SSC CHSL Tier-1 2022: Official Paper (Held On: 20 March, 2023 Shift 4) (Previous Year Paper)

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

Take this paper as a timed mock test

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

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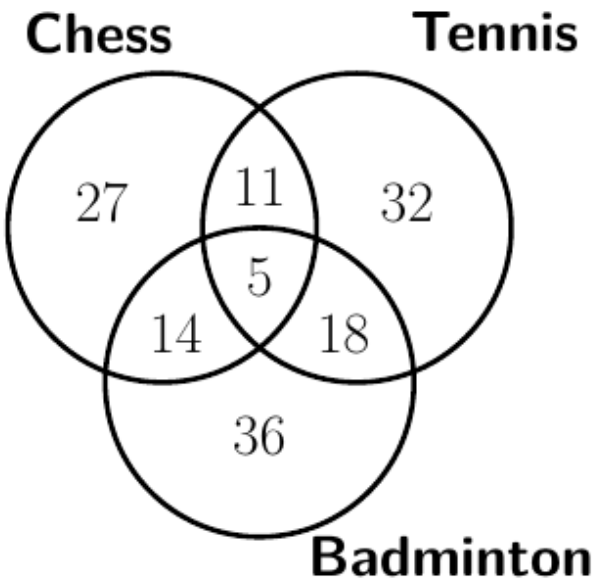
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ENGLISH LANGUAGE

Q1. In the following question, four number pairs are given. In each pair the number on left side of (–)is related to the number of the right side of (–)with some Logic/Rule /Relation. Three pairs are similar on basis of same Logic/Rule/Relation. Select the odd one out from the given alternatives. (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g.13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(a) 11 – 1331
(b) 12 – 1728
(c) 16 – 4086
(d) 13 – 2197

Q2. Study the given diagram carefully and answer the questions. The numbers in different sections indicate the number of persons good at the given sport.



How many people are good exactly two sports ?

(a) 43
(b) 38
(c) 48
(d) 11

Q3. The total ages of Sweta, Damini and Supriya is 56 years. What was the total of their ages 3 years ago?

(a) 51 years
(b) 53 years
(c) 43 years
(d) 47 years

Q4. Select the option in which the numbers shares the same relationship in set as that shared by the numbers in the given set. (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g.13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(12, 24, 72)

(14, 28, 84)

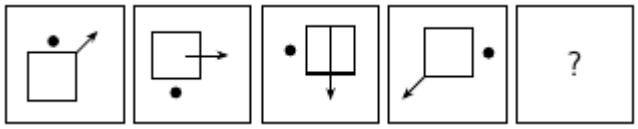
(a) (20, 40, 160)
(b) (24, 72, 216)
(c) (16, 32, 96)
(d) (18, 36, 118)

Q5. Select the combination of letters that when sequentially placed in the blanks of the given letter series will complete the series.

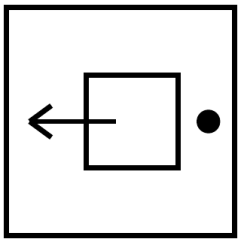
ab_absa_sab_

(a) asb
(b) aab
(c) sbs
(d) bbs

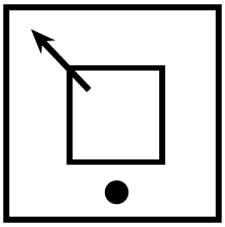
Q6. Select the figure that will come next in the following figure series.



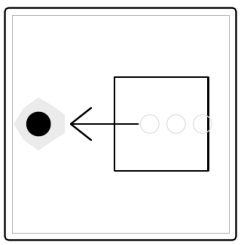
(a)



(b)

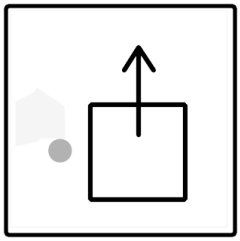


(c)

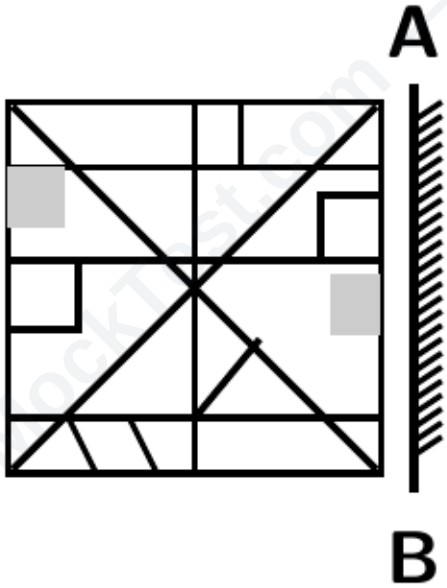


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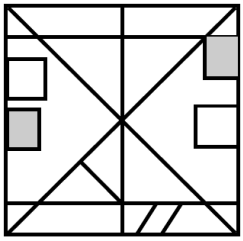
(d)



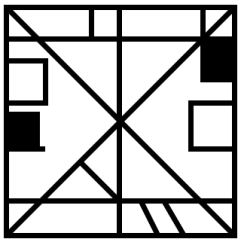
Q7. If a mirror is placed on the line AB, then out of the option figures which figure will be the right image of the question figure ?



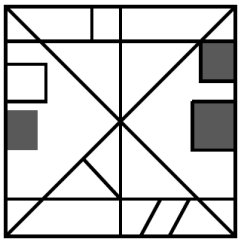
(a)



(b)

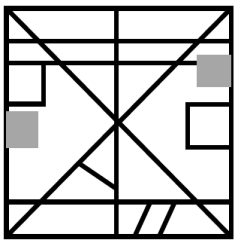


(c)



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(d)



Q8. 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.

Statement I: No food is water.

Statement II: All food are snacks.

Conclusion I: No water is a snack.

Conclusion II: All water can be snacks.

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

Q9. Which of the following numbers will replace the question mark (?) in the given series?

1, 2, 6, 21, ?, 445, 2676

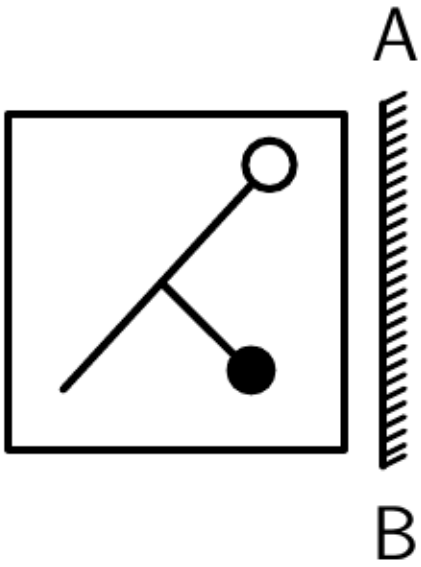
(a) 221
(b) 76
(c) 110
(d) 88

Q10. Select the option that is related to the fifth number in the same way as the second number is related to the first number and fourth number is related to third number.

196 : 2 :: 784 : 4 :: 3136 : ?

(a) 6
(b) 8
(c) 11
(d) 7

Q11. Select the correct mirror image of the given figure when the mirror is placed to its right side.

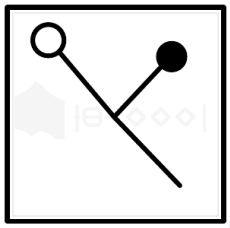


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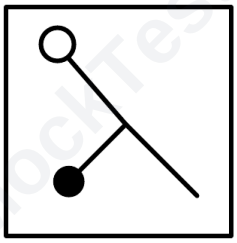
(a)



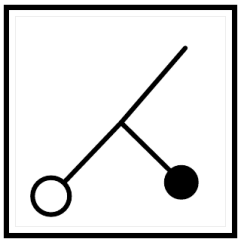
(b)



(c)



(d)



Q12. In a certain code language if SUNSET is written as TVOTFU, how will SUNRISE be written in the same code language?

