked bowl-lute chordophone that is native to Pakistan and northern India.

• There is a small additional bridge next to the upper nut of the sarod type with eight main strings and two chikari strings.

• Four drone strings rest upon this bridge.

• Sitar:

• Hindustani classical music uses the sitar, a plucked stringed instrument from the Indian subcontinent.

• The sitar, which is typically four feet long and has a deep pear-shaped gourd body, features twenty arched movable frets, a long, wide, hollow wooden neck, and front and side tuning pegs.

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Q28. Answer: (c) Bank Sakhi

The correct answer is Bank Sakhi.

Key Points

• "Bank Sakhi" is a term used for women Self-Help Group (SHG) members who are appointed as banking agents.

• These women act as a bridge between the bank and the rural population, especially women, who may not be familiar with banking procedures.

• They provide banking services like account opening, deposit, withdrawal, and other financial services to the community they serve.

Additional Information

• Self-help groups are committees that act as financial intermediaries and are typically made up of 12 to 25 local women who are between the ages of 18 and 50.

• A minimum of three members, any two of whom may work together to manage their account, should be authorized by the SHG.

• The resolution may be submitted to the bank branch together with the properly completed application form that the promoter duly introduced.

• "Bank Mitra" is a term used for business correspondents who act as agents of banks and provide basic banking services to the unbanked population.

Q29. Answer: (b) Potassium bitartrate

The correct answer is Potassium bitartrate.

Key Points

• Potassium bitartrate is the by-product of the fermentation of grape juice or other fruit juices during the alcohol-making process.

• It is also known as cream of tartar.

• It is a white crystalline powder that is commonly used in baking as a leavening agent and to stabilize egg whites.

Additional Information

• Potassium citrate is a salt that is commonly used as a food additive and in medical treatments to prevent kidney stones.

• If you suffer from chronic kidney failure, you should avoid using potassium citrate.

• Potassium nitrate, also known as saltpeter, is a chemical compound that is used in fertilizers, fireworks, and as a food preservative.

• It exists as the mineral niter in nature.

• It is a source of nitrogen, which bears niter's name.

• Potassium hydrogen adipate is a salt that is used in the manufacture of synthetic fibers and plastics.

• It's a chemical substance found in a variety of powders used to make fruit-flavored or jelly-like desserts and drinks.

Q30. Answer: (d) Jharkhand

The correct answer is the Jharkhand.

• Mundari dance is associated with the tribal community of Jharkhand, India.

• It is a traditional dance form performed by the Mundari tribe during various occasions like weddings, festivals, and harvest seasons.

• The dance is performed in a group, with both men and women participating in it.

• The dance is characterized by rhythmic footwork, clapping, and synchronized movements of the dancers.

• The Mundari dance is an integral part of the cultural heritage of Jharkhand and is recognized as an important folk dance of the state.

• Mizoram is a northeastern state of India that has a rich cultural heritage.

• The state is known for its traditional dance forms like Cheraw, Khuallam, and Chheihlam.

• Arunachal Pradesh is a northeastern state of India that is known for its tribal culture.

• The state has various traditional dance forms like Aji Lamu, Chalo, and Ponung.

• Jharkhand is a state located in eastern India that is known for its rich tribal culture.

• The state has various traditional dance forms like Karma, Jhumar, and Chhau, apart from Mundari dance.

Q31. Answer: (a) Kolkata

The correct answer is Kolkata.

Key Points

• Bandhan Financial Services is headquartered in Kolkata.

• Bandhan Financial Services was granted in-principal approval by RBI to start a universal bank in 2014, which means that they

were given permission to set up a new bank, subject to fulfilling certain conditions laid down by the RBI.

• Bandhan Bank, the universal bank started by Bandhan Financial Services, began operations in August 2015 and has since expanded to become one of India's largest banks.

Additional Information

• Bandhan Financial Services was founded in 2001 by Chandra Shekhar Ghosh, a former field officer with BRAC, the Bangladesh-based microfinance organization.

• The organization provides microfinance services to women in rural and semi-urban areas of India, helping them start and grow small businesses.

• Mumbai is the financial capital of India and home to the Reserve Bank of India.

• Pune is a major center for IT and manufacturing industries.

• Lucknow is the capital city of the northern state of Uttar Pradesh.

Q32. Answer: (b) 36 feet

The correct answer is 36 feet.

Key Points

• Standard tennis court dimensions are defined by the International Tennis Federation (ITF).

• For doubles matches, the full court width is utilized, extending to the outer doubles sidelines.

• This width measures 36 feet (10.97 meters).

• Singles matches use a narrower section within the doubles court, marked by the inner singles sidelines.

Additional Information

• Tennis is a racquet sport that can be played by two teams of two players each, or it can be played individually against one opponent.

• A hollow rubber ball covered in felt is struck by each player using a tennis racket that is strung with cord over or around a net and into the court of their opponent.

• Major Walter Wingfield of Her Majesty's Body Guard created the game, which he first played in 1874 under the name "Spharistike."

• Denbighshire, England hosted the first-ever game, and the first-ever public competition happened in 1875.

Basic Rules

• Scoring System: The match consists of points, games, and sets. A player wins a point when the opponent fails to return the ball within the prescribed dimensions of the court. Games are won by the first player to win at least four points in total and at least two points more than the opponent. A set consists of a sequence of games, with players alternating serves. Matches are generally best of three or five sets.

• Serving: Matches start with a coin toss to decide which player will serve first. The server must hit the ball over the net to the diagonally opposite service box. If the serve fails, the server gets a second attempt. A serve that lands in but is not returned by the opponent scores a point.

• Faults and Lets: A serve that fails to land in the opponent's service box is called a fault. If this happens twice in a row, the opponent wins the point. A let is when the serve hits the net but still lands in the service box, or a serve is disrupted by an outside influence – the serve is retaken with no penalty.

Equipment:

• Racket: Frame with tightly pulled strings.

• Ball: Felt-covered rubber.

• Apparel: Sportswear and tennis shoes.

Key Terminology:

• Ace: Unreturned serve.

• Break: Winning a game when opponent serves.

• Deuce: Score of 40-40; requires two consecutive points to win from this position.

• Love: Zero score.

• Advantage: Point after deuce; winning next point wins the game, losing returns to deuce.

• Rally: Exchange of ball between players.

• Volley: Hitting the ball before it bounces.

• Groundstroke: Forehand or backhand shot after the ball bounces.

Governing Bodies and Tournaments:

• Organizations: International Tennis Federation (ITF), Women's Tennis Association (WTA), Association of Tennis Professionals (ATP).

• Grand Slam Tournaments: Australian Open, French Open, Wimbledon, US Open.

Q33. Answer: (d) a - iv, b - i, c - ii, d - iii

The correct answer is a - iv, b - i, c - ii, d - iii.

Key Points

• Champakkulam boat race is a popular boat race held in Kerala.

• Somnath fair is an important fair held in Gujarat which attracts a large number of tourists.

• Surajkund fair is a cultural fair held in Haryana showcasing the rich cultural heritage of the state.

• Baneshwar fair is a religious fair held in Rajasthan dedicated to Lord Shiva.

Additional Information

• Kerala is known as "God's Own Country",

• It is famous for its backwaters, beaches, and traditional boat races.

• Gujarat is known for its vibrant culture, rich history, and scenic beauty.

• It is home to many important historical and cultural sites like the Somnath temple, Sabarmati Ashram, and Gir National Park.

