SSC CHSL Tier-1 2023: Official Paper (Held On: 17 Aug, 2023 Shift 4) (Previous Year Paper)

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

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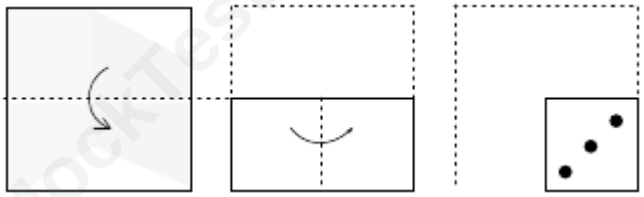
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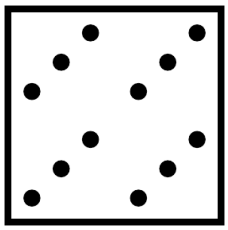
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ENGLISH LANGUAGE

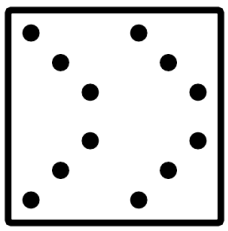
Q1. A square sheet of paper is folded along the dotted line successively along the directions shown and is then punched in the end. How would the paper look when unfolded?



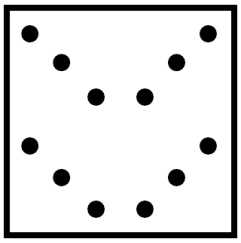
(a)



(b)

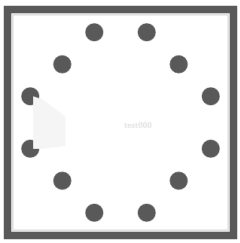


(c)



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(d)



Q2. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some houses are trees.

All flowers are houses.

No vegetable is a flower.

Conclusions:

(I) Some vegetables are houses is a possibility.

(II) Some flowers are trees is a possibility.

(III) No vegetable is a house.

(a) Both conclusions II and III follow
(b) Only conclusion II follows
(c) Both conclusions I and II follow
(d) Only conclusion III follows

Q3. 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?

4 B 18 D 5 C 9 A 9 = ?

(a) 88
(b) 58
(c) 78
(d) 68

Q4. What will come in the place of '?' in the following equation, if '+' and '-' are interchanged with '÷' and '×', respectively?

88 + 8 - 17 × 16 ÷ 40 = ?

(a) 203
(b) 197
(c) 200
(d) 211

Q5. In a certain code language, 'BALD' is coded as '7680' and 'DRAB' is coded as '8097'. What is the code for 'L' in the given code language?

(a) 8
(b) 6
(c) 0
(d) 7

Q6. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

A_DE, FGI_, _LNO, PQ_T, UV_Y

(a) CJKSX
(b) CJKRW
(c) BJKRW
(d) BJKSX

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Q7. Select the word - pair that best represents a similar relationship to the one expressed in the pair of words given below.

(The words must be considered as meaningful English words and must not be related to each other based on the number of letters / consonants / vowels in the word.)

Heat : Cold

(a) Encourage : Motivate
(b) Compete : Success
(c) Sustain : Persist
(d) Demolish : Build

Q8. RSPT is related to VWTX in a certain way based on the English alphabetical order. In the same way, MNKO is related to QROS. Which of the following is GHEI related to, following the same logic?

(a) KLHI
(b) KLJM
(c) KLIM
(d) JKHL

Q9. 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) 2 - 6
(b) 4 - 20
(c) 5 - 30
(d) 8 - 75

Q10. In a certain code language, 'QUEZAL' is coded as '82' and 'LUCKY' is coded as '72'. What is the code for 'ADVERSE' in the given code language?

(a) 68
(b) 78
(c) 74
(d) 62

Q11. GIEK is related to OQMS in a certain way based on the English alphabetical order. In the same way, KMIO is related to SUQW. To which of the following is EGCI related to, following the same logic?

(a) MQOK
(b) MOKQ
(c) PRNT
(d) UWSY

Q12. The second number in the given number pairs is obtained by performing certain mathematical operations(s) on the first number. The same operation(s) are followed in all the number pairs except one. Find that odd number pair.

(a) 5 : 20
(b) 4 : 12
(c) 7 : 42
(d) 6 : 36

Q13. Based on the alphabetical order, three of the following four letter - clusters are alike in a certain way and thus form a group. Which of the following does NOT belong to that group?

(a) WZB
(b) UWX
(c) ORT
(d) GJL

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Q14. In a certain code language,

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

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

A × B means 'A is the son of B'

A ÷ B means 'A is the mother of B'

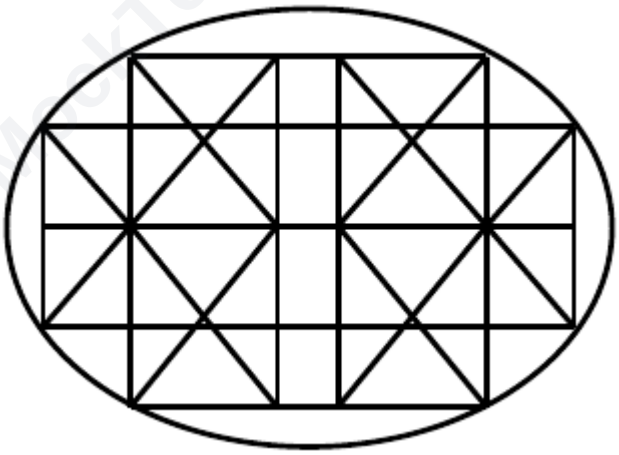
Based on the above, how is F related to J if 'F × G - H ÷ I + J' ?

(a) Brother
(b) Mother's brother
(c) Father
(d) Father's brother

Q15. If 9 July 1978 is Sunday, then what will be the day of the week on 19 September 1983?

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

Q16. How many triangles are there in the given figure?



(a) 24
(b) 28
(c) 22
(d) 30

Q17. N is the brother of X. X is the wife of M. S is the daughter of M. K is the brother of S. P is the mother of N. How is K related to P?

(a) Son's Son
(b) Daughter's son
(c) Mother's brother
(d) Sister's Son

Q18. What should come in place of X in the given series?

23 31 47 71 103 X

(a) 153
(b) 147
(c) 150
(d) 143

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Q19. Select the number from among the given options that can replace the question mark (?) in the following series.

136, 135, 137, 136, 138, 137, ?

(a) 136
(b) 140
(c) 138
(d) 139

Q20. 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.)

(15, 96)

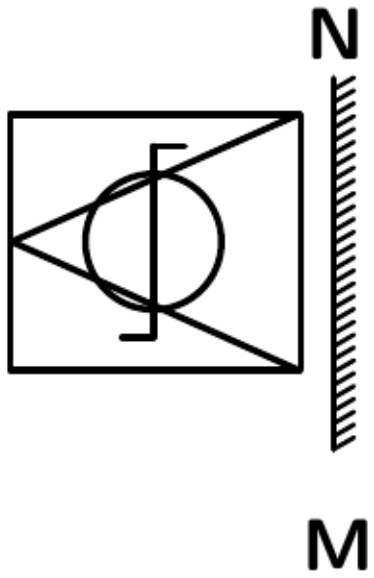
(35, 216)

(a) (41, 250)
(b) (18, 102)
(c) (29, 180)
(d) (21, 122)

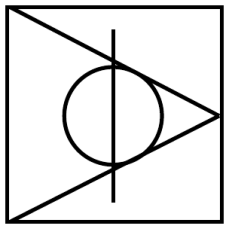
Q21. The position of how many letters will remain unchanged if each of the letter in the word 'ACQUIRE' is arranged in alphabetical order?

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

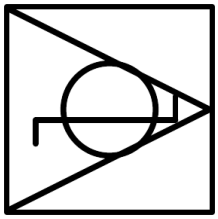
Q22. Select the correct mirror image of the given figure when the mirror is placed at MN as shown.



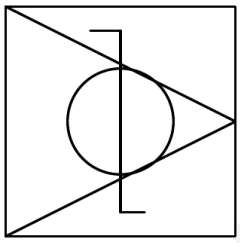
(a)



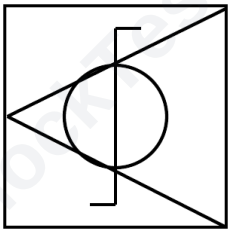
(b)



(c)



(d)

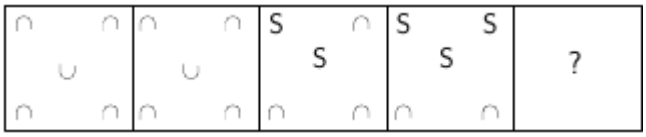


Q23. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

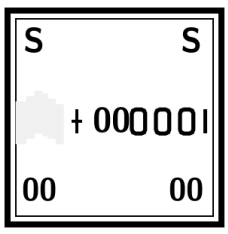
A_CD_CDAC_AB_ABC

(a) AACD
(b) AABB
(c) BBDD
(d) BDBD

Q24. Identify the figure given in the options which when put in place of the question mark (?) will logically complete the series.

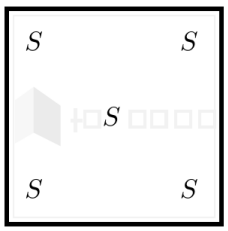


(a)

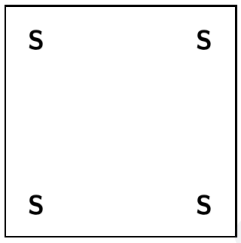


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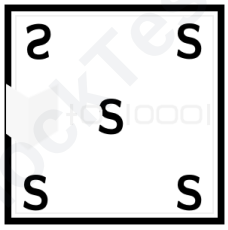
(b)



(c)



(d)



Q25. Select the set in which the numbers are related in the same way as are the numbers of the given sets.

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into their 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.)

11 : 87 : 34

6 : 28 : 8

(a) 9 : 25 : 54
(b) 7 : 35 : 12
(c) 8 : 19 : 47
(d) 12 : 81: 63

GENERAL INTELLIGENCE

Q26. Which is the most powerful river in the world in terms of its volume and extensive drainage into the Atlantic Ocean?

(a) Congo
(b) Amazon
(c) Amur
(d) Nile

Q27. Which of the following statements about Akshdeep Singh is NOT true?

(a) Akshdeep Singh won the National Race Walking Championship.
(b) Akshdeep Singh qualified for the Paris 2024 Olympics and World Athletics Championships 2023.
(c) Akshdeep Singh won a medal at Nomi in 2023.
(d) In the men's 20 km race walk event, Akshdeep Singh clocked 1 hour 19 minutes 55 seconds, a new national record, to win the Silver medal.

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Q28. The law of octaves asserts that every eighth element has comparable properties when grouped in increasing order of their atomic masses and is also known as:

(a) Gravity relation
(b) Doppler relation
(c) Coulomb's relation
(d) Newland's relation

Q29. Which of the following regions in India is nicknamed as the storehouse of minerals?

(a) Deccan Plateau
(b) Western Ghats
(c) Chota Nagpur
(d) Himalayas

Q30. Which of the following is consistent with the import substitution policy?

(a) Capital account convertibility
(b) Flexible exchange rate policy
(c) Tariffs and quotas
(d) Current account convertibility

Q31. Which of the following will be considered normal residents of India?

A) Indians working in foreign embassies in India.

B) Ambassador for India in the rest of the world.

(a) Only A
(b) Only B
(c) Both A and B
(d) Neither A nor B

Q32. Which of the following is the most problematic and primary difficulty of barter exchanges as against money - based exchanges?

(a) Bartered exchanges involve difficulty in preserving value.
(b) Barter exchanges may result in an incorrect valuation of the goods transacted.
(c) Barter exchanges may be imperfectly divisible.
(d) Barter exchanges require a double coincidence of wants.

Q33. Who among the following personalities is a professional Kuchipudi Dancer?

(a) Radha Sridhar
(b) Surupa Sen
(c) Anupama Hoskere
(d) Kaushalya Reddy

Q34. Which region has the maximum concentration of Iron and Steel industries?

(a) Shillong Plateau
(b) Deccan Plateau
(c) Chota Nagpur Plateau
(d) Malwa Plateau

Q35. Who among the following has been accused of committing the judicial murder of Raja Nand Kumar?

(a) Lord Wellesly
(b) Lord Dalhousie
(c) Lord Cornwallis
(d) Warren Hastings

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Q36. In which year did Swami Dayanand Saraswati establish Arya Samaj?