(a) TVOSFTJ
(b) TOVSJTF
(c) TVOSJTF
(d) TVOSTJF

Q13. Words given on the left side of (::) are related with each other by some Logic/Rule /Relation. Select the missing word/word pair on the right side of (::) from the given alternatives based on the same Logic/Rule/Relation.

Army : Soldiers :: Shoal : ?

(a) Sheep
(b) Bouquet
(c) Fish
(d) Players

Q14. In the following question, select the odd word pair from the given alternatives.

(a) Child – Man
(b) Lamb – Frog
(c) Kitten – Cat
(d) Cub – Lion

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Q15. If Penny is the mother of the daughter of Charlie's brother, then how is Penny related to Charlie?

(a) Sister
(b) Brother's wife
(c) Daughter-in-law
(d) Mother

Q16. Select the option in which the numbers shares the same relationship in set as that shared by the numbers in the given set. (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)

(529, 36, 324)

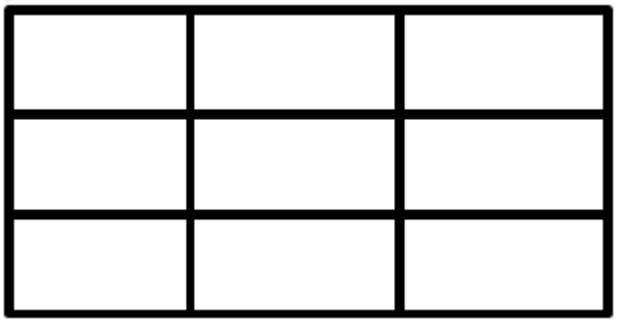
(49, 144, 100)

(a) (289, 4, 1024)
(b) (9, 256, 334)
(c) (100, 144, 179)
(d) (121, 47, 324)

Q17. If in a coding system EDEKA is coded as 54521, then how will AORBG be coded in the same coding system?

(a) 16927
(b) 19672
(c) 16279
(d) 17269

Q18. Find the total number of rectangles in the figure.



(a) 31
(b) 29
(c) 28
(d) 36

Q19. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd letter-cluster.

(a) KIO
(b) DEH
(c) WXA
(d) NOR

Q20. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.

STYE : UVAE :: ELSE : ENUE :: MINE : ?

(a) PINE
(b) OIPE
(c) MJPE
(d) MIJO

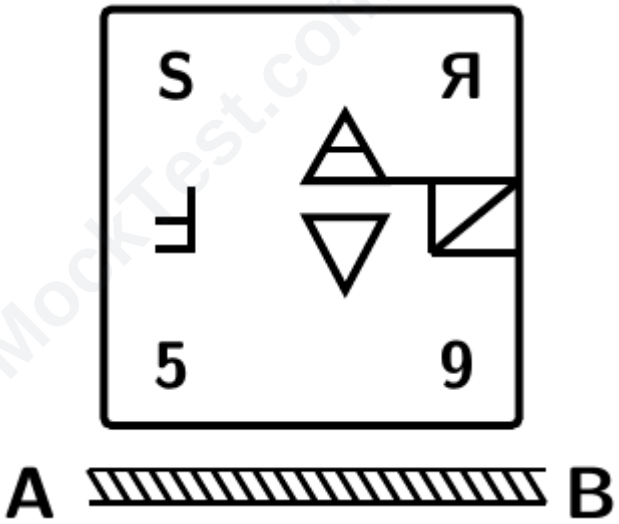
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Q21. Arrange the given words in the sequence in which they occur in the dictionary.

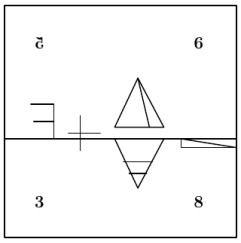
1. Gain
2. Gaiter
3. Gainsay
4. Gaiety
5. Gauge

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

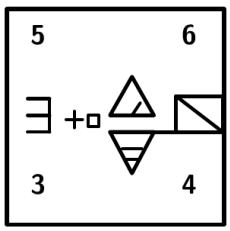
Q22. If a mirror is placed on the line AB, then out of the option figures which figure will be the right image of the question figure ?



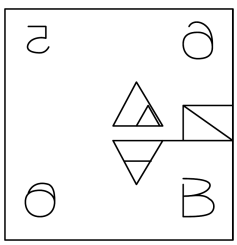
(a)



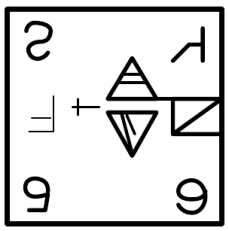
(b)



(c)



(d)

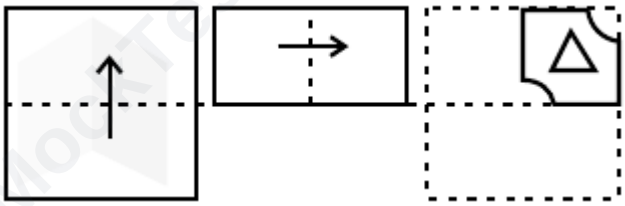


Q23. Select the word pair in which the words are related in the same way as the words are related in the following pair.

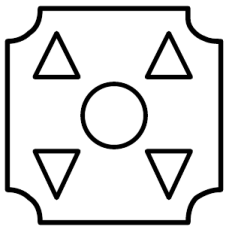
Nib : Pen

(a) Tyre : Round
(b) Car : Seat
(c) Room : House
(d) Triangle : Three

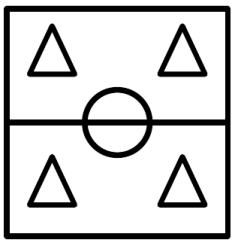
Q24. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded ?



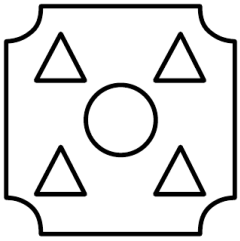
(a)



(b)

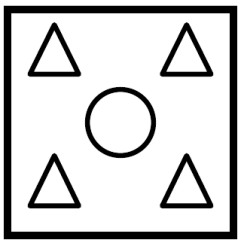


(c)



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(d)



Q25. By Interchanging the given two numbers (not digits) which of the following equation will be correct?

5 and 7

I. 4 × 7 + 8 ÷ 2 – 5 = 14

II. 7 + 6 × 4 – 5 ÷ 3 = 22

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

GENERAL INTELLIGENCE

Q26. Which of the following statements is NOT correct regarding laterite soil?

(a) Red laterite soils in Tamil Nadu, Andhra Pradesh and Kerala are more suitable for crops like cashew nut.
(b) They are generally rich in humus.
(c) This soil is very useful for growing tea and coffee.
(d) The laterite soil develops in areas with high temperature and heavy rainfall.

Q27. In which of the following countries was the 2022 Cricket Asia Cup held?

(a) United Arab Emirates
(b) Sri Lanka
(c) India
(d) China

Q28. Which team won the Vijay Hazare trophy 2021 – 2022?

(a) Himachal Pradesh
(b) Karnataka
(c) Tamil Nadu
(d) Mumbai

Q29. The total pressure of a mixture of ideal gases is the sum of partial pressures. This is _____ law of partial pressures.

(a) Dalton's
(b) Boyles
(c) Charles
(d) None of the above

Q30. Which among the following articles of the Indian constitution deals with the right to equality of opportunity in the matters of public employment?

(a) 17
(b) 18
(c) 15
(d) 16

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Q31. Who among the following is the Union Minister of Law and Justice of India as of October 2022?

(a) Kiren Rijiju
(b) Raj Kumar Singh
(c) Pralhad Joshi
(d) Bhupender Yadav

Q32. Which among the following is Asia's largest freshwater oxbow lake?

(a) Wular
(b) Kanwar
(c) Bhojtal
(d) Nakki

Q33. Flute instruments comes under which type of instrument category?