• Haryana is a state located in northern India and is known for its agricultural and industrial development.

• It is also home to many important historical and cultural sites like the Surajkund Lake and the Kurukshetra War Memorial.

• Rajasthan is known as the "Land of Kings" and is famous for its rich history, culture, and architecture.

• It is home to many important historical and cultural sites like the Amer Fort, Jaisalmer Fort, and the Thar Desert.

Q34. Answer: (b) 60°

The correct answer is 60°.

Key Points

• Mid-latitude deserts (BWK) are found between 35^o and 60^(o)N and S.

• These deserts are located poleward of subtropical high-pressure areas.

• BWK deserts are characterized by low precipitation and high evaporation rates.

• Examples of BWK deserts include the Mojave Desert in the United States and the Gobi Desert in Asia.

Additional Information

• In the southwestern United States, the Mojave Desert is a desert that receives rain shadows from the Transverse Ranges and the southern Sierra Nevada mountains.

• The sixth largest desert in the world, the Gobi Desert is a vast, icy area of grassland and desert located in southern Mongolia and northern China.

Q35. Answer: (d) Bauxite

The correct answer is Bauxite.

Key Points

• Panchpatmali deposits in Koraput district are known for their abundant reserves of bauxite, which is the primary ore used to produce aluminum.

• Bauxite is a sedimentary rock that typically contains high levels of aluminum hydroxide minerals, as well as other impurities like iron oxides and silica.

• Panchpatmali deposits in Koraput district is located in Orissa.

• Bauxite deposits are created when rocks containing a lot of aluminum silicates break down.

• Panchpatmali deposits is the largest bauxite mines in Asia.

Additional Information

• Iron ore is another mineral commonly found in India and is used primarily in the production of steel.

• Copper is a metal that is used in a variety of applications, from electrical wiring to plumbing.

• Manganese is a metal that is used primarily in the production of steel and other alloys.

• Bauxite is the primary source of gallium and aluminum in the world.

Q36. Answer: (b) Third

The correct answer is Third.

Key Points

• The Anglo-Maratha War that resulted in merging the Peshwas' territories with the Bombay Presidency was the Third Anglo-Maratha War.

• This war took place between 1817 and 1819 and was fought between the British East India Company and the Maratha Empire.

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• The British won the war and as a result, the Peshwas' territories, which included Pune, were annexed by the British and merged with the Bombay Presidency.

• This war was significant in the history of India as it marked the end of the Maratha Empire's power and paved the way for British dominance in India.

Additional Information

• The First Anglo-Maratha War took place between 1775 and 1782 and was fought between the British East India Company and the Maratha Empire.

• The British were unable to defeat the Marathas and the war ended with the Treaty of Salbai.

• The Second Anglo-Maratha War took place between 1803 and 1805 and was fought between the British East India Company and the Maratha Empire.

• The British won the war and as a result, the Marathas lost a significant amount of territory.

• The third Anglo-Maratha War took place between 1817 and 1819 and was fought between the British East India Company and the Maratha Empire.

• The British were successful in defeating the Marathas and the war ended with the Treaty of Mandsaur.

Q37. Answer: (d) It is not processed further by a producer.

The correct answer is It is not processed further by a producer.

Key Points

• A final good is a product that is purchased by the end-user for consumption, rather than for further processing or resale.

• The key term "final good" is used to distinguish between goods that are used by the end-user and goods that are used as inputs in the production of other goods.

• A final good, sometimes referred to as consumer goods, is a class of commodity that is used by the user to fulfill their immediate needs instead of being produced in order to create other goods.

• Only newly produced goods are included in the term "final goods" when referring to national income and output.

Additional Information

• Intermediate goods are goods that are used as inputs in the production of other goods. For example, steel used in the production of a car is an intermediate good.

• Products, such as partially finished goods, that are utilized as inputs in the production of other goods, including final goods, are referred to as intermediate goods, producer goods, or semi-finished products.

• A consumer durable is a final good that is expected to last for a long time and is used repeatedly. Examples include cars, refrigerators, and televisions.

• A class of consumer goods known as consumer durables are ones that last for a long period and don't need to be replaced regularly.

• A non-durable good is a final good that is consumed in a short period of time. Examples include food, toiletries, and cleaning supplies.

Q38. Answer: (d) gopuram

The correct answer is gopuram.

Key Points

• Gopuram refers to the ornate and towering gateways that mark the entrance to the temple grounds in South India and Sri Lanka.

• Gopurams are typically made of stone and feature intricate carvings and sculptures of gods, goddesses, and other mythological figures.

• The gopuram's roots are in the early Pallava kings' constructions, which are related to North India's central shikhara towers.

• There are 21 gopurams (tower gateways) at the Ranganathaswamy Temple in Srirangam, Tamil Nadu, which is the tallest temple tower in Asia, the Rajagopuram (shrine of the main gateway), is a striking 239.5 feet (73.0 m) high.

Additional Information

• Mandap:

• It refers to a pillared outdoor hall or pavilion used for public gatherings or religious ceremonies.

• The mandapa, an elaborate gateway that leads to the temple through the gopuram, is a porch-like structure in Hindu temples.

• It is a part of the main temple compound and is used for religious dancing and music.

• Ardhmandap:

• It refers to a smaller, semi-open hall or chamber typically found near the entrance of a temple.

• Typically, Ardhamandapa is an open, four-pillared structure that stands in front of the temple's mandapa entrance door, allowing for natural light and ventilation.

• Vimana:

• In Hindu temples in South India and Odisha, East India, the structure over the garbhagriha, or inner sanctum, is known as the vimana.

• Vimana refers to the towering, pyramid-shaped roof structure that sits atop the sanctum sanctorum (innermost shrine) of a South Indian temple.

Q39. Answer: (c) Bt Cotton

The correct answer is Bt Cotton.

Key Points

• Bt Cotton is the only GM crop approved for commercial cultivation in India.

• It was first approved in 2002 for cultivation in six Indian states.

• Bt Cotton has been genetically modified to produce a toxin that kills bollworm, a major pest that affects cotton crops.

• The adoption of Bt Cotton in India has been controversial, with some arguing that it has led to increased farmer debt and decreased yields.

Additional Information

• A crop used in agriculture that has had its DNA altered through genetic engineering is known as a genetically modified crop (GM crop).

• In GM crop, Agrobacterium can be used to transfer sequences hosted in T-DNA binary vectors, or one can physically modify plant genomes.

• The goal is to give the plant a new characteristic that is not found in the species naturally.

• Mustard is currently awaiting approval for commercial cultivation in India.

• It has been genetically modified to improve yields and reduce the country's dependence on imported edible oil.

• Bt Brinjal was approved for commercial cultivation in India in 2009, but the approval was later revoked in 2010 due to concerns about its safety and impact on human health and the environment.

Q40. Answer: (b) Shubman Gill

The correct answer is Shubman Gill.

Key Points

• Shubham Gill won the orange cap in IPL - 2023.

• Shubman Gill is a cricket player from India.

• In addition to playing for Punjab in domestic cricket and the Gujarat Titans in the Indian Premier League, he is an international representative of the Indian cricket team.

• Gill was named Player of the Tournament during the 2018 Under-19 Cricket World Cup.

• The Orange Cap is awarded to the player who scores the most runs in an IPL season. It is a prestigious award in the tournament.

Additional Information

• Ten franchise teams from cities around India compete in the men's Twenty20 (T20) cricket league known as the Indian Premier League (IPL).