(a) 1875
(b) 1867
(c) 1828
(d) 1887

Q37. Which of the following is a transfer payment?

a) Unemployment allowances
b) Scholarships
c) Retirement pension

(a) Only a
(b) All of a, b and c
(c) Only a and b
(d) only c

Q38. Which equation was verified by American scientists Nichols and Hull in 1903 by measuring the radiation pressure of visible light?

(a) Pr = C/N
(b) P = L/M
(c) P = F/A
(d) P = U/C

Q39. Match the items in list I with those in list II.

Measure of Money Supply	Formula		
i.	M1	a.	M1 + T_d
ii.	M2	b.	C_p + D_d + O_d
iii.	M3	c.	M3 + TPO_d
iv.	M4	d.	M1 + POSB_d

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

Q40. Sheorinarayan fair is held in which of the following states?

(a) West Bengal
(b) Jharkhand
(c) Chhattisgarh
(d) Madhya Pradesh

Q41. Where is Bhimrao Ambedkar Multipurpose Stadium situated?

(a) Faizabad
(b) Ghaziabad
(c) Kanpur
(d) Patna

Q42. Which of the following Articles of the Indian Constitution has the idea that 'No child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment?

(a) Article 22
(b) Article 24
(c) Article 19
(d) Article 20

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Q43. Totaram Sharma is associated with which of the following instruments?

(a) Tanpura
(b) Panchavadyam
(c) Pakhawaj
(d) Sarangi

Q44. The founders of the Vijayanagara Empire were the feudatories of which of the following dynasties?

(a) Hoysala
(b) Pandya
(c) Kakatiya
(d) Chola

Q45. The Pakhawaj syllables are primarily used to conclude which of the following Indian classical dances?

(a) Manipuri
(b) Kathak
(c) Odissi
(d) Kathakali

Q46. Who among the following was an initial member of the Drafting Committee of the Constituent Assembly?

(a) Dr. KM Munshi
(b) BN Rao
(c) TT Krishnamachari
(d) N Madhav Rau

Q47. In the 2023 Women's World Boxing Championship gold medal match, Lovlina Borgohain defeated Australia's Caitlin Parker in the _____ kg weight category.

(a) 70
(b) 75
(c) 80
(d) 85

Q48. In March 2023, the Pension Fund Regulatory and Development Authority (PFRDA) amended the 2015 PFRDA Regulation to increase the age limit for the Ombudsman from 65 to _____ years.

(a) 77
(b) 80
(c) 70
(d) 90

Q49. The literacy rate of Andhra Pradesh state as per the Census of 2011 is _____.

(a) 66.48%
(b) 67.02%
(c) 66%
(d) 68.5%

Q50. In which year did Rudolf Ludwig Karl Virchow formulate his famous aphorism 'Omnis cellula - e cellula' which became a part of the foundation of cell theory?

(a) 1855
(b) 1869
(c) 1840
(d) 1835

QUANTITATIVE APTITUDE

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Q51. Directions: The table below shows the laptop sold on different days by different wholesalers. Study the table and answer the questions that follow.

	Monday	Tuesday	Wednesday	Thursday	Friday
Wholesaler1	22	20	14	24	10
Wholesaler2	46	45	06	14	8
Wholesaler3	18	40	07	15	19
Wholesaler4	23	30	32	06	26

Laptop sold by wholesaler 1 and wholesaler 2 together on Thursday is what per cent of laptop sold by wholesalers 3 on Friday?

(a) 200%
(b) 150%
(c) 100%
(d) 50%

Q52. Find the area of a right - angled triangle whose base is 12 cm and hypotenuse is 13 cm.

(a) 30 cm^2
(b) 55 cm^2
(c) 65 cm^2
(d) 22 cm^2

Q53. Find the value of tan(50 + θ) - Cot(40 - θ).

(a) 1/2
(b) -1
(c) 0
(d) 1

Q54. In 2021, Sam received an annual increment in his salary by 40% but due to the recession in 2022, the company started taking cost-cutting measures and his salary was reduced by 15%. What was the net change in his salary?

(a) 17% increase
(b) 19% increase
(c) 9% decrease
(d) 11% increase

Q55. A rod of 5 cm radius and 52 cm length is converted into a wire of 100 cm length of uniform thickness. The radius of the wire (in cm) is:

(a) √13
(b) √15
(c) √23
(d) √17

Q56. If $(y^2 + 1/(y^2)) = 74$ and $y > 1$, find the value of $(y - 1/y)$.

(a) 6√2
(b) • 2√19
(c) 2√19
(d) • 6√2

Q57. If a sum of money at simple interest becomes 45 times in 110 years, then in how many years will that sum become 23 times?

(a) 48
(b) 60
(c) 55
(d) 50

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Q58. Two trains 320 m and 205 m in length are running towards each other on parallel lines. One train runs at the rate of 70 kmph and the other train runs at the rate of 56 kmph. Find the time they will take to cross each other (in seconds).

(a) 10
(b) 20
(c) 12
(d) 15

Q59. A can complete a task in the same time in which B and C work together. If A and B could complete it jointly in 10 days and C alone in 50 days, then B could complete it independently in:

(a) 26 days
(b) 27 days
(c) 25 days
(d) 23 days

Q60. What is the value of $(1 - \sin^2 A) \operatorname{cosec}^2 A$?

Given A is an acute angle.

(a) $\cot^2 A$
(b) $\cos^2 A$
(c) $\tan^2 A$
(d) $\sin^2 A$

Q61. If $3x - 2y = 3$ and $xy = 9$, then find the value of $3x + 2y$.

(a) 16
(b) 13
(c) 14
(d) 15

Q62. Study the table given below and answer the question that follows.

The table below shows the total number of students studying different subjects in a college and the percentage of boys and girls.

Subject	Number of Students	Percentage of Girls	Percentage of Boys
Hindi	110	60	40
English	70	50	50
Physics	50	30	70
Chemistry	40	80	20
Mathematics	80	20	80
Computers	90	40	60

What is the ratio of the total number of girls in all the subjects to that of boys in all the subjects?

(a) 5 : 6
(b) 7 : 9
(c) 6 : 7
(d) 2 : 3

Q63. Simplify the following:

$18 \times [24 \div 70 \times \{25 \times 49 \div (5 \times 7)\}]$

(a) 218
(b) 216
(c) 215
(d) 220

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Q64. A 40 - litre mixture of milk and water contains milk and water in the ratio of 7 : 3. How many litres of water should be added to the mixture so that the resulting mixture has 60% of water in it?

(a) 30
(b) 35
(c) 20
(d) 25

Q65. ΔABC inscribe in a circle with center O. if AB = 9 cm, BC = 40 cm and AC = 41 cm, then what is the circum-radius of a triangle?

(a) 20 1/2 cm
(b) 12 1/2 cm
(c) 18 1/2 cm
(d) 16 1/2 cm

Q66. The compound interest accrued on a sum of Rs. 20,000 at the end of 2 years compounded annually is Rs. 2,050. Find the compound interest at the end of the 3rd year.

(a) Rs. 3,153.50
(b) Rs. 2,852.50
(c) Rs. 3,152.50
(d) Rs. 3,154.50

Q67. If Tan 15° = 2 - √3, then the value of Tan 15° Cot 75° + Tan 75° Cot 15° is:

(a) 6
(b) 10
(c) 8
(d) 14

Q68. A certain sum was to be divided between A and B in the ratio 8 : 5. However, by mistake, it was divided in the ratio 5 : 8. Thus, A gets Rs. 300 less than his original share. Find the sum.

(a) Rs. 2,600
(b) Rs. 1,500
(c) Rs. 1,300
(d) Rs. 600

Q69. Akash sold a motorcycle to Navin at a profit of 10%. Navin sold it to Vinay at a profit of 20%. Vinay sold it to Vishal at a loss of 5%. If Vishal paid Rs. 62,700 for the motorcycle, then what was the cost of the motorcycle (in Rs.) for Akash?

(a) 48,000
(b) 48,500
(c) 52,500
(d) 50,000

Q70. The perimeters of two similar triangles XYZ and PQR are respectively 62 cm and 42 cm. If PQ = 21 cm, find XY

(a) 27 cm
(b) 28 cm
(c) 29 cm
(d) 31 cm

Q71. If $px + qy = 1$ and $qx + py = (2\ p\ q)/(p^2+q^2)$, then $(x^2 + y^2)\ (p^2 + q^2)$ is equal to:

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

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Q72. The radii of two circles are 9 cm and 4 cm, the distance between their centres is 13 cm, then the length of the direct common tangent is:

(a) 8 cm
(b) 14 cm
(c) 12 cm
(d) 16 cm

Q73. If an electricity bill is paid before the due date, one gets a reduction of 13% on the amount of the bill. By paying the bill before the due date, Ravi got a reduction of Rs. 260.39. The amount of his electricity bill (in Rs.) was:

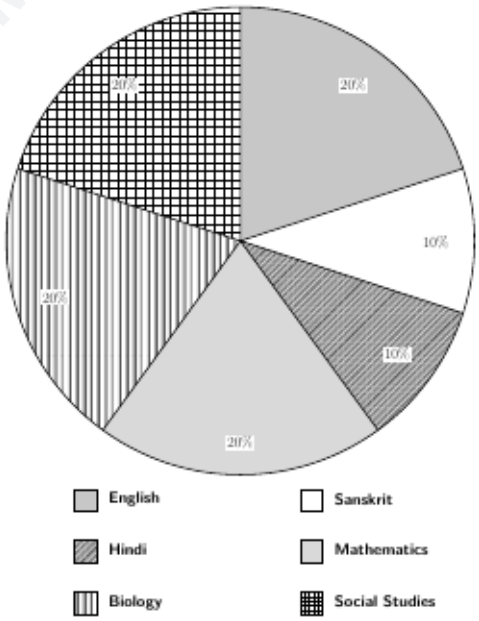
(a) 2,003
(b) 2,580
(c) 2,230
(d) 2,064

Q74. A salesman marks his goods 30% above the cost and gives a discount of 10% on them. Find his gain or loss percentage.

(a) Loss 7%
(b) Gain 7%
(c) Loss 17%
(d) Gain 17%

Q75. Study the given pie-chart and answer the question that follows.

Percentage - wise distribution of teachers in six different subjects in a school is given in the pie - chart. The total number of teachers is 600. The ratio of male and female teachers is 3 : 1.



Find the ratio of teachers in English, Sanskrit and Hindi to teachers in Mathematics, Biology and Social Studies.

(a) 2 : 5
(b) 1 : 2
(c) 2 : 3
(d) 1 : 5

GENERAL AWARENESS

Q76. Select the most appropriate synonym of the given word.

Dynamic

(a) Famous
(b) Halt

(c) Innate
(d) Energetic

Q77. Choose the correct meaning of the underlined word in the given sentence.
The museum's archive is a great place to find valuable artifacts such as ancient manuscripts.
(a) A collection of essays
(b) A room to store lots of books
(c) A room to store important official documents
(d) A collection of historical documents or records

Q78. Select the most appropriate ANTONYM of the given word.
Guile
(a) Deceit
(b) Treachery
(c) Honesty
(d) Terseness

Q79. Select the most appropriate homophone to fill in the blank.
Ants _____ food during the summer and save it for winter.
(a) horde
(b) hoard
(c) heard
(d) herd

Q80. The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.
A owl was / hooting throughout / the night.
(a) A owl was
(b) the night
(c) No error
(d) hooting throughout

Q81. Select the option that can be used as a one - word substitute for the given group of words.
One who studies the evolution of mankind
(a) Anarchist
(b) Amateur
(c) Anthropologist
(d) Antagonist

Q82. Select the most appropriate ANTONYM for 'redeem' in the given sentence.
Shantanu violated the rules of the college when he started screaming and shouting in the premises.
(a) Screaming
(b) Violated
(c) Premises
(d) Shouting

Q83. Select the option that can be used as a one - word substitute for the given group of words.
Something to be easily carried or moved
(a) Robust
(b) Stagnant
(c) Portable
(d) Fragile

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Q84. Select the option that can be used as a one - word substitute for the given group of words.

An imagined place or state of things in which everything is perfect

(a) Dwarf
(b) Utopia
(c) Chronology
(d) Octogenarian

Q85. Select the option that can be used as a one - word substitute for the given group of words.

Poor physical or mental condition.

(a) Ill nature
(b) Illicit
(c) Ill - fated
(d) Ill health

Q86. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

They were laid / in the sun / the entire morning / till Sudharshan came.

(a) till Sudharshan came
(b) They were laid
(c) the entire morning
(d) in the sun

Q87. Select the correct spelling of the underlined word in the given sentence.