(a) Ghana Vadya
(b) Sushira Vadya
(c) Avanaddha Vadya
(d) Tata Vadya

Q34. Bhagwant Singh Mann is an Indian politician and current Chief Minister of Punjab. He was formerly a _____.

(a) comedian
(b) cricketer
(c) writer
(d) singer

Q35. The important system components like the central processing unit (CPU) and random access memory (RAM) modules are connected directly to the _____.

(a) Magnetic Tape
(b) Mother Board
(c) Optical Disk
(d) Flash Memory

Q36. When was the Champaran Agrarian Act passed?

(a) 1920
(b) 1922
(c) 1917
(d) 1924

Q37. Which of the following statements is correct regarding the direct taxes?

I. Levied on taxable income earned by individuals and corporate entities.

II. Gift tax is a type of direct tax.

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

Q38. Before writing codes in a high level language, a _____ of a program helps in representing the basic functionality of the intended program.

(a) original code
(b) small code
(c) naïve code
(d) pseudocode

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Q39. Which of the following pair of "Player – Sports" is correct?

I. Bajrang Punia – Boxing

II. Yash Dhull – Cricket

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

Q40. Which of the following statements is NOT correct regarding sound?

(a) Sound can travel through vacuum.
(b) In human beings, the vibration of vocal cords produces sound.
(c) Unpleasant sounds are called noise.
(d) Frequency is expressed in hertz.

Q41. The reproduction in yeast happens by the process of _____.

(a) Budding
(b) Fragmentation
(c) Spore formation
(d) Fertilisation

Q42. PSLV Orbital Experimental Module (POEM) is associated with which organization?

(a) DRDO
(b) HAL
(c) BHEL
(d) ISRO

Q43. Who was professor Prasanta Chandra Mahalanobis?

(a) Economist who won a Nobel Prize
(b) An artist who painted the painting of Bharat Mata
(c) Indian Scientist and Statistician
(d) A doctor who invented a new surgical method

Q44. The Dronacharya Award was first handed out in 1985, and the first Dronacharya Award winner was _____.

(a) Hansa Sharma
(b) Karan Singh
(c) Bhalchandra Bhaskar Bhagwat
(d) Hawa Singh

Q45. Surat is also known as _____ of India.

(a) Diamond city
(b) Blue city
(c) Pink City
(d) City of Lakes

Q46. The northern plains of India are formed up of which soil?

(a) Alluvial
(b) Peaty
(c) Black
(d) Laterite

Q47. Start Up India Scheme which aims at developing an ecosystem that promotes and nurtures entrepreneurship across the country was launched in _____.

(a) 2016
(b) 2020
(c) 2012

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(d) 2018

Q48. In _____ the Muslim League had moved a resolution demanding “Independent States” for Muslims in the north-western and eastern areas of the country

(a) 1940
(b) 1942
(c) 1946
(d) 1935

Q49. Thangka painting style depicts _____ deity.

(a) Islamic
(b) Buddhist
(c) Jewish
(d) Hindu

Q50. In India, Who was appointed the new Chief of Defence Staff (CDS) in September 2022?

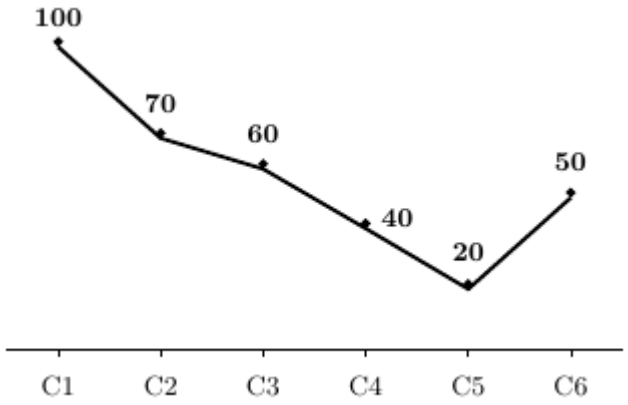
(a) Yogendra Dimri
(b) Rana Pratap Kalita
(c) Anil Chauhan
(d) Manoj Mukund Naravane

QUANTITATIVE APTITUDE

Q51. There is a ratio of 10 : 13 between two numbers. If 80 percent of the first is 16, then 50% of the second number is

(a) 17
(b) 13
(c) 25
(d) 14

Q52. The line chart given below shows the production of refrigerator by 6 companies.



What is the ratio of production of refrigerator by company C1 to the production of refrigerator by company C6 ?

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

Q53. The table given below shows the cost price and selling price of four articles.

Articles	Cost price	Selling price
D	550	450
E	750	700

F	650	450
G	950	650

The total cost price of D, E and F is what percent of the total selling price of E, F and G?

(a) 118.37 percent
(b) 105.37 percent
(c) 101.33 percent
(d) 108.33 percent

Q54. Find the value of $\sec\theta \times \sqrt{(1 - \sin^2\theta)}$

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

Q55. If $3\tan\theta = 5\sin\theta$, then what is the value of $\cos\theta$?

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

Q56. The average age of Abhay, his wife and their child 6 years ago was 42 years and that of his wife and their child 8 years ago was 30 years, Find the present age of Abhay.

(a) 68 years
(b) 63 years
(c) 64 years
(d) 66 years

Q57. If 73A215 is divisible by 11 and 56B26 is divisible by 9, then what is the value of A + B?

(a) 10
(b) 9
(c) 11
(d) 7

Q58. If $(p + q) = 5$ and $pq = 18$, then what is the value of $p^3 + q^3$?

(a) -270
(b) 125
(c) -145
(d) 135

Q59. Simplify: 60% of $870 - \sqrt{1444} + 18 \times 19$

(a) 826
(b) 842
(c) 786
(d) 700

Q60. If 70% of $(x - y) = 30\%$ of $(x + y)$, then what percent of x is y?

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

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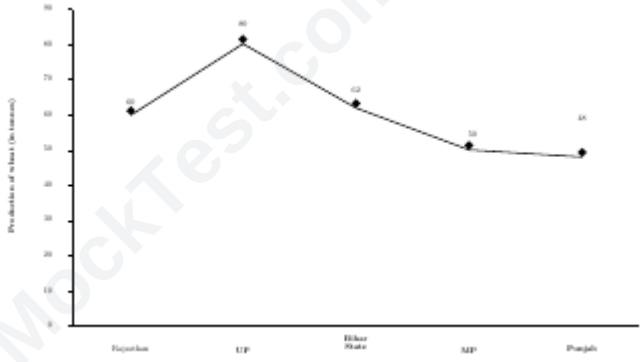
Q61. If the radius of a circle is increased by 10%, then its area would increase by:

(a) 100%
(b) 20%
(c) 21%
(d) 19%

Q62. If $(a + b)^2 = 100$ and $ab = 25$ then find the value of $(a - b)$

(a) 20
(b) 25
(c) 0
(d) 10

Q63. The following line graph shows the production of wheat in five different states in the year 2020.
What is the average production of wheat in these five states in the year 2020?



(a) 60 tonnes
(b) 70 tonnes
(c) 57 tonnes
(d) 50 tonnes

Q64. If $x = -2$ and $y = 1$, then what is the value of $(4/x + y)\ (16/(x^2) + y^2 - 4y/x)$?

(a) -5
(b) 7
(c) -7
(d) 5

Q65. In a right angled triangle if the longest side is 26 cm and one of the other sides is 24 cm, find the length of the third side.

(a) 20 cm
(b) 18 cm
(c) 12 cm
(d) 10 cm

Q66. Angle subtended by a chord PQ on the circumference is 90 degree. If radius of this circle is 15 cm, then what is the length of PQ?

(a) 35 cm
(b) 40 cm
(c) 7.5 cm
(d) 30 cm

Q67. A cell phone was bought for Rs.18,400 after getting a discount of 8% on its marked price. What is the marked price of the cell phone?