• In 2007, the BCCI established the league.

• The Indian Premier League was the first sports event to be streamed live on YouTube in 2010.

• Every year, the competition is typically held in the summer, between March and May.

• Yashasvi Jaiswal is a young Indian batsman who made his IPL debut in 2020 for Rajasthan Royals.

• Faf du Plessis is a South African cricketer who has played for Chennai Super Kings in IPL.

• Devon Conway was hired by the Chennai franchise for Rs. 1.00 Cr. during the IPL 2023 Auction.

Q41. Answer: (c) Gonds

The correct answer is Gonds.

Key Points

• Gonds have been recognized as a Schedule Tribe in some parts of Uttar Pradesh through the Constitution (Scheduled Castes and Scheduled Tribes) Orders (Second Amendment) Bill, 2022.

• The Gonds are an ethnolinguistic group in India who call themselves "Koitur".

• Gondi, their mother tongue, is a member of the Dravidian language family.

• The Gondi community has been featured in two major films: S.S. Rajamouli's 2022 blockbuster RRR and the 2017 Amit V. Masurkar film Newton.

• Gonds are one of the largest tribal communities in India, primarily found in central India, including the states of Madhya Pradesh, Chhattisgarh, Maharashtra, and parts of Uttar Pradesh, Andhra Pradesh, and Telangana.

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Additional Information

• Erukala:

• It is a community in Andhra Pradesh.

• Although Yerukala is their mother tongue, the majority now speak Telugu.

• Bhils:

• These are a large tribal community primarily found in western India, including the states of Rajasthan, Gujarat, Maharashtra, and Madhya Pradesh.

• A subgroup of the Western Zone of the Indo-Aryan languages, they speak the Bhil languages.

• Chenchus:

• These are another tribal community primarily found in Andhra Pradesh, Telangana, and parts of Karnataka.

• The Dravidian language family includes the Chenchu language, which is spoken by the Chenchu people.

Q42. Answer: (a) Most people will expect the interest rate to rise in the future.

The correct answer is Most people will expect the interest rate to rise in the future.

Key Points

• When the general interest rate reaches a very low level, most people will expect the interest rate to rise in the future because they anticipate that the central bank will try to stimulate the economy by increasing interest rates.

• As a result, most people will prefer to hold cash or short-term securities rather than long-term bonds because the latter are more sensitive to changes in interest rates and may lose value if rates rise.

• Some investors may speculate that the interest rate will decline further, but this is less likely because interest rates cannot fall below zero and there are limits to how much the central bank can ease monetary policy.

• Any increase in the money supply may cause inflation and inflation expectations to rise, which would put upward pressure on interest rates, not downward pressure.

Additional Information

• Most people will prefer to hold bonds:

• It is unlikely to be true when interest rates are very low because bonds become less attractive as their yields decline and their prices rise.

• However, it is possible that some investors may still prefer to hold bonds because they need income or because they believe that interest rates will remain low for a long time.

• Most people will speculate a further decline in the rate of interest:

• May be true in some cases, especially if investors believe that the central bank will continue to ease monetary policy or that the economy will remain weak.

• However, this is not a universal expectation and may depend on the specific circumstances.

• Any increase in the money supply will cause the interest rate to fall further:

• It is incorrect because the relationship between the money supply and interest rates is not straightforward and depends on many factors, such as the demand for money, the velocity of circulation, and the role of banks in creating credit.

• In general, an increase in the money supply may lead to higher inflation expectations and higher interest rates, not lower ones.

Q43. Answer: (b) Pradhan Mantri Kaushal Vikas Yojana

The correct answer is Pradhan Mantri Kaushal Vikas Yojana.

Key Points

• Pradhan Mantri Kaushal Vikas Yojana (PMKVY) is a government scheme that provides skill development training to youth in India.

• The scheme aims to provide vocational training to youth across the country and help them acquire new skills for better employability.

• The training is provided through various training partners and centres, and the candidates can choose from a wide range of courses as per their interest and eligibility.

• The scheme also provides financial assistance to candidates who successfully complete the training and are placed in a job or start their own business.

Additional Information

• Pradhan Mantri Jan Dhan Yojana (PMJDY):

• It is a financial inclusion scheme that aims to provide banking services to the unbanked population of the country.

• The Indian Prime Minister, Narendra Modi, started this campaign for financial inclusion on August 28, 2014.

• Deendayal Antyodaya Yojana (DAY):

• It is a poverty alleviation scheme that aims to uplift the poor and vulnerable sections of the society.

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• Swarnajayanti Gram Swarozgar Yojana (SGSY) was the original scheme introduced in 1999.
• In 2011, it changed its name to the National Rural Livelihood Mission.
• They eventually combined to form DDU-AY.
• Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):
• It is a food security scheme that aims to provide food grains to the poor and needy during the COVID-19 pandemic.
• During India's COVID-19 pandemic on March 26, 2020, the government of India announced the food security welfare program.

Q44. Answer: (d) Mahadev Govind Ranade

The correct answer is Mahadev Govind Ranade.

Key Points

• Widow Remarriage Association was founded in 1861 in Bombay (now Mumbai), India.
• The Association was established to promote the remarriage of widows, which was considered taboo in Indian society at that time.
• The founder of the Association, Mahadev Govind Ranade, was a prominent social reformer and a member of the Bombay Presidency Association, which was formed in 1885 to work for social and political reforms in India.
• He was also a member of the Indian National Congress and the Bombay Presidency Association.
• He worked for social and political reforms in India and was a strong advocate for women's rights.

Additional Information

• Dr. Atma Ram Pandurang:
• He was a social reformer and a member of the Prarthana Samaj, which was founded in Bombay in 1867.
• He worked for the upliftment of women and advocated for the education of girls.
• RG Bhandarkar:
• He was a historian and a member of the Indian National Congress.
• He supported social and political reforms in India.
• Dwarkanath Tagore:
• He was a prominent businessman and a member of the Brahmo Samaj, which was founded in Calcutta in 1828.
• He supported social and religious reforms.

Q45. Answer: (a) Odisha

The correct answer is Odisha.

Key Points

• Odissa has the highest number of aluminium smelting plants in India.
• Some of the major players in the aluminium industry in Odisha include National Aluminium Company Limited (NALCO), Vedanta Aluminium Limited, Hindalco Industries Limited, and Jindal Aluminium Limited.
• The method by which alumina is melted to create pure aluminum metal is known as primary production.
• The process of recycling aluminum scrap into reused aluminum is known as secondary production.

Additional Information

• Tamil Nadu, which is the second-largest producer of aluminium in India after Odisha, has a few aluminium smelting plants as well, including Madras Aluminium Company Limited (MALCO), which is a subsidiary of Vedanta Limited.
• Maharashtra, which is the third-largest producer of aluminium in India, has a few aluminium smelting plants, including Hindalco Industries Limited's plant in Belgaum, Karnataka, which is operated by its subsidiary Novelis.
• Uttar Pradesh have a few downstream aluminium units, including Bharat Heavy Electricals Limited's (BHEL) plant in Varanasi, which produces aluminium conductors and other equipment.

Q46. Answer: (a) Four

The correct answer is Four.

Key Points

• Aditi Ashok is an Indian professional golfer who started playing golf at the age of five.
• She turned professional in 2016 and joined the Ladies European Tour (LET) in the same year.
• Aditi Ashok has also played on the LPGA Tour and has represented India in the Olympics.
• As of February 2023, Aditi Ashok has overall won the LET four times.