The feeling of weightlessness while skydiving is known to exilarete many people.

(a) exilairate
(b) exhilarete
(c) exilarate
(d) exhilarate

Q88. Select the option that expresses the given sentence in active voice.

I was never supported by my family.

(a) My family have never supported me.
(b) My family had never supported me.
(c) My family never supported me.
(d) My family never supports me.

Q89. The following sentence has been split into four segments. Identify the segment that contains a spelling error.

The famous author / clearly mentioned / all the names of his friends / in the acknolledgments of the book.

(a) in the acknolledgments of the book.
(b) The famous author
(c) clearly mentioned
(d) all the names of his friends

Q90. Select the most appropriate ANTONYM of the given word.

Mean

(a) Minute
(b) Noble
(c) Notorious
(d) Novel

Q91. Select the most appropriate idiom for the underlined segment in the following sentence.

Nitish’s promotion is due.

(a) On the cards
(b) Not worth his salt
(c) With due respect

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(d) Done to death

Q92. 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 social evolution by imitation

B) by reason of its higher standard of living

C) the royal style is the agent

D) and cultural patterns are similarly transmitted by the dominant caste

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

Q93. Select the option that expresses the following sentence in passive voice.

An agitated gathering of workers in the company disturbed the meeting.

(a) Meeting of the company was disturbed.
(b) An agitated meeting of workers in the company disturbed the gathering.
(c) The meeting was disturbed by an agitated gathering of workers in the company.
(d) The gathering agitated the meeting of the company.

Q94. Select the most appropriate meaning of the given idiom.

Costs an arm and a leg

(a) To be affordable
(b) To be moderately priced
(c) To be free of charge
(d) To be very expensive

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

The _____ of the company's CEO was widely praised for her innovative leadership.

(a) rein
(b) rayne
(c) rain
(d) reign

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.

Globalisation is not a new 1_____. Traders travelled vast distances in ancient times to buy commodities that were 2_____ and expensive for sale in their homelands. The Industrial Revolution brought 3_____ in transportation and communication in the 19th century that eased trade across borders. The think tank, Peterson Institute for International Economics (PIIE), states globalisation 4_____ after World War I and nations moved toward 5_____ as they launched import taxes to more closely guard their industries in the aftermath of the conflict.

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

(a) power
(b) variation
(c) design
(d) concept

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

(a) plentiful
(b) common
(c) preserved
(d) rare

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

(a) chaos
(b) advances
(c) issues
(d) a decline

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

(a) trooped
(b) soared
(c) de - escalated
(d) stalled

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

(a) protectionism
(b) integration
(c) liberalisation
(d) diversification

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) [figure]

The paper after unfolded will be:

Hence, the correct answer is "Option 4".

Q2. Answer: (c) Both conclusions I and II follow

Given Statements:

Some houses are trees.

All flowers are houses.

No vegetable is a flower.

The least possible Venn diagram for the given statement is:

Conclusions:

I. Some vegetables are houses is a possibility - True (Because, Some houses are not vegetables, but no information given about the remaining part between vegetables and houses, so it can be possible).

II. Some flowers are trees is a possibility - True (Because, No definite relation given between flowers and trees, so it can be possible).

III. No vegetable is a house - False (Because, some vegetables are definitely not houses, but no information given about the remaining part, so it can be possible only).

So, Both conclusions I and II follow.

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Hence, the correct answer is "Option 3".

Q3. Answer: (d) 68

Given Equation: 4 B 18 D 5 C 9 A 9 = ?

BODMAS Rule:

Decoding the given information:

Alphabet	A	B	C	D
Meaning	÷	×	•	•

Now replacing the sign from left to right using BODMAS Rule, we get:

=> 4 × 18 - 5 + 9 ÷ 9

=> 4 × 18 - 5 + 1

=> 72 - 5 + 1

=> 73 - 5 = 68

Hence, the correct option is "Option 4".

Q4. Answer: (d) 211

BODMAS Rule:

According to the given question:

Symbols	Interchanged with
•	÷
•	×

Given equation : 88 + 8 - 17 × 16 ÷ 40 = ?

Now if '+' and '-' are interchanged with '÷' and '×' respectively then:

=> 88 ÷ 8 × 17 - 16 + 40 = ?

=> 11 × 17 - 16 + 40 = ?

=> 187 - 16 + 40 = ?

=> 227 - 16 = 211.

Hence, the correct answer is 'Option 4'.

Q5. Answer: (b) 6

The logic followed here is:

‘BALD' is coded as '7680'

'DRAB' is coded as '8097’,

Here, 'BAD' is common in both the statement, so the remaining number is the code for the remaining letter.

So, 'L' will be coded as '6'.

Hence, the correct answer is "Option 2".

Q6. Answer: (d) BJKSX

The logic followed here is:

So, 'BJKSX' will be the correct alternative that will complete the series.

Hence, the correct answer is "Option 4".

Q7. Answer: (d) Demolish : Build

The logic followed here is:

Logic: The second word is Antonym of the first word.

Here:

Heat : Cold → Cold is antonym of Heat.

Similarly,

Demolish : Build → Build is antonym of Demolish.

Hence, the correct answer is "Option 4".

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Q8. Answer: (c) KLIM

The logic followed here is:
For, 'RSPT is related to VWTX'
For, 'MNKO is related to QROS'
Similarly, for 'GHEI'
So, 'GHEI' will be related to 'KLIM'
Hence, the correct answer is "Option 3".

Q9. Answer: (d) 8 - 75

The logic followed here is:
Logic: 1st number × (1st number + 1) = 2nd number.
Now,
Option 1) 2 - 6
=> 2 × (2 + 1)
=> 2 × 3 = 6.
Option 2) 4 - 20
=> 4 × (4 + 1)
=> 4 × 5 = 20.
Option 3) 5 - 30
=> 5 × (5 + 1)
=> 5 × 6 = 30.
Option 4) 8 - 75
=> 8 × (8 +1)
=> 8 × 9 = 72 ≠ 75.
Hence, the correct option is "Option 4".

Q10. Answer: (c) 74

The logic followed here is:
Logic: Sum of the place value of all numbers = Code of the word.
'QUEZAL' is coded as '82'
=> 17 + 21 + 5 + 26 + 1 + 12 = 82.
'LUCKY' is coded as '72'
=> 12 + 21 + 3 + 11 + 25 = 72.
Similarly, for 'ADVERSE'
=> 1 + 4 + 22 + 5 + 18 + 19 + 5 = 74.
So, 'ADVERSE' will be coded as '74'.
Hence, the correct answer is "Option 3".

Q11. Answer: (b) MOKQ

The logic followed here is:
For, 'GIEK is related to OQMS'
For, 'KMIO is related to SUQW'
Similarly, for 'EGCI'
So, 'EGCI' will be related to 'MOKQ'
Hence, the correct answer is "Option 2".

Q12. Answer: (d) 6 : 36

The logic followed here is:
Logic: 1st number × (1st number - 1) = 2nd number
Now,
Option 1) 5 : 20
→ 5 × (5 - 1)
→ 5 × 4 = 20.

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Option 2) 4 : 12
→ 4 × (4 - 1)
→ 4 × 3 = 12.
Option 3) 7 : 42
→ 7 × (7 - 1)
→ 7 × 6 = 42.
Option 4) 6 : 36
→ 6 × (6 - 1)
→ 6 × 5 = 30 ≠ 36.
So, odd number pair is '6 : 36'.
Hence, the correct option is "Option 4".

Q13. Answer: (b) UWX

The logic followed here is:
Option 1) WZB
Option 2) UWX
Option 3) ORT
Option 4) GJL
Here, 'UWX' is odd among the given options.
Hence, the correct answer is "Option 2".

Q14. Answer: (a) Brother

Family Chart:
Decoding the Symbols:

Symbol	•	•	×	÷
Meaning	Sister	Husband	Son	Mother

Given: F × G - H ÷ I + J
It means: F is the Son of G, G is the Husband of H, H is the Mother of I, I is the Sister of J.
So, F is the 'Brother' of J.
Hence, the correct answer is "Option 1".

Q15. Answer: (a) Monday

Given: 9 July 1978 is Sunday.
Now, 1978 to 1983 = 5 Years.
In 5 years, 1 Leap year (1980) and 4 ordinary years.
Total odd days from 9 July 1978 to 9 July 1983 = (1 × 2) + (4 × 1) = 2 + 4 = 6 days.
So, 9 July 1983 will be Sunday + 6 = Saturday.
Now, 9 July 1983 to 19 September 1983 = 22(July) + 31(Aug) + 19(Sept) = 72 days i.e., 10 weeks and 2 odd days.
Therefore, 19 September 1983 = Saturday + 2 = Monday.
Hence, the correct option is "Option 1".

Q16. Answer: (b) 28

The triangles are:
So, there are '28' triangles in the given figure.
Hence, the correct answer is "Option 2".

Q17. Answer: (b) Daughter's son

Family Chart:
Given:
N is the brother of X.
X is the wife of M.
S is the daughter of M.

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K is the brother of S.
P is the mother of N.
So, K is 'Daughter's son' of P.
Hence, the correct answer is "Option 2".

Q18. Answer: (d) 143

The logic followed here is:
So, '143' will replace the 'X' in the given series.
Hence, the correct answer is "Option 4".

Q19. Answer: (d) 139

The logic followed here is:
thus, "139" will replace the question mark in the given series.
Hence, the correct option is "Option 4".

Q20. Answer: (c) (29, 180)

The logic followed here is:
Logic: (1st number × 6) + 6 = 2nd number.
(15, 96)
=> (15 × 6) + 6
=> 90 + 6 = 96.
(35, 216)
=> (35 × 6) + 6
=> 210 + 6 = 216.
Now, checking the options:
Option 1) (41 - 250)
=> (41 × 6) + 6
=> 246 + 6 = 252 ≠ 250.
Option 2) (18 - 102)
=> (18 × 6) + 6
=> 108 + 6 = 114 ≠ 102.
Option 3) (29, 180)
=> (29 × 6) + 6
=> 174 + 6 = 180.
Option 4) (21, 122)
=> (21 × 6) + 6
=> 126 + 6 = 132 ≠ 122.
Hence, the correct option is "Option 3"

Q21. Answer: (a) Three

The logic followed here is:
Given word: ACQUIRE
Now, arranged in reversed alphabetical order:

Word	A	C	Q	U	I	R	E
Alphabetical order	A	C	E	I	Q	R	U

Here, 'Three' letters 'A C R' will remain unchanged if each of the letters in the word ACQUIRE is arranged in alphabetical order.
Hence, the correct answer is "Option 1".

Q22. Answer: (c) [figure]

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

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Q23. Answer: (c) BBDD

The logic followed here is:

Given Sequence: A_CD_CDAC_AB_ABC

Now, putting the letters in the blank spaces given in the option one by one:

Option 1) AACD → AACD / ACDA / CCAB / DABC

Option 2) AABB → AACD / ACDA / CBAB / BABC

Option 3) BBDD → ABCD / BCDA / CDAB / DABC

Here, option 3 followed a pattern, as the first letter is shifting to the last of the next letters pairs.

Option 4) BDBD → ABCD / DCDA / CBAB / DABC

Hence, the correct answer is "Option 3"

Q24. Answer: (d) [figure]

The logic followed here is:

Logic: One horizontal 'S' is getting changed it's shape in vertical form to the each next image.

So, option 4 will complete the series.

Hence, the correct answer is "Option 4".

Q25. Answer: (d) 12 : 81: 63

The logic followed here is:

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

Given,

11 : 87 : 34

=> $(11)^2$ - 34

=> 121 - 34 = 87.

And, 6 : 8 : 28

=> $(6)^2$ - 28

=> 36 - 28 = 8.

Now, checking the options:

Option 1) 9 :25 : 54

=> $(9)^2$ - 54

=> 81 - 54 = 27 ≠ 25.

Option 2) 7 : 35 : 12

=> $(7)^2$ - 12

=> 49 - 12 = 37 ≠ 35.

Option 3) 8 : 19: 47

=> $(8)^2$ - 47

=> 64 - 47 = 17 ≠ 19.

Option 4) 12 :81 : 63

=> $(12)^2$ - 63

=> 144 - 63 = 81.

Hence, the correct option is "Option 4".

Q26. Answer: (b) Amazon

The correct answer is Amazon.

Key Points

• The Amazon River holds the distinction of being the world's largest river in terms of both discharge volume and drainage basin area, surpassing even the combined flow and basin areas of the Nile, Yangtze, and Mississippi Rivers.

• Additionally, it stands as the planet's largest drainage system by volume of flow and basin area.