(a) Rs. 20,500
(b) Rs. 19,000
(c) Rs. 19,500

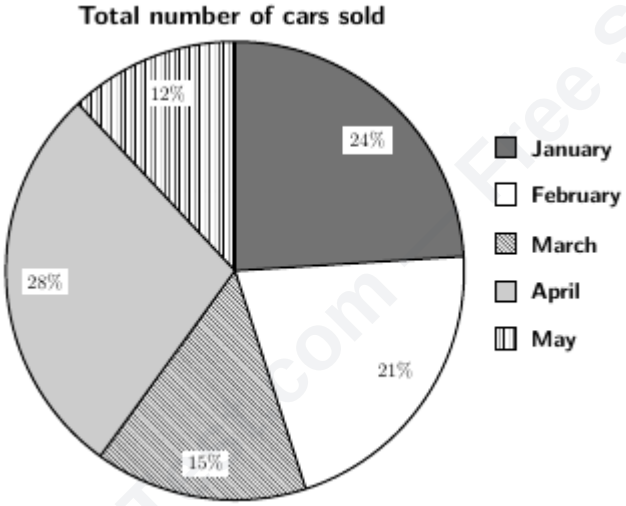
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(d) Rs. 20,000

Q68. The pie chart below shows total number of cars sold by a company during five months.

Total number of cars sold in these 5 months is 5400.

Total number of cars sold in January and April is how many more than the number of cars sold in May?



(a) 2258
(b) 2160
(c) 2200
(d) 2100

Q69. A sum of Rs. 4,000 becomes Rs. 4,960 in 4 years at simple interest. If the rate of interest becomes 1.5 times of itself, then how much this sum will become after 4 years?

(a) Rs. 5,440
(b) Rs. 5,680
(c) Rs. 5,280
(d) Rs. 4,890

Q70. A alone can complete a work in 20 days with full efficiency. If the efficiency of A decreases by 20 percent, then A alone can do the same work in how many days?

(a) 30
(b) 20
(c) 25
(d) 36

Q71. What is the time taken by Mohan to cover one round of a circular park of diameter 420 m, if he walks at a speed of 9 km/h ?

(a) 8.8 minutes
(b) 4.4 minutes
(c) 6.6 minutes
(d) 3.3 minutes

Q72. The area of a square is 1156 cm^2. What is the respective ratio between the length and the breadth of a rectangle whose length is twice the side of the square and whose breadth is 14 cm less than the side of the square?

(a) 16 : 7
(b) 19 : 5
(c) 17 : 5
(d) 21 : 19

Q73. A man can cover a certain distance in 2 hours and 10 minutes if he walks at the rate of 12 km/hr. If he covers the same distance on cycle at the rate of 13 km/hr, then find the time taken by him.

(a) 90 minutes
(b) 110 minutes
(c) 120 minutes
(d) 115 minutes

Q74. What is the value of sec 60° + tan 45° - sin²90° ?

(a) 2/√3
(b) 1/√3
(c) 1
(d) 2

Q75. Amar buys an old washing machine for Rs. 4,500 and spends Rs. 500 on its repair. If he sells the washing machine for Rs. 4,500, then what is his loss percent ?

(a) 6%
(b) 8%
(c) 10%
(d) 12%

GENERAL AWARENESS

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

As global
P. electricity generation is expected to
Q. significantly to maintain its current share of the mix
R. double over the next three decades, nuclear power
S. generating capacity would need to expand

(a) PRSQ
(b) QSPR
(c) PQSR
(d) SQPR

Q77. Select the correct passive form of the given sentence.

My father fixed the computer easily.

(a) The computer was fixed by my father easily.
(b) The computer is fixed by my father easily.
(c) The computer was fix by my father easily.
(d) The computer fixed by my father easily.

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

To take the veil

(a) To help someone
(b) To become a nun
(c) To take a responsibility
(d) To show interest

Q79. Choose the correctly spelt word.

(a) Gregareous
(b) Emphatic
(c) Liberanian
(d) Gangstar

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Q80. Select the most appropriate antonym of the given word.

ABSOLUTE

(a) SHEER
(b) OUTRIGHT
(c) INCOMPLETE
(d) PURE

Q81. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

Personal care products can also been made from agricultural ingredients, such as flower or fruit extracts and oils.

(a) such as flower or fruit extracts and oils.
(b) Personal care products can
(c) No error
(d) also been made from agricultural ingredients,

Q82. Select the most appropriate option to fill in the blank.

Sometimes, even one good _____ can make a big impact on both the person doing it and the person receiving it.

(a) deal
(b) dwell
(c) drill
(d) deed

Q83. Choose the incorrectly spelt word.

(a) DEBUCHERY
(b) DUBIOUS
(c) MALIGNANT
(d) CONSCIENCE

Q84. Select the word that is closest in meaning (SYNONYM) to the word given below.

Wallow

(a) Straighten
(b) Rise
(c) Flounder
(d) Steady

Q85. Some parts of a paragraph have been jumbled up, and labelled A, B, C and D. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct paragraph.
Carts: carts have two solid wheels.

A. The triangles are distributed in three concentric circles.

B. The wheels are decorated with triangles made of copper.

C. The chassis of the two carts are made of wood and covered with thick copper sheets.

D. The wheels rotated on a fixed axle linked by a shaft to the yoke. The concentric circles start from the hub flange of the wheel.

(a) BADC
(b) CBAD
(c) ABCD
(d) DCBA

Q86. Select the word that is closest in meaning (SYNONYM) to the word given below.

Famine

(a) Drought
(b) Feast
(c) Abundance
(d) Plenty

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Q87. Fill in the blank with the most suitable word.

The machine can be _____ to deliver a certain number of coins.

(a) met
(b) abet
(c) slashed
(d) set

Q88. Choose the word that can substitute the given group of words.

Study of body functions

(a) Genealogy
(b) Physiology
(c) Psychology
(d) Astrology

Q89. Fill in the blank with an appropriate option.

The sun _____ directly in the east and sets directly in the west.

(a) rises
(b) sums
(c) expands
(d) elevates

Q90. Given below are four jumbled sentences. Pick the option that gives their correct order.

P. The Spanish flu, also known as the 1918 flu pandemic, was a deadly pandemic in recent history.

Q. It spread worldwide during the year 1918-1919.

R. The virus infected 500 million people – about a third of the world's population at the time.

S. The death toll was estimated to be at least 50 million worldwide, possibly as high as 100 million this makes it the severest pandemic in human history.

(a) PQRS
(b) PRSQ
(c) PSRQ
(d) SRPQ

Q91. Parts of the following sentence are given as options. Identify the part that contains a grammatical error. If there is no error, select 'No error'.

And so for the sakes / of his son he remained, / absolutely calm.

(a) absolutely calm
(b) No error
(c) of his son he remained
(d) And so for the sakes

Q92. Choose the option that is the correct indirect form of the sentence.

Ravi said, “I may sell this tie.”

(a) Ravi said that he may sell that tie.
(b) Ravi said that he might sell that tie.
(c) Ravi said that I might sell that tie.
(d) Ravi said that he should sell this tie.

Q93. Fill in the blank with an appropriate option.

A group of Googlers get together regularly to _____ and decide which events will be celebrated with a doodle.

(a) brainstorm
(b) discredit
(c) relief
(d) salute

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Q94. Choose the word that means the same as the given word.

Lair

(a) Concealment
(b) Arraign
(c) Apart
(d) Concurrent

Q95. Select the most appropriate meaning of the given idiom.

To the manner born

(a) To have high manners
(b) To do something as though it is coming naturally
(c) To be sophisticated
(d) To give a ride to someone

Directions

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

Krishna helped my husbands create a strategy. They (1) _____ by killing Jarasandha, the most feared (2) ____ of the time—and incidentally, a long time enemy of Krishna. (3) ____ released the many kings Jarasandha had imprisoned in his labyrinths and gave them back (4) ____ kingdoms. This made my husband so popular that (5) _____ they went after that, they were greeted with friendship.