Additional Information

• Founded in 1978, the Ladies European Tour is a professional golf tour for women.
• It is situated in England at the Buckinghamshire Golf Club, close to London.

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• Members of the tour made the decision to establish the Women Professional Golfers' European Tour Limited as a separate company in 1988.

Q47. Answer: (d) Article 23

The correct answer is Article 23.

Key Points

• Article 23 of the Indian Constitution prohibits forced labour and any form of human trafficking.

• This includes trafficking of children and women for forced labour, prostitution, or any other form of exploitation.

• The article also prohibits the employment of children below the age of 14 in any hazardous occupation or process.

• Any contravention of this article is a punishable offence under the law.

• The article also provides for the rehabilitation of victims of forced labour and trafficking.

Additional Information

• Article 20:

• It deals with protection against double jeopardy and self-incrimination.

• No one may face charges or punishment for the same offense more than once.

• Article 19:

• It is related to right to freedom of speech and expression, assembly, association, movement, and residence.

• The ability to organize into cooperative societies, unions, or associations.

• Article 25:

• It deals with the right to freedom of religion.

• This fundamental right ensures that every individual has the freedom to profess, practice and propagate any religion of their choice without being discriminated against on any grounds.

Q48. Answer: (d) Padma Bhushan

The correct answer is Padma Bhushan.

Key Points

• Rukmini Devi Arundale received the Padma Bhushan award in 1956 for her contribution to the field of Bharatanatyam dance.

• She was a pioneer in the revival and popularization of Bharatanatyam, which had been looked down upon as a low-class art form.

• Rukmini Devi Arundale was also a social activist and worked towards the betterment of women's rights and animal welfare.

• She founded the Kalakshetra Foundation, an institute for the promotion of Indian art and culture, which continues to thrive today.

Additional Information

• Jnanpith Award:

• It is given for excellence in literature.

• The oldest and most prestigious literary award in India, the Jnanpith Award is given out every year.

• Saraswati Samman:

• It is given for outstanding literary work.

• It is an annual literary prize given for exceptional prose or poetry in any of the 22 Indian languages included in Schedule VIII of the Indian Constitution.

• Kabir Puraskar:

• This award is given for promoting communal harmony.

• In 1990, the Indian government launched the "Kabir Puraskar Scheme,"

Q49. Answer: (b) 1865

The correct answer is 1865.

Key Points

• John Alexander Newlands propounded the concept of the "Law of Octaves" in the year 1865.

• The Law of Octaves proposed that the chemical elements exhibit similar properties after every eighth element when arranged in order of increasing atomic weight.

• This concept was later refined by Dmitri Mendeleev, who developed the modern periodic table of elements.

Additional Information

• The law of octaves by Newland was an early attempt to categorize elements into groups according to their characteristics.

• Based on their atomic masses, He put them in ascending order and saw that every eighth element had characteristics in common.

• Newlands compared the similarity between the elements to the octaves of music, where every eighth note is compared to the first.

Q50. Answer: (b) To organise village panchayat

The correct answer is To organise village panchayat.

Key Points

• Gandhian principle of Directive Principles of State Policy refers to the principles advocated by Mahatma Gandhi, the father of the nation, which were incorporated in the Constitution of India as a guiding framework for the government.

• One of the key Gandhian principles is to organize village panchayats, which are local self-governance institutions that promote community participation and decision-making at the grassroots level.

• The Indian Constitution contains several articles like Article 40, Article 43, Article 43 B, Article 46, Article 47, and Article 48.

Additional Information

• To Separate judiciary from executive:

• This principle aims to ensure the independence and impartiality of the judiciary, which is already enshrined in the Constitution of India as a fundamental right.

• The principle of separation of powers, which is a key feature of the Indian Constitution, already mandates a clear separation between the three branches of government - legislature, executive, and judiciary.

• To secure uniform civil code:

• This principle is aimed at promoting gender equality and social justice, but it remains a highly contentious issue in India due to opposition from some religious communities.

• The government has not yet been able to implement a uniform civil code due to opposition from various quarters.

• To provide equal pay for equal work:

• This principle is aimed at promoting gender equality in the workplace, but it remains a major challenge in India where women continue to face discrimination and unequal pay.

• The government has taken several measures to address this issue, including enacting laws and policies to ensure equal pay for equal work, but the implementation remains a challenge.

Q51. Answer: (d) 81 : 29

Calculation:

Total visitors = Male visitors + Female visitors

= 2000 + 1500

= 3500

The total visitors in the age group 25 - 35 is = 27% of 3500 = 945

so

The number of male visitors in the age group 25 - 35 is = 60% of 945 = 567

Similarly,

The total visitors in the age group 45 - 60 is = 29% of 3500 = 1015

so

The number of female visitors in the age group 45 - 60 is = 20% of 1015 = 203

The expected ratio will be,

567 : 203

=> 81: 29

Therefore The correct option is 4

Q52. Answer: (c) 6 2/5 %

Given:

The marked price = 80% above its cost price.

Discount = 48%

Concept used:

SP = CP + profit

Profit is calculated on the cost price and discount on the market price.

Calculation:

Let the CP is = 100

The market price is = 180

The selling price will be,

=> 180 × 52/100 = 93.60

The loss percentage will be,

=> 100 - 93.60

=> 6 2/5 %

Therefore The correct option is 3

Q53. Answer: (a) 15 < S < 33

Shortcut Trick

For any triangle with sides a, b, and c, the third side c must lie in the range:

|a − b| < c < a + b

Difference of sides < S < Sum of sides

=> |24 − 9| < S < 24 + 9

=> 15 < S < 33

Therefore The correct answer is 15 < S < 33.

Alternate Method

Given:

Side 1 (a) = 9 units

Side 2 (b) = 24 units

Side 3 (c) = S units

Formula Used:

Triangle Inequality Theorem: The sum of the lengths of any two sides of a triangle must be strictly greater than the length of the third side.

According to the theorem, for sides 9, 24, and S:

=> Case 1: 9 + 24 > S

=> 33 > S or S < 33

=> Case 2: 9 + S > 24

=> S > 24 − 9

=> S > 15

=> Case 3: 24 + S > 9 (Always true for any positive S)

Combining the conditions from Case 1 and Case 2:

=> 15 < S < 33

Therefore The correct answer is 15 < S < 33.

Additional Information

Triangle Inequality Theorem

This theorem states that the sum of any two sides of a triangle is greater than the third side, which prevents the triangle from collapsing into a straight line.

Range of the Third Side

If two sides are x and y, the third side z must satisfy: (Difference of x,y) < z < (Sum of x,y).

Degenerate Triangle

A triangle where the sum of two sides equals the third side (a + b = c) is called a degenerate triangle, where the three vertices are collinear.

Q54. Answer: (d) 81/8

Shortcut Trick

Given 2x + 2/x = 5 => x + 1/x = 5/2 = k.

Using algebraic shortcut: $x^3 + 1/x^3 = k^3 − 3k$.

$x^3 + 1/x^3 = (5/2)^3 − 3(5/2) = 125/8 − 15/2 = 65/8$.

Required value = $(x^3 + 1/x^3) + 2 = 65/8 + 2 = (65 + 16)/8 = 81/8$.

Therefore The correct answer is 81/8.