• Throughout the year, the width of the Amazon River varies, with a range of 2 to 6 miles during the dry season (June to November) and expanding to up to 30 miles wide during the wet season (December through April).

• The Amazon River basin experiences substantial rainfall, particularly during the wet season, which significantly contributes to the river's formidable discharge volume.

Important Points

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• The Congo River, spanning 4,700 kilometres (2,900 miles) in length, courses through west-central Africa. It ranks as the ninth-longest river globally and boasts the title of the world's deepest river, with recorded depths reaching approximately 220 meters (720 feet).

• The Amur River, also recognized as the Heilong River, stretches over 2,824 kilometres in length, delineating the boundary between Russia and China. It stands as one of Asia's longest rivers and is celebrated as one of the world's most extensive free-flowing waterways.

• The Nile, a significant river flowing northward in northeastern Africa, empties into the Mediterranean Sea.

Q27. Answer: (d) In the men's 20 km race walk event, Akshdeep Singh clocked 1 hour 19 minutes 55 seconds, a new national rec...

The correct answer is In the men's 20 km race walk event, Akshdeep Singh clocked 1 hour 19 minutes 55 seconds, a new national record, to win the Silver medal.

Key Points

• Akshdeep Singh

• Akshdeep Singh, a trainee at SAI Bengaluru, took home the gold medal in the men's 20-kilometre racewalk in the Khelo India University Games in 2021.

• Before heavy rain stopped the athletic competition at the 2nd Khelo India University Games at the Sree Kanteerava Stadium, Akshdeep Singh of Punjabi University won the gold medal in the men's 20km race walk and Aparna Roy of Kerala won the women's 100m hurdles.

Q28. Answer: (d) Newland's relation

The correct answer is Newland's relation.

Key Points

• The law of octaves, also referred to as Newlands' Law of Octaves, posits that when elements are arranged in ascending order of their atomic masses, the properties of every eighth element resemble those of the first.

• In 1864, British scientist John Newlands endeavoured to organize the 62 known elements of his time. He arranged them based on increasing atomic weight and observed that every eighth element exhibited similar characteristics.

• For instance, taking the elements Li, Be, B, C, N, O, F, and Na, where lithium (Li) is the first element and sodium (Na) is the eighth, it was noted that the properties of sodium repeat those of lithium.

Important Points

• Gravity is the force that attracts objects with mass toward each other. This force is directly proportional to the masses of the objects involved and inversely proportional to the square of the distance between them, meaning it weakens as the distance between the objects increases.

• The Doppler effect refers to the alteration in the frequency of a wave when both the source emitting the wave and the observer detecting it are in relative motion concerning each other. This effect is commonly observed in various phenomena, including sound waves and light waves.

• Coulomb's law delineates the magnitude of the electrostatic force between two charged objects. According to this law, the force between the charges is directly proportional to the product of their magnitudes and inversely proportional to the square of the distance between them.

Q29. Answer: (c) Chota Nagpur

The correct answer is Chota Nagpur.

Key Points

• The Chota Nagpur Plateau in India has earned the moniker "storehouse of minerals" due to its abundant mineral wealth.

• Comprised primarily of igneous rocks dating back to the Pre-Cambrian era, this plateau boasts a rich array of resources including mica, bauxite, copper, limestone, iron ore, and coal.

• Spanning across the states of Jharkhand, Odisha, West Bengal, and Chhattisgarh, the Chota Nagpur Plateau sustains a populace whose primary occupation revolves around mining activities.

• The Chota Nagpur Dry Deciduous Forests provide a habitat for a range of endangered species, including tigers, sloth bears, leopards, blackbucks, Asian elephants, and chinkaras.

• Additionally, these forests harbour significant species of conservation concern, such as the lesser Florican and two species of hornbills.

Additional Information

• The expansive Deccan Plateau in southern India is situated between the Western Ghats and the Eastern Ghats, generally delineated as the peninsular area south of the Narmada River.

• The Western Ghats, also referred to as the Sahyadri mountain range, sprawls across an expanse of 160,000 km², stretching approximately 1,600 km parallel to the western coastline of the Indian peninsula. This range traverses through the states of

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Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.

• The Himalayas, often simply called the Himalayas, form a formidable mountain range in Asia, acting as a natural barrier separating the plains of the Indian subcontinent from the Tibetan Plateau.

Q30. Answer: (c) Tariffs and quotas

The correct answer is Tariffs and quotas.

Key Points

• Tariffs and quotas are consistent with the import substitution policy.

• Import substitution involves the practice of replacing imported goods with domestically produced alternatives.

• This strategy typically involves the implementation of tariffs and quotas to shield domestic industries from foreign competition.

• The inward-looking trade approach aims to bolster domestic production by reducing reliance on imports through protective measures.

• Its impact on domestic industries is geared towards fostering self-sufficiency by promoting the development and expansion of domestic manufacturing capabilities.

Important Points

• Tariffs are duties imposed by governments on specific types of imported goods, while quotas are restrictions placed on the quantity of a particular good that can be imported into a country.

• Capital account convertibility is a characteristic of a nation's financial system that allows for the unrestricted conversion of local financial assets into foreign financial assets, typically at exchange rates determined by market forces.

• In a flexible exchange rate system, the value of a currency is determined by the supply and demand dynamics within the market for that currency.

• Current account convertibility refers to the freedom to exchange domestic currency for foreign currency and vice versa, primarily to conduct trade in goods and services.

Q31. Answer: (c) Both A and B

The correct answer is Both A and B.

Key Points

• Both Indian citizens working in foreign embassies within India and the Ambassador representing India abroad are classified as normal residents of India.

• A normal resident in the context of India is defined as an individual who resides or is situated within the country and engages in fundamental economic activities, including earning, spending, and accruing wealth from that location.

• Additionally, normal residents possess the right to reside and work within the country without constraints and may qualify for specific entitlements or privileges.

• Indian citizens employed in foreign embassies within India are categorized as normal residents due to their citizenship, residence, and economic contributions within India.

• Their activities, including earning income and spending, contribute to the Indian economy.

• Similarly, the Ambassador representing India in foreign countries is considered a normal resident of India despite being stationed abroad, as their official duties and economic ties remain linked to India.

Additional Information

• A resident of India refers to an individual who resides within the geographical boundaries of India for a substantial period.

• This term encompasses both Indian citizens as well as foreigners who live in India for an extended duration.

• Residents of India typically engage in various economic activities within the country, including earning income, spending money on goods and services, and potentially accumulating wealth.

Q32. Answer: (d) Barter exchanges require a double coincidence of wants.

The correct answer is Barter exchanges require a double coincidence of wants.

Key Points

• Barter exchanges require a double coincidence of wants is the most problematic and primary difficulty of barter exchanges as against money-based exchanges.

• Barter exchanges necessitate a double coincidence of wants, wherein both parties must possess items desired by the other and mutually consent to trade.

• In such an economy, individuals engage in the exchange of goods or services, relying on the alignment of desires between trading partners.

• However, barter transactions are inherently inefficient due to the requisite agreement between parties.

• For instance, if one person wishes to swap their laptop for a mobile phone, both parties must reach a consensus on the terms and conditions of the exchange.

Important Points

• Barter is the practice of exchanging goods or services directly between two or more parties, without involving money or monetary instruments like credit cards.

• Essentially, it entails one party providing a good or service in exchange for another good or service from a different party.

• Bartering operates on a straightforward premise: individuals negotiate to establish the value of their respective goods and services, then offer them to each other in a mutually agreed-upon exchange.

• This system predates the existence of traditional currency, representing one of the earliest forms of trade and commerce in human history.

Q33. Answer: (d) Kaushalya Reddy

The correct answer is Kaushalya Reddy.

Key Points

• Kaushalya Reddy is a renowned figure in the field of Kuchipudi classical dance, showcasing expertise and dedication throughout her career.

• As a professional performer and educator, she has made significant contributions to the art form, particularly through her role at the Natya Tarangini Institute of Kuchipudi Dance in New Delhi.

• Reddy's commitment to preserving and promoting Kuchipudi is evident in her teachings and performances, inspiring countless students and audiences alike.

• Her accomplishments have been recognized internationally, with accolades such as the Yuva Ratna Award from the Government of Mauritius.

• Additionally, Reddy's influence extends beyond national borders, as evidenced by her associations with esteemed institutions like Sadhana Sangama International in Portland, USA, and the Meditation Centre in Minneapolis, USA.

Important Points

• Radha Sridhar was honoured with the Sangeet Natak Akademi Award in 2018 for her exceptional contributions to Bharatanatyam.

• Surupa Sen, a renowned Odissi dancer and choreographer, has resided and practised her craft at Nrityagram, a rural dance community located in Karnataka.

• Anupama Hoskere, an esteemed puppeteer, serves as the Founder-Director of Dhaatu Puppet Theater in Bengaluru.

Additional Information

• Kuchipudi, one of the eight prominent Indian classical dance forms, originates from the village of Kuchipudi in the state of Andhra Pradesh, India.

• It is a dance-drama performance deeply rooted in the ancient Hindu Sanskrit text Natya Shastra.

• Like other classical dances of India, Kuchipudi evolved as a religious art associated with itinerant storytellers, temples, and spiritual traditions. Originally, Kuchipudi was exclusively performed by all-male troupes.

• In traditional performances, male dancers would portray female roles while adorned in Agnivastra, also known as Bagalbandi, and wearing a dhoti, a single pleated garment draped around the waist.

Q34. Answer: (c) Chota Nagpur Plateau

The correct answer is Chota Nagpur Plateau.

Key Points

• The Chota Nagpur plateau stands out as the hub of iron and steel industries in India, primarily due to its abundant reserves of high-grade hematite iron ore found in places like Noamundi, Gua, Kolhan, Dharwar, and Budabaru.

• This region also boasts extensive coal deposits, further bolstering its appeal for iron and steel production.

• Most of the iron and steel plants are strategically situated across four states — West Bengal, Jharkhand, Odisha, and Chhattisgarh.

• Key steel-producing centers such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, and Bokaro are concentrated in this area.

• Additionally, Bhadravati and Vijay Nagar in Karnataka, Vishakhapatnam in Andhra Pradesh, and Salem in Tamil Nadu emerge as significant steel hubs in southern India.

• The growth of the iron and steel industry in this region has been fueled by factors such as abundant raw materials, a readily available workforce, efficient transportation networks, and access to lucrative markets.

Important Points

• The Chota Nagpur Plateau, situated in eastern India, spans across significant portions of Jharkhand state along with adjoining areas of Chhattisgarh, Odisha, West Bengal, and Bihar.

• To the north and east of the plateau lies the vast Indo-Gangetic plain, while the basin of the Mahanadi river extends to the south.

• Covering an approximate area of 65,000 square kilometers, the Chota Nagpur Plateau serves as a prominent geographical

feature in the region.

Additional Information

• The Shillong Plateau, situated in eastern Meghalaya state of India, is defined by its western, northern, and southern ridges, which correspond to the Garo, Khasi, and Jaintia Hills respectively. In southern India, the expansive

• Deccan Plateau lies between the Western Ghats and the Eastern Ghats. This plateau is generally described as the peninsular region extending south of the Narmada River.

• The Malwa Plateau, located in north-central India, is a volcanic plateau covering parts of Madhya Pradesh, Gujarat, and Rajasthan. Encompassing an area of 83,535 square kilometers, it boasts an average elevation of 500 meters above sea level.

Q35. Answer: (d) Warren Hastings

The correct answer is Warren Hastings.

Key Points

• Nand Kumar accused Warren Hastings, then Governor General of Bengal, of bribery and corruption, leading to a famous case often referred to as the "First Judicial Murder of Colonial India" or the 'Black Case.'

• This legal dispute unfolded between Lord Warren Hastings and Raja Nand Kumar, a Hindu Brahmin Zamindar.

• Allegations were exchanged between both parties, resulting in contentious situations that obscured the principles of a fair trial.

• The case exemplifies a dark chapter in the judiciary, highlighting how abuse of power and authority led to the wrongful conviction and subsequent death sentence of Raja Nand Kumar.

• The legal dispute between Raja Nand Kumar and Warren Hastings traces its origins back to the passing of the Regulating Act by the British in 1773.

• One significant provision of this act was the establishment of Supreme Courts in Kolkata (then Calcutta), each presided over by four English judges.

Important Points

• Maharaja Nandakumar served as an Indian tax collector for various regions in what is now modern-day West Bengal.

• Born in Bhadrapur, which is currently located in Birbhum, he holds the unfortunate distinction of being the first Indian to be executed by hanging.