Q96. Select the most appropriate option to fill in the blank No. 1.

(a) commence
(b) begun
(c) began
(d) initiate

Q97. Select the most appropriate option to fill in the blank No. 2.

(a) ruler
(b) dominion
(c) rule
(d) sovereignty

Q98. Select the most appropriate option to fill in the blank No. 3.

(a) They then
(b) Their after they
(c) They kept
(d) Then after they

Q99. Select the most appropriate option to fill in the blank No. 4.

(a) their
(b) whose
(c) there
(d) that

Q100. Select the most appropriate option to fill in the blank No. 5.

(a) if at all
(b) whichever
(c) when if
(d) wherever

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 16 – 4086

The logic followed here is:

Logic: (First Number)^3 = Second Number

Let's check each option as per the logic,

1) 11 – 1331

→ $(11)^3 = 1331$

2) 12 – 1728

→ (12)3 = 1728

3) 16 – 4086

→ $(16)^3 \neq 4086$ → Doesn't follow the logic.

4) 13 – 2197

→ $(13)^3 = 2197$

Here, we can see that only Option 3 doesn't follow the logic.

Hence, the correct answer is "16 – 4086".

Q2. Answer: (a) 43

According to the given diagram the total number of people who are good at exactly two sports are shown below :

Thus, as marked above :-

Total number of people who are good at exactly two sports = Total number of people good at both chess and badminton + Total number of people good at both chess and tennis + Total number of people good at both tennis and badminton

Total number of people who are good at exactly two sports = 14 + 11 + 18

Total number of people who are good at exactly two sports = 43

Hence, "43" is the correct answer.

Q3. Answer: (d) 47 years

The total ages of Sweta, Damini and Supriya is 56 years.

Let, the total of their ages 3 years ago be x.

→ (Shweta - 3) + (Damini - 3) + (Supriya - 3) = x

→ (Shweta + Damini + Supriya) - 9 = x

→ 56 - 9 = x

→ 47 = x

Hence, the correct answer is "47".

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Q4. Answer: (c) (16, 32, 96)

The logic followed here is:

Logic: Second Number = (First Number) × 2

→ Third Number = (Second Number) × 3

(12, 24, 72):

→ 24 = 12 × 2

→ 72 = 24 × 3

(14, 28, 84):

→ 28 = 14 × 2

→ 84 = 28 × 3

Let's check each option as per the logic,

1) (20, 40, 160):

→ 40 = 20 × 2

→ 160 ≠ 40 × 3

2) (24, 72, 216):

→ 72 ≠ 24 × 2

3) (16, 32, 96):

→ 32 = 16 × 2

→ 96 = 32 × 3 => Follow the logic.

4) (18, 36, 118):

→ 36 = 18 × 2

→ 118 ≠ 36 × 3

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

Hence, the correct answer is "(16, 32, 96)".

Q5. Answer: (c) sbs

Let's check each option,

1	**a**	**b**	**a**	**a**	**b**	**s**	**a**	**s**	**s**	**a**	**b**	**b**
2	a	b	a	a	b	s	a	a	s	a	b	b
3	a	b	s	a	b	s	a	b	s	a	b	s
4	a	b	b	a	b	s	a	b	s	a	b	s

Here, we can see that Option 3 follows a repetitive pattern of abs.

Hence, the correct answer is "sbs".

Q6. Answer: (b) [figure]

The figure that will replace the question mark (?) in the following figure series is shown below:

1) For

element : It is shifting in the clockwise direction.c

2) For

element : It is shifting in the clockwise direction along with increasing '

' part of the element subsequently.

Final series is :

Hence, ‘option - (2)’ is the correct answer.

Q7. Answer: (a) [figure]

The mirror image of the given figure is shown below:

Hence, the correct answer is "Option 1".

Mistake Points

Option 1:

Here as you can see the diagonal line is touching the straight line.

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Option 3:

Here the diagonal line is touching the corner.

Q8. Answer: (c) Only II follows

The least possible Venn diagram for the given statements is as shown below :

Conclusions:

I. No water is a snack → Does not follow (As no food is water and all food are snacks. So, as no direct negative or cross relation is given between water and snack therefore it is definitely false)

II. All water can be snacks → Follow (As no food is water and all food are snacks. So, as no direct negative or cross relation is given between water and snack therefore all water can be snacks is possible thus,it is definitely true)

Therefore Here, Only II follows.

Hence, the correct answer is "Only II follows".

Q9. Answer: (d) 88

The logic followed here is : Multiplied and added by a whole number series subsequently starting with (1).

Hence, "88" is the correct answer.

Q10. Answer: (b) 8

The logic followed here is:

Logic: Second Number = (√First Number) ÷ 7

196: 2

→ 2 = √196 ÷ 7

→ 2 = 14 ÷ 7

784: 4

→ 4 = √784 ÷ 7

→ 4 = 28 ÷ 7

Similarly,

3136:?

→ ? = √3136 ÷ 7

→ ? = 56 ÷ 7

→ ? = 8

Hence, the correct answer is "8".

Q11. Answer: (c) [figure]

The mirror image of the given figure is shown below:

Hence, the correct answer is "Option 3".

Q12. Answer: (c) TVOSJTF

Logic : is added to the position value according to the English alphabetic series.

So,

• SUNSET is written as TVOTFU

Similarly,

• SUNRISE is written as :

Hence, "TVOSJTF" is the correct answer.

Q13. Answer: (c) Fish

The logic followed here is:

Army: Soldiers

→ Army is the group of Soldiers.

Similarly,

Shoal:?

→ Shoal is a large group of fish that feed and swim together.

Hence, the correct answer is "Fish".

Q14. Answer: (b) Lamb – Frog

The logic followed here is:

Logic: The first word is a young or immature form of the second word.

Let's check each option,

1) Child – Man

→ Child is the young form of a man.

2) Lamb – Frog

→ Lamb is not the young form of a Frog. => Doesn't follow the logic.

3) Kitten – Cat

→ Kitten is the young form of a cat.

4) Cub – Lion

→ Cub is the young form of a Lion.

Hence, the correct answer is "Lamb – Frog".

Q15. Answer: (b) Brother's wife

Given Statement : Penny is the mother of the daughter of Charlie's brother

Thus, according to the final family tree boy is the Penny is Charlie's brother's wife i.e sister-in-law.

Hence, "Brother's wife" is the correct answer.

Q16. Answer: (a) (289, 4, 1024)

The logic followed here is:

Logic: All three numbers of the set are the perfect squares.

(529, 36, 324):

→ All three numbers are perfect squares.

(49, 144, 100):

→ All three numbers are perfect squares.

Let's check each option,

1) (289, 4, 1024):

→ All three numbers are perfect squares → Follow the logic.

2) (9, 256, 334):

→ Here, 334 is not a perfect square.

3) (100, 144, 179):

→ Here, 179 is not a perfect square.

4) (121, 47, 324):

→ Here, 47 is not a perfect square.

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

Hence, the correct answer is "(289, 4, 1024)".

Q17. Answer: (a) 16927

Logic :

1. Position value according to the English alphabetic series is written.

2. Double digit position values are made single digits by adding digits within the number.

So,

• EDEKA is coded as 54521

Similarly,

• AORBG is coded as :

Hence, "16927" is the correct answer.

Q18. Answer: (d) 36

The total number of rectangles are in the given figure are shown below:

Thus, as marked above there are total 36 rectangles in the the given figure.

Hence, "36" is the correct answer.

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Q19. Answer: (a) KIO

Logic :

1. First and second letters => The difference between the position value is (1).

2. Second and third letter => The difference between the position value is (3).

So,

• KIO

• DEH

• WXA

• NOR

Thus, Only in KIO the difference between the position value between letters is different.