Alternate Method

Given:

2x + 2/x = 5

Formula Used:

$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

Calculations:

$\Rightarrow 2(x + 1/x) = 5$

$\Rightarrow x + 1/x = 5/2$

Now, perform cubing on both sides:

$\Rightarrow (x + 1/x)^3 = (5/2)^3$

$\Rightarrow x^3 + (1/x)^3 + 3 \times x \times (1/x) \times (x + 1/x) = 125/8$

$\Rightarrow x^3 + 1/x^3 + 3(5/2) = 125/8$

$\Rightarrow x^3 + 1/x^3 + 15/2 = 125/8$

$\Rightarrow x^3 + 1/x^3 = 125/8 - 15/2$

$\Rightarrow x^3 + 1/x^3 = (125 - 60)/8 = 65/8$

According to the question, we need the value of $(x^3 + 1/x^3 + 2)$:

$\Rightarrow 65/8 + 2$

$\Rightarrow (65 + 16)/8 = 81/8$

Therefore The correct answer is 81/8.

Additional Information

Sum of Cubes Identity

The expression $x^3 + 1/x^3$ can always be derived from $x + 1/x$ using the formula: $(x + 1/x)^3 - 3(x + 1/x)$.

Square Relationship

The square of the sum of a variable and its reciprocal is given by: $x^2 + 1/x^2 = (x + 1/x)^2 - 2$.

Difference of Cubes

Similarly, for subtraction: $x^3 - 1/x^3 = (x - 1/x)^3 + 3(x - 1/x)$, which is useful in reciprocal algebra problems.

Q55. Answer: (a) 18,270

Given:

Income = Rs 45000, Expenditure = Rs 33000

Income is increased by 22% and expenditure is increased by 11%,

Concept used:

Income = expenditure + savings

Calculation:

After increasing the income will be,

$\Rightarrow 45,000 \times 122/100 = Rs\ 54900$

After increasing the expenditure will be,

$\Rightarrow 33,000 \times 111 /100 = Rs\ 36630$

Increased savings is 54900 - 36630 = Rs 18270

Therefore The correct option is 1

Q56. Answer: (c) 47

Given:

$x + 1/x = 7$

Formula used:

(A + B)2 = A2 + 2AB + B2

Calculation:

$x + 1/x = 7$

$\Rightarrow (x + 1/x) = 7$

$\Rightarrow (x + 1/x)2 = 49$

$\Rightarrow x2 + 1/(x^2) = 49 - 2$

$\Rightarrow 47$

Therefore The correct option is 3

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Q57. Answer: (c) 10 cm

Given:

The radius of the circles are 12cm and 13 cm

Concept used:

Using Pythagoras theorem

Formula used:

Hypotaneus² = Height² + Base²

Calculation:

The length of the AP is

=> √(13² - 12²)

=> √25 = 5 cm

The length of the chord(AB) of the larger circle which touches the smaller circle is,

=> 5 × 2 = 10 cm

Therefore The correct option is 3

Q58. Answer: (b) 1

Given:

sinA + sin2A = 1

Concept used:

sin2A + cos² A = 1

Calculation:

sinA + sin2A = 1

=> sinA = 1 - sin2A

=> sinA = cos2 A

Now,

(cos2 A + cos4A)

=> [cos2 A + (cos² A)²]

=> [cos2 A + (sin A)2]

=> cos2 A + sin ²A = 1

Therefore The correct option is 1

Q59. Answer: (d) 25.2 years

Given:

The average age of 6 members = 25 years.

The youngest member is 4 years old.

Concept used:

Sum = average × total number

Calculation:

The total age of the family is,

=> 25 × 6 = 150 years

The total age of the family just before the birth of the youngest member is,

=> 150 - (4 × 6) = 126 years

The average age of the family just before the birth of the youngest member is,

=> 126 / 5 = 25.2 years

Therefore The correct option is 4

Q60. Answer: (d) 181/289

Given:

cotθ = 9/17

Concept used:

Cosec²θ - cot²θ = 1

Calculation:

As we know,

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Cosec2θ - cot2θ = 1
Putting the value of cotθ = 9/17 we get
=> Cosec2θ - (9/17)2= 1
=> Cosec2θ = 1 + (9/17)2
=> Cosec2θ = 181/289
Therefore The correct option is 4

Q61. Answer: (a) 62/3

Given:
Rate of interest = 6%
The principal will be increased its value by 40%
Formula used:
Simple interest = P × R × T / 100 [P = principal, R = rate of interest, T = time]
Calculation:
Let,T = time and principal (P) = 100
The simple interest got by the person is 40
As per the formula,
40 = 100 × 6 × T / 100
=> T = 40 /6
=> 20/3years = 62/3 years
Therefore The correct option is 1

Q62. Answer: (d) 8

Given:
The radius = 6 cm, OB = 10 cm
Concept used:
OA is perpendicular on AB
Pythagoras theorem
Calculation:
As per the question,
$OB^2 - AO^2 = AB^2$
=> $10^2 - 6^2 = AB2$
=> AB = √64
=> AB = 8 cm
Therefore The correct option is 4

Q63. Answer: (c) 7.5

Given:
Height of Suhas' eyesight = 1.8 m
Height of tree = 3.15 m
Height of building = 11.25 m
Distance between building and tree = 45 m
Calculation:
From the figure,
TU = BE = 45 m
AS = DT = 1.8 m
=> BD = BT - DT = 3.15 - 1.8 = 1.35 m
BT = EU = 3.15 m
=> CE = CU - EU = 11.25 - 3.15 = 8.1 m
According to the question, the eyes of Suhas, the top of the tree, and the top of the building fall in one line
=> angle BAD = angle CBE ----(1)
Also, angle BDA = angle CEB = 90° ----(2)
From (1) and (2), ΔABD and ΔBCE are similar triangles

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=> AD/BD = BE/CE
=> AD/1.35 = 45/8.1
=> AD = (45/8.1) × 1.35
=> AD = 7.5 m
Now, AD = ST = 7.5
Therefore The tree is located at a distance of 7.5 meters from Suhas.

Q64. Answer: (c) 81

Shortcut Trick
To find the third proportional (c) of two numbers 'a' and 'b', use the formula: $c = b^2 \div a$.
Here, a = 25 and b = 45.
Third proportional = (45 × 45) ÷ 25
Third proportional = 2025 ÷ 25 = 81.
Therefore The correct answer is 81.
Alternate Method
Given:
First number (a) = 25
Second number (b) = 45
Formula Used:
If a, b, and c are in continued proportion, then a : b = b : c.
Calculations:
=> 25 : 45 = 45 : c
=> 25 ÷ 45 = 45 ÷ c
=> c = (45 × 45) ÷ 25
=> c = 2025 ÷ 25
=> c = 81
Therefore The correct answer is 81.
Additional Information
Mean Proportional
The mean proportional between two numbers 'a' and 'b' is $\sqrt{(a \times b)}$.
Fourth Proportional
For three numbers a, b, and c, the fourth proportional 'd' satisfies a : b = c : d, meaning d = (b × c) ÷ a.
Continued Proportion
Three numbers are in continued proportion if the ratio of the first to the second is equal to the ratio of the second to the third.

Q65. Answer: (c) C

Calculation:
Total number of students in commerce in college A is = 520
Total number of students in commerce in college B is = 550
Total number of students in commerce in college C is = 515
Total number of students in commerce in college D is = 690
Among these values, the minimum number of students in Commerce is in College C with 515 students.