• Nandakumar was appointed by the East India Company to the position of Dewan (tax collector) for Burdwan, Nadia, and Hooghly in 1764, following the removal of Warren Hastings from the same post.

Additional Information

• Warren Hastings, on the other hand, was a British colonial administrator who held several key positions in India.

• He served as the first Governor of the Presidency of Fort William (Bengal) and was also the head of the Supreme Council of Bengal, subsequently becoming the first Governor-General of Bengal from 1772 to 1785.

• Hastings, along with Robert Clive, is credited with laying the groundwork for the British Empire in India.

Q36. Answer: (a) 1875

The correct answer is 1875.

Key Points

• Swami Dayanand Saraswati established Arya Samaj in 1875.

• The Arya Samaj is a monotheistic Hindu reform movement in India that advocates for values and practices rooted in the belief in the absolute authority of the Vedas.

• Founded by the sannyasi (ascetic) Dayanand Saraswati in the 1870s, it was the first Hindu organization to engage in proselytization within Hinduism.

• Since the 1800s, the Arya Samaj has also been involved in advancing the civil rights movement in India.

• The formal establishment date of the Arya Samaj is recognized as June 24, 1877, when the movement expanded beyond its regional roots in Punjab and gained prominence in Lahore.

Important Points

• Dayanand Saraswati, an Indian philosopher and social leader, is renowned as the founder of the Arya Samaj, a reform movement within Hinduism.

• His influential book "Satyarth Prakash" serves as a significant text on Vedic philosophy, elucidating various concepts and human responsibilities.

• In 1876, he issued the call for Swaraj, advocating for "India for Indians," a sentiment later echoed by Lokmanya Tilak.

• Rejecting idolatry and ritualistic practices, Saraswati focused on revitalizing Vedic principles.

• Both philosopher and former President of India, S. Radhakrishnan, and Sri Aurobindo recognized him as a key figure in shaping modern India.

Q37. Answer: (b) All of a, b and c

The correct answer is All of a, b and c.

Key Points

• A transfer payment is a payment made by a government for which no goods or services are received in return.

• Unemployment allowances:

• This is a transfer payment because it is typically provided by the government to individuals who are unemployed and seeking employment.

• No goods or services are exchanged directly for this payment.

• Scholarships:

• While scholarships are payments made to individuals, they are often made by organizations, institutions, or individuals themselves, rather than directly by the government.

• Scholarships are typically awarded to support education and are often based on merit, need, or some other criteria. As such, they may not always be classified as transfer payments, especially if they are funded privately.

• Retirement pension:

• It is a form of deferred compensation for services already rendered by employees during their working years.

• Therefore, it is considered an earned benefit rather than a transfer payment.

Important Points

• A transfer payment is a redistribution of wealth and income that occurs when the government pays for something without expecting anything in return, such as products or services.

• Since these payments don't directly use resources or produce output, they are regarded as non-exhaustive.

• Welfare, financial aid, social security, and government subsidies for certain industries are a few examples of transfer payments.

Q38. Answer: (d) P = U/C

The correct answer is P = U/C.

Key Points

• P = U/C verified by American scientists Nichols and Hull in 1903 by measuring the radiation pressure of visible light is the equation proposed by James Clerk Maxwell.

• This equation relates the intensity of light to its pressure.

• It is known as Maxwell's stress tensor equation, which is a part of Maxwell's equations of electromagnetism.

• The equation P = U/C is known as the radiation pressure formula.

• In this equation:

• P represents the radiation pressure,

• U represents the energy density of radiation, and

• C represents the speed of light in a vacuum.

• This equation describes the pressure exerted by electromagnetic radiation (such as light) on a surface or object. It's an important equation in physics, particularly in fields like optics and astrodynamics.

Important Points

• The idea of radiation pressure emerges from the momentum exchange that takes place between the item and the electromagnetic field.

• Since electromagnetic waves carry momentum during transit, this force is visible.

• The mechanical pressure that results from the interchange of momentum between an item and the electromagnetic field is known as radiation pressure, and it can be applied to any surface. In this instance, photons striking the object's surface cause a momentum transfer.

• Any surface's radiation pressure is influenced by its characteristics and the light source's intensity.

Q39. Answer: (b) i - b, ii - d, iii - a, iv - c

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

Key Points

• M1 represents the narrowest measure of money supply and includes:

• Currency in circulation (C)

• Demand deposits (Dd)

• Other deposits (Od)

• M2 is a broader measure of money supply and includes all components of M1 plus:

• Time deposits (Td)

• Savings deposits (S)

• M3 is an even broader measure and includes all components of M2 plus:

• Term deposits of non-banking public (TPOd)

• M4 is the broadest measure of money supply and encompasses all components of M3 plus:

• Post office savings bank deposits (POSBd)

Important Points

• The money supply refers to the aggregate sum of money circulating within an economy, encompassing physical currency, coins, and funds held in bank accounts.

• It is typically understood as a collection of secure assets accessible to households and businesses for conducting transactions or as short-term investment vehicles.

Q40. Answer: (c) Chhattisgarh

The correct answer is Chhattisgarh.

Key Points

• The Sheorinarayan Fair, a renowned festival in Chhattisgarh, takes place annually during February's Magh Purnima.

• It attracts a large gathering, both local and international, to the Sheorinarayan Temple dedicated to Lord Rama, the focal point of the festivities.

• This event showcases the vibrant cultural heritage and traditional festivals of Chhattisgarh.

• Throughout the festival, the Sheorinarayan Temple is adorned with intricate decorations of lights and flowers.

• The temple grounds transform into bustling marketplaces, offering a diverse array of traditional crafts to visitors from across India.

• The atmosphere is brimming with joyous celebrations, making it a memorable occasion for all attendees.

Additional Information

• Chhattisgarh is a landlocked state located in Central India.

• It is the ninth-largest state by area and the seventeenth most populous in India, with approximately 30 million residents.

• Chhattisgarh shares its borders with seven other states: Uttar Pradesh to the north, Madhya Pradesh to the northwest, Maharashtra to the southwest, Jharkhand to the northeast, Odisha to the east, and Andhra Pradesh and Telangana to the south.

• Formerly a part of Madhya Pradesh, Chhattisgarh was granted statehood on 1 November 2000, with Raipur as its designated capital.

Q41. Answer: (a) Faizabad

The correct answer is Faizabad.

Key Points

• The Dr. Bhimrao Ambedkar International Sports Stadium, located on the Ayodhya-Sultanpur road in the Ayodhya district of Uttar Pradesh, India, is a versatile facility designed to accommodate various sports and activities.

• It forms a key component of a large-scale project aimed at developing a sports complex in the region.

• Situated near the intersection of NH-330 and the Ayodhya ring-road, just a short distance from Ayodhya Airport, the stadium adheres to international standards.

• It is equipped with amenities such as a multipurpose hall and a swimming pool, making it one of the premier sports venues in Uttar Pradesh.

Additional Information

• Bhimrao Ramji Ambedkar, born on April 14, 1891, and passed away on December 6, 1956, was an eminent Indian figure renowned for his roles as a jurist, economist, social reformer, and political leader.

• He chaired the committee responsible for drafting the Constitution of India during the Constituent Assembly debates and later served as the Law and Justice minister in Jawaharlal Nehru's inaugural cabinet.

• Ambedkar's influence extended to inspiring the Dalit Buddhist movement following his decision to renounce Hinduism. In recognition of his contributions, he was posthumously honored with the Bharat Ratna, India's highest civilian award, in 1990.

• His followers pay homage to him with the salutation "Jai Bhim" (meaning "Hail Bhim"), while he is affectionately referred to as Babasaheb, signifying "Respected Father".

Q42. Answer: (b) Article 24

The correct answer is Article 24.

Key Points

• Article 24 of the Indian Constitution addresses the prohibition of child labour, aimed at safeguarding the well-being and rights of children.

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• Its primary objective is to prevent the exploitation of children by prohibiting their employment in hazardous occupations or processes.

• According to Article 24, no child below the age of fourteen years can be employed in factories, mines, or any other hazardous employment. This measure is implemented to ensure the protection of children's health, development, and access to education.

• While Article 24 establishes a general prohibition, it also allows for certain exceptions. These exceptions include situations where children engage in non-hazardous work within their family, participate in work as part of their school curriculum, or undertake harmless or innocent occupations.

• Additionally, Article 24 grants the government the authority to enact legislation specifying the occupations and processes deemed hazardous for children. This provision enables the government to establish necessary regulations and restrictions to effectively enforce the prohibition of child labour.

Important Points

• Article 22 of the Indian Constitution addresses the protection against arrest and detention in specific circumstances. This provision applies to both citizens and non-citizens and aims to provide procedural safeguards during arrests. The fundamental principle underlying this right is to prevent arbitrary arrests and detention, ensuring that individuals are afforded due process of law.

• In contrast, Article 19 safeguards six fundamental rights related to freedom, including speech and expression, assembly, association, movement, residence, and profession.

• On the other hand, Article 20 focuses on protecting citizens concerning convictions for offenses. It offers three types of protection against the State, ensuring fairness and justice in legal proceedings.

Q43. Answer: (c) Pakhawaj

The correct answer is Pakhawaj.

Key Points

• Totaram Sharma is associated with Pakhawaj.

• The pakhavaj is a type of double-headed drum with a barrel shape that originated in the Indian subcontinent.

• It is the oldest type of double-sided drum and is related to the mridangam in Southern India, the kendang in Maritime Southeast Asia, and other double-headed drums from South Asia.

• It is the most often used percussion instrument in the dhrupad style of Indian classical music.

• It is also occasionally employed as a rhythm accompaniment for performances of several other musical genres and dances, such as kathak, Odissi, and Marathi.

• Although they are extremely rare, clay replicas of it are still available. It was initially constructed of clay.

Important Points

• The tanpura, originating in India, is a plucked, four-stringed instrument with a long neck. It is commonly used in Indian music and bears a resemblance to simplified sitars or similar lute-like instruments. Typically, the tanpura is crafted from a gourd or pumpkin.

• Panchavadyam, translating to "orchestra of five instruments," is an art form primarily associated with temples in Kerala. It involves a combination of five instruments, including four percussion instruments — timila, maddalam, ilathalam, and idakka — and one wind instrument, kombu.

• The sarangi, utilized in traditional South Asian music, is a bowed instrument characterized by its short neck and three strings.

Q44. Answer: (c) Kakatiya

The correct answer is Kakatiya.

Key Points

• The founders of the Vijayanagara Empire were the feudatories Kakatiya dynasty.

• Before establishing the Vijayanagara Empire in 1336, Harihara and Bukka, who were initially feudatories of the Kakatiyas of Warangal, served in administrative roles for both the Kakatiya and Kampili kingdoms.

• Following the Muslim conquest of Kakatiya in 1323, they sought refuge in Kampili, where they eventually rose to become ministers.

• The Vijayanagara Empire, founded by Harihara and Bukka, emerged after their time in Kampili.

• Over its history, the empire saw the rule of significant dynasties including the Sangama, Saluva, Tuluva, and Aravidu.

Important Points

• The Hoysala Empire, a significant Kannadiga power in the Indian subcontinent, held sway over much of present-day Karnataka from the 10th to the 14th centuries. Initially headquartered in Belur, the capital later shifted to Halebidu.

• The Pandyan dynasty, also known as the Pandyas of Madurai, stood as an ancient Tamil dynasty in South India, counted among the prominent kingdoms of Tamilakam alongside the Pallavas, the Cholas, and the Cheras.

• Originating from southern India, the Chola dynasty governed the expansive Chola Empire, a prominent maritime power. The earliest verifiable mentions of the Chola date back to inscriptions dating to the 3rd century BCE during the Maurya empire under

Ashoka's reign.

Q45. Answer: (c) Odissi

The correct answer is Odissi.

Key Points

• Pakhawaj syllables are rhythmically chanted as the dance gradually transitions from slow to rapid sequences, culminating in a climactic moment when the dancer offers their final respects.

• An Odissi ensemble typically comprises a pakhawaj player (often the Guru), a vocalist, a flautist, a sitar or violinist, and a manjira player.

• The dancer adorns themselves with intricate Odiya silver jewellery and a distinctive hairstyle. The saree, commonly tailored nowadays, is distinctive to the Odissi tradition.

• In each performance, even in modern Odissi dance, there is a reiteration of the spiritual quest for liberation or moksha, echoing the traditions of the devadasis and maharis who sought enlightenment through dance.

Important Points

• Odissi, also known as Orissi in ancient texts, is a prominent classical dance form with roots tracing back to the temples of Odisha, a coastal state in eastern India.