Hence, "KIO" is the correct answer.

Q20. Answer: (b) OIPE

The logic followed here is :-

• Vowels → No change.

• Consonants → (2) is added to the position value according to English alphabetic series.

So,

• STYE : UVAE

And,

• ELSE : ENUE

Similarly,

• MINE : ?

Hence, the correct answer is "OIPE".

Q21. Answer: (d) 4,1,3,2,5

The correct order as per the dictionary is:

4) Gaiety

1) Gain

3) Gainsay

2) Gaiter

5) Gauge

Hence, the correct answer is "4, 1, 3, 2, 5".

Q22. Answer: (b) [figure]

The mirror image of the given figure is shown below:

Hence, the correct answer is "Option 2".

Q23. Answer: (c) Room : House

The logic followed here is:

Logic: The first word is a part of the second word.

Nib: Pen

→ Nib is a part of the Pen.

Let's check each option as per the logic,

1) Tyre: Round

→ Tyre is not a part of the Round.

2) Car: Seat

→ Car is not a part of the seat.

3) Room: House

→ Room is a part of the House. → Follow the logic.

4) Triangle: Three

→ Triangle is not a part of the Three.

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

Hence, the correct answer is "Room: House".

Q24. Answer: (a) [figure]

When the paper is unfolded, the image we get is shown below:

Hence, the correct answer is "Option 1".

Q25. Answer: (d) Neither I nor II

After interchanging 5 and 7, the equations we get:

I. 4 × 5 + 8 ÷ 2 – 7 = 14

→ 4 × 5 + 4 – 7 = 14

→ 20 + 4 – 7 = 14

→ 24 – 7 = 14

→ 17 ≠ 14

→ LHS ≠ RHS

II. 5 + 6 × 4 – 7 ÷ 3 = 22

→ 5 + 6 × 4 – 7/3 = 22

→ 5 + 24 – 7/3 = 22

→ 29 – 7/3 = 22

→ 80/3 ≠ 22

→ LHS ≠ RHS

Here, we can see that both equations are incorrect.

Hence, the correct answer is "Neither I nor II".

Q26. Answer: (b) They are generally rich in humus.

The correct answer is Option 2.

Key Points

• They are generally rich in humus: This statement is NOT correct.

• Laterite soils are generally low in fertility and organic matter, including humus.

• They are often leached of essential nutrients due to heavy rainfall and have a low capacity to retain organic matter.

Additional Information

• Red laterite soils in Tamil Nadu, Andhra Pradesh, and Kerala are more suitable for crops like cashew nut: Red laterite soils found in these regions have good drainage properties and are rich in iron and aluminum oxides.

• These soil characteristics make them suitable for crops like cashew nut, which thrive in well-drained soils.

• This soil is very useful for growing tea and coffee: Laterite soils are suitable for growing tea and coffee.

• These crops require well-drained soils with good water-holding capacity, and the characteristics of laterite soils, such as their ability to retain moisture, make them conducive to tea and coffee cultivation.

• The laterite soil develops in areas with high temperature and heavy rainfall: Laterite soils are primarily found in tropical and subtropical regions with high temperatures and heavy rainfall.

• The intense weathering and leaching processes that occur in these regions contribute to the formation of laterite soils.

Q27. Answer: (a) United Arab Emirates

The correct answer is Option 1.

Key Points

• The 2022 Cricket Asia Cup was held in United Arab Emirates.

• "Every effort was made to host the Asia Cup in Sri Lanka and the decision to shift the venue to the UAE was taken after much deliberation," Asian Cricket Council (ACC) President Jay Shah said that.

Additional Information

• The Asia Cup is a cricket tournament that features teams from Asian countries.

• It is organized by the Asian Cricket Council (ACC), which is a regional governing body for cricket in Asia.

• The tournament has been held since 1984, with the exception of a few years.

• The participating teams in the Asia Cup typically include Test-playing nations such as India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, along with other Asian countries that qualify through regional tournaments.

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Q28. Answer: (a) Himachal Pradesh

The correct answer is Option 1.

Key Points

• Himachal Pradesh became the latest winner of the Vijay Hazare Trophy winners list after defeating Uttar Pradesh in the 2021 season.

• The Vijay Hazare Trophy is named after the legendary Indian test cricketer, Vijay Hazare is a one-day cricket championship of the Indian domestic cricket circuit.

Additional Information

• The Vijay Hazare Trophy is an annual domestic limited-overs cricket tournament in India.

• It is named after the renowned Indian cricketer Vijay Hazare, who was one of the most successful captains in Indian cricket history.

• The tournament is organized by the Board of Control for Cricket in India (BCCI) and is considered one of the premier domestic one-day competitions in the country.

• The Vijay Hazare Trophy was first held in 2002-03, and it was initially known as the Ranji One-Day Trophy.

Q29. Answer: (a) Dalton's

The correct answer is Option 1.

Key Points

• This is known as Dalton's law of partial pressures.

• According to Dalton's law, the total pressure exerted by a mixture of non-reacting ideal gases is equal to the sum of the partial pressures of each individual gas.

• Dalton's law is based on the assumption that the gases in the mixture behave independently of one another, without any significant interactions or reactions.

Additional Information

• Boyle's Law:

• Boyle's law states that, at a constant temperature, the volume of a given amount of gas is inversely proportional to its pressure.

• In other words, as the pressure of a gas increases, its volume decreases, and vice versa, provided the temperature remains constant. Mathematically, Boyle's law can be expressed as:

• P1V1 = P2V2

• where P1 and V1 are the initial pressure and volume, and P2 and V2 are the final pressure and volume, respectively.

• Charles's Law:

• Charles's law states that, at a constant pressure, the volume of a given amount of gas is directly proportional to its absolute temperature. This means that as the temperature of a gas increases, its volume also increases, and as the temperature decreases, its volume decreases, as long as the pressure remains constant. Mathematically, Charles's law can be expressed as:

• V1/T1 = V2/T2

• where V1 and T1 are the initial volume and temperature (in Kelvin), and V2 and T2 are the final volume and temperature, respectively.

• Avogadro's Law:

• Avogadro's law states that, at a constant temperature and pressure, equal volumes of gases contain an equal number of particles (atoms, molecules, or ions).

• This law implies that the volume of a gas is directly proportional to the number of moles of gas present. Mathematically, Avogadro's law can be expressed as:

• V1/n1 = V2/n2

where V1 and n1 are the initial volume and number of moles, and V2 and n2 are the final volume and number of moles, respectively.

Q30. Answer: (d) 16

The correct answer is Option 4.

Key Points

• Article 16 of the Indian Constitution deals with the right to equality of opportunity in matters of public employment.

• It ensures that there is no discrimination in public employment on the grounds of religion, race, caste, sex, descent, place of birth, or residence.

• It also provides for the reservation of posts for certain categories, such as Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs), to promote social justice and equality.

Additional Information

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• Article 15 of the Indian Constitution deals with the prohibition of discrimination on grounds of religion, race, caste, sex, or place of birth.
• It ensures that the state shall not discriminate against any citizen on these grounds in matters of access to public places, use of public resources, or in providing opportunities in employment or educational institutions.
• Article 15 promotes the principles of equality and non-discrimination.
• Article 17 of the Indian Constitution deals with the abolition of untouchability.
• It declares that untouchability is abolished and that its practice in any form is forbidden.
• It is a provision aimed at eradicating the social evil of untouchability and promoting equality and dignity among all individuals.

Q31. Answer: (a) Kiren Rijiju

The correct answer is Option 1.

Key Points

• The Ministry of Law and Justice is organizing a conference for Law Ministers and Law Secretaries from all over India.
• It will take place in Ekta Nagar, Gujarat, from October 14th to 16th, 2022.
• The conference aims to bring together policymakers to discuss various topics related to India's legal system.
• Shri Kiren Rijiju is the Union Minister of Law and Justice of India as of October .