Q66. Answer: (a) 1 : 2 and 1 : 1

Calculation :
The sale of wheat is 10 and the sale of rice is 20
The sale of onion is 5 and the sale of Sugar is also 5
The ratio between the sale of wheat and rice is,
=> 10 : 20 = 1 : 2
The ratio between the sale of sugar and onions is
=> 5 : 5 = 1 : 1
Therefore The correct option is 1

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Q67. Answer: (b) 11088 cm³

Shortcut Trick

The radius (r) is calculated from the circumference: $2\pi r = 42\pi \Rightarrow r = 21$ cm.

Using the volume formula for a cone: $V = (1/3) \times \pi \times r^2 \times h$.

Substitute values: $V = (1/3) \times (22/7) \times 21 \times 21 \times 24$.

$V = 22 \times 21 \times 24 = 11088$ cm³.

Therefore The correct answer is 11088 cm³.

Alternate Method

Given:

Height (h) of the cone = 24 cm

Circumference of the base = 42π cm

Formula Used:

Circumference of circle = $2\pi r$

Volume of a cone = $(1/3)\pi r^2 h$

Calculations:

$\Rightarrow 2 \times \pi \times r = 42\pi$

$\Rightarrow 2r = 42$

$\Rightarrow r = 21$ cm

$\Rightarrow$ Volume = $(1/3) \times (22/7) \times 21 \times 21 \times 24$

$\Rightarrow$ Volume = $(1/3) \times 22 \times 3 \times 21 \times 24$

$\Rightarrow$ Volume = $22 \times 21 \times 24$

$\Rightarrow$ Volume = 462×24

$\Rightarrow$ Volume = 11088 cm³

Therefore The correct answer is 11088 cm³.

Additional Information

Slant Height of a Cone

The slant height (l) is the distance from the apex to any point on the base circumference: $l = \sqrt{(r^2 + h^2)}$.

Curved Surface Area (CSA)

The area of the curved surface of a cone is given by the formula: CSA = πrl.

Total Surface Area (TSA)

The total surface area includes the base area and the curved area: TSA = $\pi r(l + r)$.

Relation with Cylinder

The volume of a cone is exactly one-third the volume of a cylinder with the same radius and height.

Q68. Answer: (b) 8.70%

Given:

A dishonest shopkeeper uses a weight of 920 gm for 1 kg weight.

Concept used:

Gain percentage = (Error value / False weight) × 100

Calculation:

So the gain percentage will be,

$\Rightarrow (1000 - 920 / 920) \times 100$

$\Rightarrow (80 / 920) \times 100$

$\Rightarrow 8.70\ \%$

Therefore The correct option is 2

Q69. Answer: (c) 20 days

Shortcut Trick

Total work = LCM of 15 and 25 = 75 units.

Efficiency of A = 75 ÷ 15 = 5, Efficiency of B = 75 ÷ 25 = 3.

Work done by A and B in 5 days = 5 × (5 + 3) = 40 units.

Remaining work = 75 − 40 = 35 units.

Combined efficiency of A and C = 35 ÷ 4 = 8.75 units/day.

Efficiency of C = 8.75 − 5 = 3.75. Time taken by C = 75 ÷ 3.75 = 20 days.

Therefore The correct answer is 20 days.

Alternate Method

Given:

Time taken by A to complete the work = 15 days

Time taken by B to complete the work = 25 days

A and B work together for 5 days.

Remaining work is completed by A and C in 4 days.

Calculations:

Person	Days	Total Work	Efficiency
A	15	75	5
B	25	3	

=> Work completed by A and B in 5 days = 5 × (5 + 3) = 40 units

=> Remaining work = Total work − Completed work = 75 − 40 = 35 units

=> A and C complete this remaining work in 4 days.

=> Combined efficiency of A and C = Remaining work ÷ Time = 35 ÷ 4 = 35/4 units/day

=> Efficiency of C = Combined efficiency of (A + C) − Efficiency of A

=> Efficiency of C = 35/4 − 5 = (35 − 20) / 4 = 15/4 units/day

=> Time taken by C alone = Total work ÷ Efficiency of C = 75 ÷ (15/4) = 75 × (4/15) = 20 days

Therefore The correct answer is 20 days.

Additional Information

Total Work Concept

Total Work is typically taken as the Lowest Common Multiple (LCM) of the given individual time periods. Efficiency = Total Work ÷ Time taken.

Efficiency and Time Relationship

The efficiency of a person is inversely proportional to the time taken by them to complete a piece of work. If the ratio of time taken is a:b, their efficiency ratio will be b:a.

Chain Rule (Group Work)

If M1 men can do W1 work in D1 days working H1 hours per day, and M2 men can do W2 work in D2 days working H2 hours per day, then (M1 × D1 × H1) ÷ W1 = (M2 × D2 × H2) ÷ W2.

Q70. Answer: (d) 8

Given:

The total race was 1.2 km.

The speed of Zeenat is 18 km/h and The speed of Nasreen is 27 km/h.

Concept used:

Distance = Speed × time

Relative speed in the same direction is the difference of their speed.

Calculation:

Relative speed will be (27 - 18) km/h = 9 km/h

The relative distance is 1.2 km

So the time will be,

=> (1.2 / 9) × 60

=> 0.4 × 20 = 8 minutes

Therefore The correct option is 4

Q71. Answer: (b) 752563

Shortcut Trick

A number is divisible by 11 if the difference between the sum of alternate digits is 0 or a multiple of 11.

For 752563, the alternate digit sums are (7 + 2 + 6) and (5 + 5 + 3).

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Sum 1 = 15, Sum 2 = 13.
Difference = 15 − 13 = 2.
Since 2 is not 0 or a multiple of 11, the number is not divisible.
Therefore The correct answer is 752563.
Alternate Method
Given: Numbers (1) 1735624, (2) 752563, (3) 1661308, (4) 1904529.
Formula Used: Sum of digits at odd positions − Sum of digits at even positions = 0, 11, 22...
Checking each option for divisibility by 11:
=> Option 1: 1735624 → (1+3+6+4) − (7+5+2) = 14 − 14 = 0 (Divisible)
=> Option 2: 752563 → (7+2+6) − (5+5+3) = 15 − 13 = 2 (Not Divisible)
=> Option 3: 1661308 → (1+6+3+8) − (6+1+0) = 18 − 7 = 11 (Divisible)
=> Option 4: 1904529 → (1+0+5+9) − (9+4+2) = 15 − 15 = 0 (Divisible)
Therefore The correct answer is 752563.
Additional Information
Divisibility by 3 and 9
A number is divisible by 3 (or 9) if the sum of all its digits is divisible by 3 (or 9).
Divisibility by 7
Double the last digit and subtract it from the remaining number. If the result is divisible by 7, the original number is also divisible by 7.
Divisibility by 4 and 8
A number is divisible by 4 if its last two digits are divisible by 4. It is divisible by 8 if its last three digits are divisible by 8.