• Odissi was predominantly performed by female artists and served as a medium to convey religious narratives and spiritual concepts, particularly those associated with Vaishnavism.

• These stories were conveyed through songs composed in accordance with the ragas and talas of Odissi music by poets from the region.

• Additionally, Odissi performances often encompass themes from other traditions, including tales related to Hindu deities such as Shiva, Surya, and various Hindu goddesses associated with Shaktism.

Additional Information

• Manipuri, also known as the Manipuri Raas Leela, is a jagoi and counts among the prominent Indian classical dance styles, originating from the state of Manipur.

• Kathak, one of the eight principal Indian classical dances, traces its origins to the wandering minstrels of ancient northern India, known as Kathakars or storytellers.

• Kathakali, a traditional form of classical Indian dance, stands as one of the oldest theater forms still in practice. It falls into the category of "story game" artistry, distinguished by the intricately colorful makeup and costumes worn by the traditional male actor-dancers.

Q46. Answer: (a) Dr. KM Munshi

The correct answer is Dr. KM Munshi.

Key Points

• Kanhaiyalal Maneklal Munshi served on the committee that B. R. Ambedkar chaired to create the Indian Constitution as well as the ad hoc Flag Committee that chose the country's flag in August 1947.

• Munshi, also known by his pen name Ghanshyam Vyas, was a Gujarati writer, politician, and activist for Indian independence. Originally a lawyer, he eventually became a politician and novelist. His name is widely recognized in Gujarati literature.

• In 1938, he established the educational trust Bharatiya Vidya Bhavan.

• From 1952 to 1957, Munshi served over Uttar Pradesh as governor.

• Munshi founded the Akhand Hindustan movement in 1959 after severing ties with the Nehru-led, socialist Congress Party.

Important Points

• Benegal Narsing Rau was an Indian statesman, jurist, civil servant, and diplomat who played a significant part in writing the country's constitution. He served as the Constituent Assembly's constitutional advisor.

• Indian politician Tiruvellore Thattai Krishnamachari held the position of Finance Minister twice, from 1956 to 1958 and 1964 to 1966.

• In addition to serving as the 23rd dewan of Mysore from 1941 to 1945, Sir Nyapathi Madhava Rau was an Indian civil servant, administrator, and statesman. He also participated in the Constituent Assembly's Drafting Committee, which was tasked with creating the Indian Constitution.

Q47. Answer: (b) 75

The correct answer is 75.

Key Points

• Lovlina Borgohain clinched the gold medal at the World Women’s Boxing Championship in New Delhi by defeating Australia’s Caitlin Parker in the 75 kg final.

• Last year, Lovlina suffered a loss in the quarterfinals of the 66 to 70 kg (light-middleweight) category at the Commonwealth

Games.

• Prior to this achievement, she secured bronze medals at the World Championships in 2018 and 2019.

• Despite participating, she failed to secure a medal at the 2018 Commonwealth Games.

• This victory marks Lovlina's first gold medal at the World Championship, adding to her previous accomplishments, including a bronze at the Tokyo Olympics.

Important Points

• At the 2018 Commonwealth Games, amateur boxer Caitlin Parker of Australia took home a silver medal.

• She participated in the 2020 Summer Olympics and took home a bronze medal at the 2014 Youth Olympics.

Q48. Answer: (c) 70

The correct answer is 70.

Key Points

• In March 2023, the Pension Fund Regulatory and Development Authority (PFRDA) amended the 2015 PFRDA Regulation to increase the age limit for the Ombudsman from 65 to 70 years.

• Under the Pension Fund Regulatory and Development Authority (Redressal of Subscriber Grievance) Regulations 2015, the maximum age limit for Ombudsman was set at 65 years.

• However, a recent gazette notification dated 27 March announced an amendment by the PFRDA, changing the upper age limit for the Ombudsman from 65 to 70 years.

• The Ombudsman, appointed by PFRDA, is tasked with receiving, assessing, and facilitating the resolution of complaints or grievances falling under the regulations.

• An individual selected as an Ombudsman serves a term of three years and may be considered for reappointment for an additional two years.

Additional Information

• The Pension Fund Regulatory and Development Authority (PFRDA) serves as the regulatory authority overseeing pensions in India, operating within the purview of the Ministry of Finance under the Government of India.

• Its establishment in 2003 stemmed from the recommendations outlined in the OASIS report commissioned by the Indian government, coinciding with the inception of the Indian National Pension Scheme.

Q49. Answer: (b) 67.02%

The correct answer is 67.02%.

Key Points

• With a literacy rate of approximately 67.02%, it suggests that out of every 100 individuals aged seven and above in Andhra Pradesh, about 67 were literate, meaning they possessed the ability to read and write with understanding.

• Andhra Pradesh's population, according to data from the 2011 Census, is 8.46 crore, up from 7.62 crore in the 2001 Census. As to the latest census data, Andhra Pradesh has a total population of 84,580,777, with 42,442,146 males and 42,138,631 females, respectively.

• Andhra Pradesh has a lower sex ratio than the national average of 940, with 993 females for every 1000 males, according to the most recent census. In Andhra Pradesh in 2001, there were 978 females for every 1000 males.

Additional Information

• According to the 2011 Indian Census, Andhra Pradesh's literacy rate is the proportion of the state's population that is seven years of age or older and can read and write in any language with comprehension.

• According to the 2011 census, 74.04% of Indians are literate. Male literacy rates are 82.14% while female literacy rates are 65.46%.

Q50. Answer: (a) 1855

The correct answer is 1855.

Key Points

• Rudolf Ludwig Karl Virchow formulated his famous aphorism "Omnis cellula - e cellula" in 1855.

• This statement, which translates to "Every cell originates from another existing cell like it," became a foundational concept in the development of the cell theory, emphasizing the continuity of cellular life and the principle that cells arise only from pre-existing cells.

• German physician, anthropologist, pathologist, prehistorian, biologist, writer, editor, and politician Rudolf Ludwig Carl Virchow was born in 1896.

• In addition to being the creator of social medicine and referred to by his peers as the "Pope of medicine," he is recognized as "the father of modern pathology."

Important Points

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• The cell theory, established in the mid-19th century, revolutionized biology by providing a unifying framework for understanding life.

• It asserts that all living organisms are composed of cells, which are the basic structural and functional units of life.

• Furthermore, cells are the fundamental building blocks of all organisms, and new cells arise only from pre-existing cells through cell division.

• This theory laid the foundation for modern biology, guiding research and shaping our understanding of cellular processes and the complexities of life itself.

Q51. Answer: (a) 200%

Calculation:

Laptop sold by wholesaler 1 and wholesaler 2 together on Thursday = 24 + 14 = 38

Laptop sold by wholesaler 3 on Friday = 19

Required percentage = (38/19) × 100 = 200

Therefore The required answer is 200%.

Q52. Answer: (a) 30 cm²

Given:

Base of the triangle = 12 cm

Hypotenuse of the triangle = 13 cm

Concept used:

Area of a right angle triangle = (1/2) × perpendicular × base

Calculation:

Let the perpendicular be 'x' cm.

$x^2 + 12^2 = 13^2$

=> x2 + 144 = 169

=> x2 = 25

=> x = 5

So, the perpendicular of the right angle = 5 cm

Now,

Area of the triangle = (1/2) × 12 × 5 = 30 cm²

Therefore The area of the triangle is 30 cm².

Q53. Answer: (c) 0

Given:

tan(50 + θ) - Cot(40 - θ)

Concept used:

cot(90° - θ) = tanθ

Calculation:

tan(50 + θ) - Cot(40 - θ)

=> tan(50 + θ) - Cot(90 - 40 + θ)

=> tan(50 + θ) - tan(50 + θ)

=> 0

Therefore The required answer is 0.

Q54. Answer: (b) 19% increase

Given:

In 2021 salary increased by 40%

In 2022 salary decreased by 15%

Calculation:

Let the salary of Sam in 2020 be 100a

So, the salary of Sam in 2022 = 100a × 1.4 × 0.85 = 119a

So, increased salary = 119a - 100a = 19a

Percentage of increase in salary of Sam = (19a/100a) × 100 = 19

Therefore The net change in his salary is 19% increase.

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Q55. Answer: (a) √13

Given:

Radius of the rod = 5 cm

Lenght of the rod = 52 cm

Lenght of the wire = 100 cm

Concept used:

Volume of a cylinder = $\pi r^2 \times h$

Here, r = radius, and h = height or length

Calculation:

Since both wire and rod are an example of cylinder, then

Volume of the rod = Volume of the wire,

Let the radius of the wire be 'x'

According to the question,

$\pi \times 5^2 \times 52 = \pi \times x^2 \times 100$

=> 52 = 4x2

=> x2 = 13

=> x = √13

So, the radius of the wire = √13 cm

Therefore The radius of the wire (in cm) is √13.

Q56. Answer: (a) 6√2

Given:

$(y2 + 1/(y^2)) = 74$

Concept used:

$(a - 1/a)^2 = a^2 + 1/(a^2)-2$

Calculation:

$(y2 + 1/(y^2)) = 74$

By subtracting 2 from both sides we get,

$y2 + 1/(y^2) - 2 = 74 - 2$

=> $(y - 1/y)^2 = 72$

=> $(y - 1/y) = 6\sqrt{2}$

Therefore The required answer is $6\sqrt{2}$.

Q57. Answer: (c) 55

Given:

Amount = 45P

Time = 110 years

Formula used:

SI = (PRT/100)

Amount = (PRT/100) + P

Calculation:

45P = (PR × 11/10) + P

=> 44P = (PR × 11/10)

=> R = 40%

According to the question,

Amount = 23P

So,

23P = (40PT/100) + P

=> 22P = (2PT/5)

=> T = 55 years

Therefore The sum will become 23 times is 55 years.

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Q58. Answer: (d) 15

Given:

Two trains 320 m and 205 m in length are running towards each other on parallel lines.

Speed of the two trains are 70 kmph and 56 kmph, respectively

Concept used:

When two objects run in opposite directions then their relative speed = Sum of their speeds

Calculation:

Relative speed of the trains = 70 + 56 = 126 km/h

Relative speed of the train in m/s = 126 × (5/18) = 35 m/s

Required time taken to cover the distance = (320 + 205) ÷ 35 = 525 ÷ 35

=> 15 seconds

Therefore The time they will take to cross each other is 15 (in seconds).

Q59. Answer: (c) 25 days

Given:

A complete the work in the same time as B + C work together

A + B can complete a work = 10 days

C can alone complete a work = 50 days

Formula Used:

Total Work = Efficiency × Time

Calculation:

LCM of (10, 50) = 50 units = Total Work

Efficiency of C = 1 unit/day

Efficiency of A + B = 5 unit/day

Let the efficiency of B = y

Efficiency of B + C = Efficiency of A

=> y + 1 = A

=> y + 1 = 5 - y (A + B = 5 => A = 5 - B)

=> 2y = 4

=> y = 2

Time taken by B to complete the work = total work/efficiency

=> 50 / 2 = 25 days

Therefore The time taken by B to complete the work is 25 days.

Q60. Answer: (a) $\cot^2 A$

Given:

(1 - sin2A) cosec2A

Concept used:

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

$\cot\theta = (\cos\theta/\sin\theta)$

Calculation:

(1 - sin2A) cosec2A

=> cos2A cosec2A

=> cos2A × (1/sin2A)

=> cot2A

Therefore The required answer is cot2A.

Q61. Answer: (d) 15

Given:

3x - 2y = 3 and xy = 9

Concept used:

If (a - b) = x, then $(a + b) = \sqrt{(x^2 + 4ab)}$

Calculation:

$3x + 2y = \sqrt{(3^2 + 4 \times 9 \times 2 \times 3)}$

$\Rightarrow 3x + 2y = \sqrt{225} = 15$

Therefore The required answer is 15.

Shortcut Trick

Let x = y = 3,

So, 3x - 2y = 9 - 6 = 3

Again, 3x + 2y = 9 + 6 = 15

Q62. Answer: (a) 5 : 6

Calculation:

Total number of girls in Hindi = 110 × 0.6 = 66

Total number of boys in Hindi = 110 × 0.4 = 44

Total number of girls in English = 70 × 0.5 = 35

Total number of boys in English = 70 × 0.5 = 35

Total number of girls in Physics = 50 × 0.3 = 15

Total number of boys in Physics = 50 × 0.7 = 35

Total number of girls in Chemistry = 40 × 0.8 = 32

Total number of boys in Chemistry = 40 × 0.2 = 8

Total number of girls in Mathematics = 80 × 0.2 = 16

Total number of boys in Mathematics = 80 × 0.8 = 64

Total number of girls in Computers = 90 × 0.4 = 36

Total number of boys in Computers = 90 × 0.6 = 54

Total number of girls = 66 + 35 + 15 + 32 + 16 + 36 = 200

Total number of boys = 44 + 35 + 35 + 8 + 64 + 54 = 240

Ratio = 200 : 240 = 5 : 6

Therefore The required answer is 5 : 6.