Additional Information

• The main goal of this initiative is to provide a platform for exchanging ideas and sharing best practices among the different states and union territories.
• The aim is to improve the overall legal system of the country, especially for the benefit of marginalized sections of society.

Q32. Answer: (b) Kanwar

The correct answer is Option 2.

Key Points

• Kanwar lake is the largest oxbow lake in India and in Asia.
• It is a freshwater lake located in the Begusarai district and is the only Ramsar site in Bihar.

Additional Information

• Wular Lake is the largest freshwater lake in India, located in the state of Jammu and Kashmir.
• While it is a significant lake in terms of size, it is not classified as an oxbow lake.
• Wular Lake is a result of tectonic activity and is fed by the Jhelum River.
• Bhojtal, also known as Upper Lake, is a large lake located in Bhopal, the capital city of the state of Madhya Pradesh in India.
• It is an artificial lake created by Raja Bhoj during his reign.
• Nakki Lake is a popular tourist attraction located in Mount Abu, a hill station in the state of Rajasthan, India.
• It is a small and scenic lake surrounded by hills.

Q33. Answer: (b) Sushira Vadya

The correct answer is Option 2.

Key Points

• Flute instruments generally fall under the category of "Sushira Vadya."
• "Sushira Vadya" refers to wind instruments in Indian classical music that produce sound by blowing air through a hollow tube.
• The flute, also known as "Venu" in Indian classical music, is a popular example of a Sushira Vadya.

Additional Information

• Ghana Vadya:
• Ghana Vadya refers to percussion instruments in Indian classical music that produce sound by striking or shaking.
• Examples of Ghana Vadya include instruments like the mridangam and ghatam.
• Sushira Vadya:
• Sushira Vadya refers to wind instruments in Indian classical music that produce sound by blowing air into them.
• Flute instruments, such as the Bansuri (a bamboo flute) or Venu, fall under this category.
• Avanaddha Vadya:
• Avanaddha Vadya is percussion instrument. Sound is produced by a stretched membrane, such as a drum. Membranophonic instruments act as skin-vibrators because they produce sound-waves by vibrations of a stretched skin or membrane when struck, plucked, or stroked.
• Examples of Avanaddha Vadya include instruments like the Tabla, Ankya, Alingya, Oordhwaka, and Damru.

Q34. Answer: (a) comedian

The correct answer is Option 1.

Key Points

• Bhagwant Singh Mann is primarily known for his career as a comedian.

• Before entering politics, he gained popularity as a stand-up comedian in Punjab and other parts of India.

Additional Information

• Punjab CM List names Bhagwant Mann as the new chief minister of the state.

• Associated with the Aam Aadmi Party (AAP), Mann took charge of the Punjab chief minister's office on 16 March 2022.

• He holds the de-facto administrative authority in the state along with other ministers in his cabinet.

• Mann succeeded Charanjit Singh Channi as the new chief minister of Punjab.

Q35. Answer: (b) Mother Board

The correct answer is Option 2.

Key Points

• The important system components like the central processing unit (CPU) and random access memory (RAM) modules are connected directly to the Motherboard.

• The motherboard acts as the main circuit board of a computer system, providing electrical connections and pathways for various hardware components to communicate with each other.

• The CPU is typically inserted into a socket on the motherboard, and the RAM modules are installed into slots on the motherboard.

Additional Information

• Magnetic Tape: Magnetic tape is a medium used for long-term storage of data.

• It is typically used for backup purposes rather than directly connecting components like CPU and RAM.

• Magnetic tape drives are separate devices that connect to a computer system.

• Optical Disk: An optical disk is a storage medium that uses laser technology to read and write data.

• Examples of optical disks include CDs, DVDs, and Blu-ray discs.

• While optical drives can be connected to the motherboard, they are used primarily for reading and writing data from optical disks rather than directly connecting the CPU and RAM.

• Flash memory is a type of non-volatile memory that retains data even when power is removed.

• It is commonly used in USB flash drives, solid-state drives (SSDs), and memory cards.

• Flash memory can be connected to the motherboard through various interfaces such as USB, SATA, or PCIe.

Q36. Answer: (c) 1917

The correct answer is Option 3.

Key Points

• The Champaran Agrarian Movement, also known as the Champaran Satyagraha, was led by Mahatma Gandhi in 1917.

• It aimed to address the issues faced by indigo farmers who were being forced to grow indigo by the British colonial landlords and were subjected to unfair treatment and exploitation.

• Gandhi's involvement in the movement and his subsequent success in negotiating better terms for the farmers played a significant role in shaping his approach to nonviolent resistance and civil disobedience.

Additional Information

• The Indian Nationalist Movement against British rule gained momentum in the late 19th and early 20th centuries.

• Various leaders, including Mahatma Gandhi, Jawaharlal Nehru, Subhas Chandra Bose, and others, emerged and mobilized Indians across the country in the struggle for independence.

• After years of struggle, India finally achieved independence on August 15, 1947.

• However, the independence came at a price, as the country was divided into India and Pakistan along religious lines, leading to widespread violence and mass migration.

Q37. Answer: (c) Both I and II

The correct answer is Option 3.

Key Points

• Both statements are correct regarding direct taxes:

• Direct taxes are levied on taxable income earned by individuals and corporate entities.

• Examples of direct taxes include income tax, corporate tax, and wealth tax.

• These taxes are directly imposed on the income or wealth of individuals and entities.
• Gift tax is indeed a type of direct tax.
• It is a tax imposed on the transfer of property or assets as a gift from one individual to another.
• The person giving the gift (donor) is usually responsible for paying the tax, although in some cases, the recipient may be liable for reporting the gift.
• Gift tax is considered a direct tax because it is directly imposed on the transfer of property or assets.

Q38. Answer: (d) pseudocode

The correct answer is pseudocode.

Key Points

• Pseudocode:
• Pseudocode is a high-level description of a program that uses plain language or a simplified syntax to outline the logic and structure of the intended code.
• It allows programmers to focus on the algorithmic steps without getting bogged down by the syntax of a specific programming language.
• Original code:
• This option refers to the actual code written in a high-level language.
• It is the final implementation of the program, which is executed by the computer.
• While original code is essential for executing the program, it is not the most suitable choice for representing the basic functionality of the program before writing actual code.
• Small code:
• "Small code" is not a commonly used term in programming.
• It is vague and does not specifically describe any stage or representation of a program.
• Naïve code:
• "Naïve code" is also not a standard term in programming.
• It could refer to code written by a novice programmer, which may lack efficiency or optimization.
• However, it does not represent a stage or technique used to represent the basic functionality of a program.

Q39. Answer: (a) Only II

The correct answer Only II.

Key Points

• Bajrang Punia:
• Bajrang Punia is an Indian freestyle wrestler who competes in the men's 65 kg category.
• He is an Olympic medalist, winning a bronze medal at the at the 2020 Summer Olympics in Tokyo.

• Yash Dhull:
• Yash Dhull is an Indian cricketer who plays as a right-handed batsman and wicket-keeper.
• He is a product of the Delhi Under-19 cricket team and was the captain of the India Under-19 team that won the 2022 Under-19 Cricket World Cup.
• He is considered to be one of the most promising young batsmen in India.
• Yash Dhull is a cricketer who is considered to be one of the most promising young batsmen in India.
• He led India to victory in the 2022 Under-19 Cricket World Cup.

Q40. Answer: (a) Sound can travel through vacuum.

Correct Answer Sound can travel through vacuum

Key Points:Concept:

• A sound is a form of energy that produces the sensation of hearing in our ears.
• Sound is a type of longitudinal wave.
• Sound is measured in Decibels(Db).
• The speed of the sound varies in different mediums.

Explanation:

• Sound from a violin and a flute played at the same time travel at the same speed.
• Both sounds travel through the same medium which is air.
• Both the sounds travel through at the same speed at the same time but the sound we receive are different due to characteristics

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associated with the sound such as pitch and amplitude.