Q72. Answer: (b) 4 : 3

Given:
The discount = 10 % and Profit = 20%
Concept used:
The discount is calculated on market price while profit is calculated on cost price.
Formula used:
Selling price = cost price + profit
Calculation:
Let the cost price is 100,
Profit = 20%, so the selling price is 100 + 20 = 120
The market price is,
=> 120 × 100 /90 = 400 /3
The ratio between the market price and cost price is,
400 /3 : 100 => 4 : 3
Therefore The correct option is 2

Q73. Answer: (b) 3√5

Shortcut Trick
Use the algebraic identity: $(a - b)^2 = (a + b)^2 - 4ab$.
Let a = 5x and b = 3y, then 4ab = 60xy.
Substitute the given values: $(5x - 3y)^2 = (15)^2 - 30(2xy) = 225 - 30(6)$.
$(5x - 3y)^2 = 225 - 180 = 45$.
$5x - 3y = \sqrt{45} = 3\sqrt{5}$.
Therefore The correct answer is $3\sqrt{5}$.
Alternate Method
Given:
5x + 3y = 15
2xy = 6
Formula Used:
$(a - b)^2 = (a + b)^2 - 4ab$

Calculations:
=> Here, a = 5x and b = 3y
=> 4ab = 4 × 5x × 3y = 60xy
=> From the given equation, 2xy = 6, so 60xy = 30 × (2xy) = 30 × 6 = 180
=> $(5x - 3y)^2 = (5x + 3y)^2 - 60xy$
=> $(5x - 3y)^2 = (15)^2 - 180$
=> $(5x - 3y)^2 = 225 - 180$
=> $(5x - 3y)^2 = 45$
=> $5x - 3y = \sqrt{45}$
=> $5x - 3y = \sqrt{(9 \times 5)} = 3\sqrt{5}$
Therefore The correct answer is $3\sqrt{5}$.
Additional Information
Fundamental Algebraic Identities
$(a + b)^2 = a^2 + b^2 + 2ab$ and $(a - b)^2 = a^2 + b^2 - 2ab$. These are used to solve variables by squaring terms.
Relationship between Sum and Difference
$(a + b)^2 - (a - b)^2 = 4ab$. This identity is crucial when the sum and product are known and the difference is required.
Difference of Squares
$a^2 - b^2 = (a - b)(a + b)$. This is used for factoring expressions or simplifying complex products.

Q74. Answer: (b) $2\cot^2\theta$

Shortcut Trick
Let $\theta = 45°$.
Substitute $\theta = 45°$ in the given expression:
$\cos 45° \div (\sec 45° - 1) + \cos 45° \div (\sec 45° + 1)$
=> $(1/\sqrt{2}) \div (\sqrt{2} - 1) + (1/\sqrt{2}) \div (\sqrt{2} + 1) = (1/\sqrt{2}) \times [(\sqrt{2} + 1 + \sqrt{2} - 1) \div (2 - 1)] = (1/\sqrt{2}) \times 2\sqrt{2} = 2$.
Now, test $\theta = 45°$ in the options: $2 \times \cot^2(45°) = 2 \times 1^2 = 2$.
Therefore The correct answer is $2\cot^2\theta$.
Alternate Method
Given:
The trigonometric expression is: $[\cos\theta \div (\sec\theta - 1)] + [\cos\theta \div (\sec\theta + 1)]$
Formula Used:
=> $\sec^2\theta - 1 = \tan^2\theta$
=> $\cos\theta \times \sec\theta = 1$
=> $1 \div \tan^2\theta = \cot^2\theta$
Calculations:
Taking $\cos\theta$ common from the terms:
=> $\cos\theta \times [1 \div (\sec\theta - 1) + 1 \div (\sec\theta + 1)]$
Find the common denominator and simplify:
=> $\cos\theta \times [((\sec\theta + 1) + (\sec\theta - 1)) \div ((\sec\theta - 1)(\sec\theta + 1))]$
=> $\cos\theta \times [2\sec\theta \div (\sec^2\theta - 1)]$
Substitute $\sec^2\theta - 1 = \tan^2\theta$ into the denominator:
=> $\cos\theta \times [2\sec\theta \div \tan^2\theta]$
Since $\cos\theta \times \sec\theta = 1$:
=> $2 \div \tan^2\theta$
=> $2\cot^2\theta$
Therefore The correct answer is $2\cot^2\theta$.
Additional Information
Reciprocal Identities
Trigonometric reciprocal functions are defined as: $\operatorname{cosec}\theta = 1 \div \sin\theta$, $\sec\theta = 1 \div \cos\theta$, and $\cot\theta = 1 \div \tan\theta$.
Pythagorean Identities
The three primary Pythagorean relations are: $\sin^2\theta + \cos^2\theta = 1$, $1 + \tan^2\theta = \sec^2\theta$, and $1 + \cot^2\theta = \operatorname{cosec}^2\theta$.
Quotient Identities

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Quotient relations define tangent and cotangent in terms of sine and cosine: tan θ = sin θ ÷ cos θ and cot θ = cos θ ÷ sin θ.

Q75. Answer: (d) Rs. 8,000

Shortcut Trick

Rate for the first year = 10%.

Rate for the remaining 9 months (3/4 year) = 10% × 3/4 = 7.5%.

Effective CI Rate = 10 + 7.5 + (10 × 7.5) ÷ 100 = 18.25%.

Given CI = Rs. 1,460 → 18.25% of Principal = 1,460.

Principal (100%) = (1,460 ÷ 18.25) × 100 = Rs. 8,000.

Therefore The correct answer is Rs. 8,000.

Alternate Method

Given:

Time (T) = 1 year 9 months = 1 (9/12) years = 1.75 years.

Rate (R) = 10% per annum.

Compound Interest (CI) = Rs. 1,460.

Formula Used:

For fractional years (n + a/b), Amount (A) = $P(1 + R/100)^n \times [1 + (R \times a/b)/100]$

CI = A − P

Calculations:

=> Amount (A) = $P \times (1 + 10/100)^1 \times [1 + (10 \times 9/12)/100]$

=> $A = P \times (11/10) \times [1 + (10 \times 3/4)/100]$

=> $A = P \times (1.1) \times (1 + 7.5/100)$

=> $A = P \times 1.1 \times 1.075$

=> $A = 1.1825P$

=> $CI = A - P = 1.1825P - P = 0.1825P$

=> $0.1825P = 1460$

=> $P = 1460 \div 0.1825$

=> $P = (1460 \times 10000) \div 1825$

=> $P = 8000$

Therefore The correct answer is Rs. 8,000.

Additional Information

Successive Percentage Change

For two successive rates r1% and r2%, the effective rate is given by [r1 + r2 + (r1 × r2) ÷ 100]%.

Effective Rate for Fractional Time

When time is in the form T = n + f (where f is a fraction), the rate for the fractional part of the year is R × f.

Amount Formula

Standard CI Amount: A = P(1 + r/100)^t. For annual compounding, interest is added to the principal at the end of each year.

Q76. Answer: (d) added insult to injury

The solution is in Hindi. Read it online.

Q77. Answer: (b) The poem will be recited by the child.

The correct answer is: The poem will be recited by the child.

Key Points

• The original sentence is in the active voice.

• The passive construction of the sentence involves switching the positions of the subject and the object and adjusting the verb accordingly.

• Structure (Active Voice): Subject (The child) + Will recite + Object (the poem)

• Structure (Passive Voice): Object (The poem) + Will be recited by + Subject (the child)

• When transforming this into the passive voice, the object of the active sentence becomes the subject of the passive sentence, and the subject becomes the agent preceded by the preposition "by."

• In this case, "will recite" in the active voice corresponds to "will be recited" in the passive voice.

• The use of "by" in the passive construction indicates the agent (the child) carrying out the action.

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Therefore, the correct answer is option 2.

Q78. Answer: (d) itinary

The solution is in Hindi. Read it online.