Q63. Answer: (b) 216

Given:

$18 \times [24 \div 70 \times \{25 \times 49 \div (5 \times 7)\}]$

Concept used:

Calculation:

$18 \times [24 \div 70 \times \{25 \times 49 \div (5 \times 7)\}]$

$\Rightarrow 18 \times [24 \div 70 \times \{25 \times 49 \div 35\}]$

$\Rightarrow 18 \times [24 \div 70 \times 35]$

$\Rightarrow 18 \times 12$

$\Rightarrow 216$

Therefore The required answer is 216.

Q64. Answer: (a) 30

Given:

Initial quantity of mixture = 40 litres

Initial ratio of milk to water = 7 : 3

Calculation:

Milk in mixture = (7/10) × 40 = 28 litres

Water in mixture = 40 – 28 = 12 litres

Let x liters of water be mixed to make water 60% of the mixture.

$(12 + x) = (40 + x) \times 0.6$

$\Rightarrow 12 + x = 24 + 0.6x$

$\Rightarrow 0.4x = 12$

$\Rightarrow x = 30$

Therefore 30 litres of water should be added.

Therefore The required quantity of water to be added is 30 litres.

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Q65. Answer: (a) 20 1/2 cm

Given:

AB = 9 cm, BC = 40 cm and AC = 41 cm

Concept used:

Circumradius of a triangle = (abc/4Δ)

Here, a, b, and c are the lengths of the sides of the triangle

Calculation:

S = (9 + 40 + 41)/2 = 45 cm

Area of the triangle = √{45(45 - 9)(45 - 40)(45 - 41)}

=> √{45 × 36 × 5 × 4}

=> √{32400}

=> 180 cm²

Now,

Circumradius = (9 × 40 ×41)/(4 × 180)=41/2

=> 20 1/2 cm

Therefore The circum-radius of a triangle is 20 1/2 cm.

Q66. Answer: (c) Rs. 3,152.50

Given:

The compound interest accrued on a sum of Rs. 20,000 at the end of 2 years compounded annually is Rs. 2,050.

Concept used:

Amount = $P(1+r/100)^n$

Here, p = principal, r = rate, and n = no. of years

Calculation:

Amount received after two years = 20,000 + 2,050 = 22,050

According to the question,

$22,050 = 20,000(1+r/100)^2$

$=> (22,050)/(20,000) = (1+r/100)^2$

$=> 441/400 = (1+r/100)^2$

$=> (21/20)^2 = (1+r/100)^2$

=> 21/20 = 1+r/100

=> 21/20 = (100 + r)/100

=> 105 = 100 + r

=> r = 5

So, the rate of interest = 5%

Now,

$A = 20,000(1+5/100)^3$

$=> A = 20,000(21/20)^3$

=> A = 23,152.5

So, the interest = 23,152.5 - 20,000 = 3,152.5

Therefore The compound interest at the end of the 3rd year is 3,152.5.

Q67. Answer: (d) 14

Shortcut Trick

Given tan 15° = 2 − √3, then cot 15° = 1/tan 15° = 2 + √3.

Since 75° + 15° = 90°, we have cot 75° = tan 15° and tan 75° = cot 15°.

Expression = $\tan^2 15° + \cot^2 15°$.

Using $a^2 + b^2 = (a + b)^2 − 2ab$, where a+b = (2−√3) + (2+√3) = 4 and ab = 1.

Result = $4^2 − 2(1) = 16 − 2 = 14$.

Therefore The correct answer is 14.

Alternate Method

Given: tan 15° = 2 − √3

Formula Used: $\tan(90° - \theta) = \cot\theta$ | $\cot(90° - \theta) = \tan\theta$ | $(a - b)^2 + (a + b)^2 = 2(a^2 + b^2)$

=> $\cot 15° = 1 / (2 - \sqrt{3}) \times (2 + \sqrt{3}) / (2 + \sqrt{3}) = 2 + \sqrt{3}$

=> $\cot 75° = \cot(90° - 15°) = \tan 15° = 2 - \sqrt{3}$

=> $\tan 75° = \tan(90° - 15°) = \cot 15° = 2 + \sqrt{3}$

=> Expression = $(2 - \sqrt{3})(2 - \sqrt{3}) + (2 + \sqrt{3})(2 + \sqrt{3})$

=> Expression = $(2 - \sqrt{3})^2 + (2 + \sqrt{3})^2$

=> Expression = $(4 + 3 - 4\sqrt{3}) + (4 + 3 + 4\sqrt{3})$

=> Expression = $7 - 4\sqrt{3} + 7 + 4\sqrt{3} = 14$

Therefore The correct answer is 14.

Additional Information

Complementary Angles

For any angle θ, $\sin\theta = \cos(90° - \theta)$, $\tan\theta = \cot(90° - \theta)$, and $\sec\theta = \text{cosec}(90° - \theta)$.

Trigonometric Values of 15° and 75°

$\tan 15° = \cot 75° = 2 - \sqrt{3}$ and $\tan 75° = \cot 15° = 2 + \sqrt{3}$.

Algebraic Identity

$(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$. In this case, $2(2^2 + (\sqrt{3})^2) = 2(4 + 3) = 14$.

Q68. Answer: (c) Rs. 1,300

Given:

A certain sum was to be divided between A and B in the ratio 8 : 5

Actual ration of share of A and B = 5 : 8

Calculation:

Let the actual sum should be divided between A and B be 8a and 5a

Let the sum get by A and B be 5b, and 8b

According to the question,

8a + 5a = 5b + 8b

=> 13a = 13b

=> (a/b) = 1

So, 8a - 5b = 300

=> 8 - 5 = 300

=> 3 = 300

=> 1 = 100

So, total sum was divided between them = 100 × 13 = Rs. 1,300

Therefore The required answer is Rs. 1,300.

Q69. Answer: (d) 50,000

Given:

Akash sold a motorcycle to Navin at a profit of 10%.

Navin sold it to Vinay at a profit of 20%.

Vinay sold it to Vishal at a loss of 5%.

Vishal paid Rs. 62,700 for the motorcycle

Calculation:

Let the cost price of the motorcycle for Akash be 100a.

According to the question,

100a × 1.1 × 1.2 × 0.95 = 62,700

=> 125.4a = 62,700

=> a = 500

=> 100a = 50,000

So, the cost price of the motorcycle for Akash = Rs. 50,000

Therefore The cost of the motorcycle (in Rs.) for Akash 50,000.

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Q70. Answer: (d) 31 cm

Given:

ΔXYZ ~ ΔPQR

Perimeter of ΔXYZ = 62 cm

Perimeter of ΔPQR = 42 cm

PQ = 21 cm

Concept used:

If ΔXYZ ~ ΔPQR

then, Perimeter of (ΔXYZ/ΔPQR) = XY/PQ = YZ/QR = ZX/PR

Calculation:

According to the question,

we have ΔXYZ ~ ΔPQR

Perimeter of (ΔXYZ/ΔPQR) = XY/PQ

=> 62/42 = XY/21

=> XY = (62 × 21)/42

=> XY = 31

Therefore The length of XY is 31 cm.

Q71. Answer: (d) 1

Shortcut Trick

Here, there are 4 variables but only 2 equations.

So, lets put p = q = 1

px + qy = 1

=> 1.x + 1.y = 1

=> x + y = 1 ----(1)

$qx + py = (2\ p\ q)/(p^2+q^2)$

$=> 1.x + 1.y = (2\times 1\times 1)/(1^2+1^2)$

=> x + y = 2/2

=> x + y = 1 ----(2)

Here, again 2 variables but only one equation,

So, put x = 1/2, then y = 1/2

i.e. p = 1, q = 1, x = 1/2, y = 1/2

Now,

(x2 + y2) (p2 + q2)

$=> (1/2^2 + 1/2^2)(12 + 12)$

=> (1/4 + 1/4) (1 + 1)

=> 1/2 × 2 = 1

Therefore The correct answer is 1.

Alternate Method

Given:

px + qy = 1

$qx + py = 2pq/(p^2+q^2)$

Formula Used:

To find the value of $(x^2 + y^2)\ (p^2 + q^2)$, we use the formulas for solving simultaneous linear equations and properties of squares.

Calculation:

Multiplying the first equation by p and the second by q and adding them:

$=> p(px + qy) + q(qx + py) = p \times 1 + q \times 2pq/(p^2+q^2)$

$=> p^2x + pqy + q^2x + pqy = p + (2pq^2)/(p^2+q^2)$

$=> (p^2 + q^2)(x + y) = p + (2pq^2)/(p^2+q^2)$

Multiplying the first equation by q and the second by p and subtracting them:

$=> q(px + qy) - p(qx + py) = q \times 1 - p \times 2pq/(p^2+q^2)$

$=> qpx + q^2y - pqx - p^2y = q - (2p^2q)/(p^2+q^2)$

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=> $(q^2 - p^2)(y - x) = q - (2p^2q)/(p^2+q^2)$

Squaring and adding the above results eliminates x + y and y - x, allowing us to solve for $x^2 + y^2$:

$(x + y)^2 = x^2 + 2xy + y^2$

$(y - x)^2 = y^2 - 2xy + x^2$

$x^2 + y^2 = ((x + y)^2 + (y - x)^2)/2$

Substituting back into our first results, we get:

$(x^2 + y^2)(p^2 + q^2) = 1/2(((p + (2pq^2)/(p^2+q^2))/(p^2 + q^2))^2 + ((q - (2p^2q)/(p^2+q^2))/(p^2 + q^2))^2) \times (p^2 + q^2)$

After simplifying, this leads to:

$(x^2 + y^2)(p^2 + q^2) = 1$

The value of $(x^2 + y^2) (p^2 + q^2)$ is 1.

Q72. Answer: (c) 12 cm

Given:

The radii of two circles are 9 cm and 4 cm, the distance between their centres is 13 cm

Concept used:

Length of direct common tangent= $\sqrt{(\text{distance between centers})^2 - (\text{difference of radii})^2}$

Calculation:

Length of direct common tangent = $\sqrt{\{13^2 - (9 - 4)^2\}}$

=> $\sqrt{\{(169 - 25)\}}$

=> $\sqrt{144}$

=> 12 cm

Therefore The length of the direct common tangent is 12 cm.

Q73. Answer: (a) 2,003

Given:

Ravi got a reduction of Rs. 260.39.

Discount percentage = 13

Calculation:

Let the electricity bill of Ravi be '100a'

100a × 13% = 260.39

=> 13a = 260.39

=> a = 20.03

=> 100a = 2003

So, the electricity bill of Ravi = Rs. 2,003

Therefore The amount of his electricity bill (in Rs.) was 2,003.

Q74. Answer: (d) Gain 17%

Given:

A salesman marks his goods 30% above the cost and gives a discount of 10% on them.

Calculation:

Let the cost price of the goods be 100x

So, the marked price of the goods = 100x × 1.3 = 130x

Selling price of the goods = 130x × 0.9 = 117x

So, profit = 117x - 100x = 17x

Profit % = 17x/100x × 100 = 17

Therefore The required answer is 17% gain.

Q75. Answer: (c) 2 : 3

Calculation:

Total percentage of teachers in English, Sanskrit, and Hindi = 20 + 10 + 10 = 40%

Total percentage of teachers in Mathematics, Biology, and Social Studies = 20 + 20 + 20 = 60%

Required ratio = 40 : 60 = 2 : 3

Therefore The required answer is 2 : 3.

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Q76. Answer: (d) Energetic

The solution is in Hindi. Read it online.

Q77. Answer: (d) A collection of historical documents or records

The solution is in Hindi. Read it online.

Q78. Answer: (c) Honesty

The solution is in Hindi. Read it online.

Q79. Answer: (b) hoard

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

Key Points

• The word "hoard" means to accumulate for future use; stash away.

• It correctly fills the blank, implying that ants collect and save food for the winter.

• Homophones are words that sound the same but have different meanings and/or spellings.

• "Hoard" and "horde" are homophones, but only "hoard" is appropriate in this context.

Therefore, the correct answer is- Option 2.

Additional Information

• Horde: A large group of people.