Q79. Answer: (c) A speech delivered without prior preparation or rehearsal

The solution is in Hindi. Read it online.

Q80. Answer: (d) DCBA

The correct answer is: DCBA

Key Points

• Part D: This phrase sets the tone and prepares the reader for an emotional or surprising moment. It introduces the narrator's emotional response.

• Part C: This transition indicates a shift in the narrative, creating anticipation for what happened next. It signals the timing of the event.

• Part B: This part introduces the key element or object of the scene, which is the carcass of an animal. It provides the visual component to the narrative.

• Part A: This phrase concludes the sentence by describing the action or event related to the carcass. It completes the thought and gives closure to the sentence.

• The correct order of DCBA creates a coherent and meaningful sentence that follows a logical sequence of events, effectively conveying the narrator's experience.

Therefore, the correct answer is option 4.

Q81. Answer: (c) DBAC

The correct answer is: DBAC

Key Points

• Part D: This statement sets the stage by providing information on the significant investment of time and money required in the pharmaceutical industry.

• Part B: Following the introduction of the development process, this sentence adds a critical piece of information about the high failure rate in discovering new drugs, emphasizing the challenges involved.

• Part A: This question logically follows the information on the challenges in the pharmaceutical industry. It introduces the idea of seeking alternative approaches, specifically referencing Silicon Valley entrepreneurs and their potential interest in ancient wisdom.

• Part C: The concluding sentence provides context and explanation for why Silicon Valley entrepreneurs might be interested in decoding ancient wisdom. It connects the challenges in the pharmaceutical industry with the idea of looking for unconventional solutions and highlights the endangered status of ancient cultures.

Thus, option 3 is the correct answer.

Q82. Answer: (c) Anger

The solution is in Hindi. Read it online.

Q83. Answer: (c) liaison

The solution is in Hindi. Read it online.

Q84. Answer: (d) Generous

The solution is in Hindi. Read it online.

Q85. Answer: (c) Supercilious

The solution is in Hindi. Read it online.

Q86. Answer: (c) C, A, D, B

The correct answer is: C, A, D, B

Key Points

• Let us break down the sequence:

• Part C: This part introduces the main idea that rewards are being distributed.

• Part A: This follows, providing information on the basis or criteria for the distribution of rewards, indicating that it is based on hierarchical status.

• Part D: This adds additional information, specifying that the rewards are not tied to economic value, suggesting that they are not based on monetary considerations.

• Part B: Finally, this part completes the sentence by explaining the reason for the rewards, indicating that they are given for the services rendered.

• So, the correct order forms a meaningful sentence.

Therefore, the correct answer is option 3.

Q87. Answer: (c) No other child in the class is as dull as she.

The correct answer is: No other child in the class is as dull as she.

Key Points

• The given sentence is in the superlative degree.

• To express it in a positive degree, we need to compare her level of dullness without referencing others.

• The sentence starts with "No other child," which sets up a negative construction. This is a common way to express a positive degree comparison by stating that no one else possesses the quality to a greater extent.

• The phrase "as dull as" is a standard construction for making positive degree comparisons.

• In positive degree comparisons, we use "as + adjective + as" to convey equality or similarity in the quality being compared.

• The sentence ends with "as she." In comparisons, it is grammatically correct to use the subject pronoun after "as" rather than the object pronoun.

Therefore, the correct answer is option 3.

Q88. Answer: (c) breach

The solution is in Hindi. Read it online.

Q89. Answer: (a) When the crunch comes

The solution is in Hindi. Read it online.

Q90. Answer: (c) Miss Glenn teaches us French.

The correct answer is: Miss Glenn teaches us French.

Key Points

• The given sentence is in passive voice, where the action is done to the subject.

• In passive voice constructions, the focus is on the recipient of the action rather than the doer of the action.

• Structure: Object (French) + Verb (is taught) + To/For Phrase (to us) + By Phrase (by Miss Glenn)

• Example: A beautiful landscape was painted by her.

• The active voice version will emphasize the doer of the action, bringing "Miss Glenn" to the forefront as the one performing the action.

• Structure: Subject (Miss Glenn) + Verb (teaches) + Object (us) + Complement (French)

• Example: She painted a beautiful landscape.

• In the active voice, "Miss Glenn" becomes the subject, and the sentence is structured to highlight the person performing the action (teaching).

Therefore, the correct answer is option 3.

Q91. Answer: (b) would have looked

The correct answer is: would have looked

Key Points

• In the given sentence, "would have looked" is the appropriate construction.

• It is the past perfect form used to express a hypothetical situation or a condition that did not occur.

• It is commonly used to talk about unrealized possibilities or missed opportunities in the past.

• Structure: Subject + Modal + Main Verb + Object.

• "Would have" is a modal auxiliary verb used to express the hypothetical or unrealized nature of the action.

• "Looked" is the main verb, indicating the action of appearing or being visually attractive.

• The compliment "gorgeous in ethnic apparel" provides additional information about how Adyasha would have looked.

• Corrected Sentence: Adyasha would have looked gorgeous in ethnic apparel.

• The correction involves removing the unnecessary "been" and retaining the past participle "looked" after the modal "would have" to form a grammatically correct and meaningful sentence.

Thus, option 2 is the correct answer.

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Q92. Answer: (d) a oldest member

The correct answer is: 'a oldest member'

Key Points

• The grammatical error in the given sentence is in the segment "a oldest member."

• The correct article to use with "oldest" is "the" instead of "a."

• The error lies in the use of the indefinite article "a" before the superlative adjective "oldest."

• When expressing the highest degree of comparison (superlative), we use "the" instead of "a."

• Corrected Sentence: Babbal is the oldest member in our Black Ice Club.

• The corrected sentence reads "the oldest member," indicating that Babbal is the oldest member in the Black Ice Club.

Therefore, the correct answer is option 4.

Q93. Answer: (c) BCAD

The correct answer is: BCAD

Key Points

• The introductory part sets the context for the sentence. It signals that the sentence will discuss poststructuralist pronouncements.

• Part B: This provides additional detail, specifying that the poststructuralist pronouncements are on the literature of the Third World.

• Part C: This part introduces the main idea that poststructuralist pronouncements are common in literary theory.

• Part A: This introduces a contrast, stating that these pronouncements are not limited to Anglo-American academia.

• Part D: This concludes the sentence by emphasizing that these pronouncements are present in Third-World countries as well, completing the thought.

Therefore, the correct answer is option 3.

Q94. Answer: (b) Neutral

The correct answer is 2) Neutral.

Key Points

• “Fundamental” refers to something basic, core, or essential in nature.

• In contrast, “neutral” implies absence of a defining, essential, or foundational position; it denotes something that is neither basic nor aligned with core principles.

• Hence, 'neutral' is taken as the most appropriate antonym here.

Additional Information

Why others are incorrect:

• Impact – denotes effect or influence, not opposition to “fundamental.”

• Least – refers to quantity or degree, not to essential nature.

• Link – means connection or association.

Q95. Answer: (a) bear

The solution is in Hindi. Read it online.

Q96. Answer: (a) causes

The solution is in Hindi. Read it online.

Q97. Answer: (d) problem

The solution is in Hindi. Read it online.

Q98. Answer: (d) solution

The solution is in Hindi. Read it online.

Q99. Answer: (c) quantity

The solution is in Hindi. Read it online.

Q100. Answer: (a) fewer

The solution is in Hindi. Read it online.

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