• Heard: Past tense of hear, meaning to have perceived with the ear.

• Herd: A large group of animals, especially hoofed mammals, that live, feed, or migrate together or are kept together as livestock.

Q80. Answer: (a) A owl was

The correct answer is '1'' i.e. this part of the sentence has an error.

Key Points

• The article 'A' before a vowel sound is incorrect. It should be 'An'.

• The word 'owl' begins with a vowel sound, making the use of 'An' necessary for correct grammar.

• Articles are used before nouns to define whether something is specific or not. Here, the correct indefinite article before a vowel sound is 'An'.

• The error in the sentence is due to the incorrect use of the article. Therefore, 'A owl was' should be corrected to 'An owl was'.

Hence, the correct answer is option 1.

Correct sentence: An owl was hooting throughout the night.

Additional Information

• The rest of the sentence, 'hooting throughout' and 'the night', do not contain grammatical errors and are correctly constructed.

• Option 'No error' is not correct because there is a grammatical mistake in the use of the article before 'owl'.

• Understanding the use of articles is crucial in English for both speaking and writing, as it helps clarify whether we're referring to something specific or nonspecific.

• Articles 'a', 'an', and 'the' are some of the most common words in English, yet they require careful consideration to use correctly.

Q81. Answer: (c) Anthropologist

The solution is in Hindi. Read it online.

Q82. Answer: (b) Violated

The solution is in Hindi. Read it online.

Q83. Answer: (c) Portable

The solution is in Hindi. Read it online.

Q84. Answer: (b) Utopia

The solution is in Hindi. Read it online.

Q85. Answer: (d) Ill health

The solution is in Hindi. Read it online.

Q86. Answer: (b) They were laid

The correct answer is 'Option 2' i.e. this part of the sentence has an error.

Key Points

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• The error in the sentence occurs in the phrase "They were laid" which incorrectly uses the passive voice.

• "Laid" implies that someone else placed them in the sun, which likely isn't the intended meaning.

• The correct phrase should be "They lay" to indicate that they positioned themselves in the sun.

• The use of "lay" (past tense of "lie") instead of "laid" (past tense of "lay") corrects the grammatical mistake, as "lie" is used when someone or something reclines or is positioned, without the action being done to them by someone else.

Hence, the correct answer is option 2.

Correct sentence: "They lay in the sun the entire morning till Sudharshan came."

Additional Information

• The phrase "in the sun" correctly sets the location where the action takes place, making it free from error.

• "The entire morning" accurately describes the duration of the action, which is also grammatically correct.

• "Till Sudharshan came" properly concludes the time frame of the action, indicating the moment it ended, hence it is also correct.

• The confusion between "lay" and "laid" often arises because "lay" is both the past tense of "lie" and the base form of another verb meaning to put or place something down. It's crucial to distinguish between them based on the context of the sentence.

Q87. Answer: (d) exhilarate

The solution is in Hindi. Read it online.

Q88. Answer: (c) My family never supported me.

The correct answer is: My family never supported me.

Key Points

• The sentence given is in the passive voice, indicating that the action is being done to the subject by someone else.

• To convert a sentence to active voice, the subject should perform the action directly.

• The original sentence is in the past tense, indicating that the action has already happened.

• The correct active voice structure is: Subject + Verb (in the correct tense) + Object.

• The sentence “I was never supported by my family” should focus on who performed the action and then the action itself, making "My family never supported me" the correct transformation.

• This maintains the past tense and shifts the focus onto the subject 'My family' as the doer of the action.

Therefore, the correct answer is: My family never supported me.

Additional Information

• Option 1: "My family have never supported me" uses the present perfect tense, which is not a direct conversion from the past simple tense of the passive voice sentence.

• Option 2: "My family had never supported me" uses the past perfect tense, indicating an action completed at a point in the past before another past action. This changes the time frame unnecessarily.

• Option 4: "My family never supports me" uses the present simple tense, which does not accurately reflect the past action indicated in the original sentence.

Q89. Answer: (a) in the acknolledgments of the book.

The correct answer is '1" i.e. in the acknolledgments of the book has an error.

Key Points

• The spelling of 'acknolledgments' in the given segment is incorrect.

• The correct spelling should be 'acknowledgments', indicating the part of the book where the author thanks those who have helped him or her.

• Spelling errors can change the meaning of a sentence or make it difficult to understand.

• Therefore, correcting spelling errors is crucial for clear communication and to maintain the professionalism of the text.

Hence, the correct answer is option 1.

Correct sentence: The famous author clearly mentioned all the names of his friends in the acknowledgments of the book.

Additional Information

• 'The famous author' introduces the subject of the sentence without any grammatical errors.

• 'clearly mentioned' correctly uses the past tense to describe the author's action of naming his friends.

• 'all the names of his friends' accurately conveys the content of the acknowledgments without any spelling or grammatical errors.

Q90. Answer: (b) Noble

The solution is in Hindi. Read it online.

Q91. Answer: (a) On the cards

The solution is in Hindi. Read it online.

Q92. Answer: (b) C, A, D, B

The correct answer is Option 2 i.e. 'C,A,D,B.

Key Points

• The sentence begins logically with 'C', stating that "the royal style is the agent", indicating the subject of the sentence.

• The phrase 'A', "in social evolution by imitation", follows 'C' to complete the idea introduced, indicating the manner in which the royal style acts as an agent.

• 'D', "and cultural patterns are similarly transmitted by the dominant caste", builds on the statement by adding another layer of explanation on how not just the royal style but also cultural patterns are transmitted.

• 'B', "by reason of its higher standard of living", finally provides the reason why the royal style and cultural patterns are influential, tying the sentence together to make a coherent statement about social evolution.

Therefore, the correct answer is Option 2.

Additional Information

• Option 1 (C, D, A, B): This arrangement doesn't flow logically because it suggests that cultural patterns transmitted by the dominant caste directly relate to social evolution by imitation, missing the crucial connection to the royal style being the agent.

• Option 3 (B, C, D, A): Starting with 'B' makes the sentence awkward because it mentions the reason ("by reason of its higher standard of living") before stating what it is explaining, leading to confusion.

• Option 4 (B, A, C, D): This arrangement fails because it begins with the reason before introducing the subject (the royal style), making the sentence structure illogical.

Q93. Answer: (c) The meeting was disturbed by an agitated gathering of workers in the company.

The correct answer is: The meeting was disturbed by an agitated gathering of workers in the company.

Key Points

• When converting a sentence from active to passive voice, the object of the active sentence becomes the subject of the passive sentence.

• The verb form changes to include a form of "be" (was/were) followed by the past participle of the main verb.

• The preposition "by" introduces the agent (the doer of the action in the active sentence) in the passive sentence.

• The sentence in question describes an action performed by "an agitated gathering of workers in the company" on "the meeting," making "the meeting" the subject in the passive voice.

• The correct transformation follows the structure: Subject (the meeting) + was + verb in past participle form (disturbed) + by + agent (an agitated gathering of workers in the company).

Therefore, the correct answer is: The meeting was disturbed by an agitated gathering of workers in the company.

Additional Information

• Option 1 ("Meeting of the company was disturbed.") misses the agent of the action, making it incomplete in context.

• Option 2 ("An agitated meeting of workers in the company disturbed the gathering.") changes the meaning of the original sentence and does not convert it to passive voice.

• Option 4 ("The gathering agitated the meeting of the company.") is in active voice and incorrectly rearranges the components of the original sentence.

Q94. Answer: (d) To be very expensive

The solution is in Hindi. Read it online.

Q95. Answer: (d) reign

The correct answer is 'Option 4' i.e. reign.

Key Points

• The word 'reign' refers to the period during which a sovereign rules.

• The context of the sentence implies leadership and authority, making 'reign' the most appropriate choice.

• Other forms like 'rain', 'rein', and 'rayne' are homophones of 'reign' but do not fit the context of the sentence.

• 'Reign' specifically relates to the exercise of governance or rule, aligning with the notion of innovative leadership mentioned in the statement.

Hence, the correct answer is option 4.

Correct sentence: The reign of the company's CEO was widely praised for her innovative leadership.

Additional Information

• Rein: A leather strap fastened to the bit of a bridle; used to control a horse or other animal. Metaphorically, it can mean to control

or direct.

• Rain: Water that falls from clouds in the sky as precipitation.

• Rayne: Not a commonly used word in English and does not fit the context of the sentence.

Q96. Answer: (d) concept

The correct answer is 'Option 4' i.e. concept is the most appropriate word.

Key Points

• The term globalisation refers to the process by which businesses or other organizations develop international influence or start operating on an international scale. It is indeed a concept rather than a physical power, a variation, or a design.

• The passage discusses the historical context and evolution of globalisation, which aligns with the notion of it being an abstract concept.

• The other options (power, variation, design) do not fit the context of the sentence as they refer to different aspects that are not related to the idea or theory of globalisation.

• Concept is the most suitable word because it accurately represents the idea of globalisation as an evolving phenomenon through history.

Hence, the correct answer is option 4.

Additional Information

• Power is often associated with the ability or capacity to do something or act in a particular way. It does not fit the context of globalisation as an abstract process.

• Variation refers to a change or difference in condition, amount, or level, typically with certain limits. This does not adequately describe the concept of globalisation.

• Design is the creation of a plan or convention for the construction of an object, system, or measurable human interaction. While globalisation involves many designed systems (e.g., trade policies), the term itself is more encompassing and abstract than just design.

Q97. Answer: (d) rare

The correct answer is '4' i.e. rare is the correct fill for the blank.

Key Points

• The passage discusses the history of globalisation and the trade of commodities that were sought after in ancient times.

• The term 'rare' implies that the commodities were not easily found or were uncommon, which made them valuable and desirable for trade.

• Commodities that are rare tend to be expensive due to their scarcity and the high demand among buyers.

• Using 'rare' in the context of the sentence logically completes the idea that traders traveled long distances for items that were not readily available in their homelands, thus adding to their allure and value.

Hence, the correct answer is option 4.

Additional Information

• Plentiful would imply that the commodities were abundant, which contradicts the context of the passage.

• Common suggests that the commodities were ordinary and widely available, which also does not fit the narrative of the passage.

• Preserved refers to the condition of being maintained or kept in its original state, which is not relevant to the idea of rarity or value in this context.

Q98. Answer: (b) advances

The correct answer is 'Option 2' i.e. advances in transportation and communication.

Key Points

• The passage discusses the historical context of globalisation, highlighting the role of the Industrial Revolution.

• The Industrial Revolution is known for its significant technological advancements, particularly in transportation and communication, which facilitated international trade.

• The word "advances" fits perfectly in the blank as it refers to the progress or development in technology that occurred during the 19th century.

• These advancements made it easier to conduct trade across borders, thereby contributing to the process of globalisation.

Hence, the correct answer is option 2.

Additional Information

• Chaos refers to complete disorder and confusion, which does not fit the context of technological progress.

• Issues implies problems or matters that need to be addressed, which also does not align with the context of the sentence.

• A decline suggests a decrease or deterioration, which is the opposite of the progress described in the passage.

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Q99. Answer: (d) stalled

The correct answer is '4' i.e. stalled.

Key Points

• The passage discusses the history and changes in globalisation over time.

• It indicates a period of decline or pause in the process of globalisation after World War I.

• The term 'stalled' aptly describes a halt or slowdown, fitting the context of nations moving towards protectionism.

• Protectionism involves launching import taxes to protect domestic industries, which would naturally slow down the process of globalisation.

Therefore, the correct answer is- Correct answer 'stalled'.

Additional Information

• Trooped usually refers to moving in a group and does not fit the context of a slowdown or halt in globalisation.

• Soared implies a rapid increase, which is the opposite of what happened to globalisation after World War I according to the passage.

• De-escalated could suggest a reduction in intensity but is more commonly used in the context of conflicts or confrontations, not trade or globalisation.

Q100. Answer: (a) protectionism

The correct answer is '1' i.e. protectionism.

Key Points

• The passage discusses the history and development of globalisation.

• It mentions the impact of the Industrial Revolution on trade across borders.

• According to the Peterson Institute for International Economics (PIIE), globalisation faced a downturn after World War I.

• Nations moved toward protectionism, implementing import taxes to protect their industries, which is why 'protectionism' is the correct fill for blank number 5.

Hence, the correct answer is option 1.

Additional Information

• Integration refers to the process of combining or coordinating separate groups or elements into a unified whole.

• Liberalisation involves the removal of trade barriers and restrictions to encourage free trade among nations.

• Diversification is a strategy that involves entering into new markets or industries to reduce reliance on a single market or technology.

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