• Hence, option 1 is correct.

• Two sound waves of the same intensity would not be perceived to have the same loudness because of the human's ear tendency to amplify sounds having frequencies in the range from 10kHz to 50kHz, sounds with these intensities seem louder to the human ear. Hence, option 2 is incorrect.

• Speed of sound in hot air is more than that of the room temperature because heat makes air molecules move around faster. Hence, option 3 is correct.

• The speed of sound depends on the density of the material.

• Tightly packed material molecules transfer the sound at high speed.

• Speed of sound is fastest in Solids, Liquids then Gas.

Thus, the incorrect statement is that two sound waves of the same intensity will always have equal loudness.

Important PointsAmplitude:

• Amplitude is the measure of compression or rarefaction of particles of a medium through which sound is traveling.

• The higher the amplitude, the louder the sound.

• The amplitude A is related to loudness as loudness prop. to A2

Frequency:

• Frequency refers to the rate of vibration of sound.

• The pitch of a sound is decided by the measure of frequency.

• The higher the frequency, the shriller the sound.

• Frequency measured in Hertz (Hz).

Additional Information Sound in the air:

• In a gas-like air, the particles are generally far apart so they travel further before they bump into one another.

• There is not much resistance to movement so it doesn't take much to start a wave, but it won't travel as fast.

Sound in water:

• In water, the particles are much closer together, and they can quickly transmit vibrational energy from one particle to the next.

• This means that the sound wave travels over four times faster than it would in the air, but it takes a lot of energy to start the vibration.

Sound in solids:

• In a solid, the particles are even closer together and linked by chemical bonds so the wave travels even faster than it does in either liquid or air, but you need quite a lot of energy to start the wave at the beginning.

Medium	Speed(m/s)
Solid (Steel)	6000
Liquid (Water)	1500
Gas (Air)	350

Q41. Answer: (a) Budding

Correct Answer Budding

Key PointsAsexual Reproduction: In asexual reproduction, plants can give rise to new plants without seeds

1. Fragmentation: Where the body of the organism breaks into smaller pieces, called fragments and each segment grows into an adult individual. like Algae etc.

2. Vegetative propagation: It is a type of asexual reproduction in which new plants are produced from roots, stems, leaves, and buds. Since reproduction is through the vegetative parts of the plant, it is known as vegetative propagation. Ex- sweet potato, ginger, grass, etc.

3. Spore formation: Reproduction in fungus/fungi and Chlamydomonas.

4. Budding: The small bulb-like projection coming out from the yeast cell is called a bud. The bud gradually grows and gets detached from the parent cell and forms a new yeast cell. Ex-yeast, sponges, and hydra.

Hence, it can be concluded that Budding is the correct option.

Q42. Answer: (d) ISRO

Correct Answer ISRO

Key PointsPSLV Orbital Experimental Module or 'POEM':

• The PSLV Orbital Experimental Module is a platform that will help perform in-orbit experiments using the final, and otherwise

discarded, stage of ISRO's workhorse rocket, the Polar Satellite Launch Vehicle (PSLV).

• POEM carries six payloads, including two from Indian space start-ups Digantara and Dhruva Space.

• POEM has a dedicated Navigation Guidance and Control (NGC) system for attitude stabilization, which stands for controlling the orientation of any aerospace vehicle within permitted limits.

• POEM will derive its power from solar panels mounted around the PS4 tank, and a Li-Ion battery. It will navigate using "four sun sensors, a magnetometer, gyros & NavIC".

• While in that mission, the fourth stage had Li-Ion batteries, solar panels are an addition this time.

• It carries dedicated control thrusters using Helium gas storage. It is enabled with a telecommand feature.

Q43. Answer: (c) Indian Scientist and Statistician

Correct Answer Indian Scientist and Statistician

Key Points:

• Prasanta Chandra Mahalanobis Calcutta was an Indian statistician who was instrumental in formulating India's strategy for industrialization in the Second Five-Year Plan (1956–61).

• Mahalanobis Plan was India's second five-year plan (1956-61) proposed by Professor Prasanta Chandra Mahalanobis.

• This plan gave priority to investment goods, as they were crucial for the further economic growth of India.

• The plan explores the allocation of investment between the different sectors of the economy.

Additional InformationFive-Year Plan

• Economic planning in India began after the country's independence in 1950 when it was thought important for the country's economic growth and development.

• This was carried out through the Planning Commission (1951-2014) and the NITI Aayog's (2015-2017) Five-Year Plans, which were established, implemented, and monitored.

• Under the socialist influence of the first Prime Minister Pt. Jawahar Lal Nehru, the idea of five-year economic planning was borrowed from the Soviet Union.

Q44. Answer: (c) Bhalchandra Bhaskar Bhagwat

The correct answer is Bhalchandra Bhaskar Bhagwat

Key Points:

• The first recipients of the award were Bhalchandra Bhaskar Bhagwat (Wrestling), Om Prakash Bhardwaj (Boxing), and O. M. Nambiar (Athletics), who was honored in 1985.

Additional Information:

• 'The Dronacharya Award for Outstanding Coaches in Sports and Games' is given to coaches for doing outstanding and meritorious work on a consistent basis and for enabling sportspersons to excel in International events.

• List of the Winners(Regular Category):

• Lalit Kumar - Wrestling

• R. B. Ramesh - Chess

• Mahaveer Prasad Saini - Para Athletics

• Shivendra Singh - Hockey

• Ganesh Prabhakar Devrukhkar - Mallakhamb

• Dhyan Chand Award for Lifetime Achievement 2023 Winners:

• Manjusha Kanwar - Badminton

• Vineet Kumar Sharma - Hockey

• Kavitha Selvaraj - Kabaddi

• Dronacharya Award-2023 (Lifetime Category) Winner:

• Jaskirat Singh Grewal (Golf)

• Bhaskaran E (Kabaddi)

• Jayant Kumar Pushilal (Table Tennis)

Q45. Answer: (a) Diamond city

The Correct Answer is Diamond city

Key Points:

• Surat is famous for its diamond cutting and polishing and is known as the Diamond City of India.

• 90% of all diamond cutting and polishing on the planet takes place in Surat.

Important Points:

• Surat is a port city situated on the banks of the Tapi River.

Additional Information:

Name of Cities	Nicknames of the Cities
Bengaluru (Karnataka)	1. Silicon Valley of India 2. Space City 3. Science city of India 4. Garden City of India
Pochampalle (Telangana)	Silk City
Chennai (Tamil Nadu)	1. Detroit of Asia 2. Automobile Capital of India 3. Gate Way Of South India 4. India's health capital 5. Electronic Manufacturing Hub in India 6. Banking Capital of India
Coimbatore (Tamil Nadu)	Manchester of South India
Dibrugarh (Assam)	Tea City of India
Hyderabad (Telangana)	City of Pearls
Jaipur (Rajasthan)	Pink City
Jamshedpur (Jharkhand)	Steel City of India
Kolkata (West Bengal)	City of Joy
Kolhapur (Maharashtra)	City of Wrestlers
Kollam (Kerala)	Cashew Capital of the World
Kochi (Kerala)	Queen of Arabian Sea
Kurnool (Andhra Pradesh)	The Gateway of Rayalaseems
Lucknow (Uttar Pradesh)	City of Nawab
Madurai (Tamil Nadu)	1. City of Festivals 2. Temple city 3. Athens of the East
Mangalore (Karnataka)	1. Cradle Of Indian Banking 2. Gateway Of Karnataka 3. Rome Of The East 4. Petrochemical capital of South India 5. Ice cream capital of India 6. Jewel of the West Coast 7. City of cuisines
Mumbai (Maharashtra)	1. City of Seven Islands 2. Gateway of India 3. Hollywood of India 4. Maximum City
Mussoorie (Uttarakhand)	Queen of the Mountains
Muzaffarpur (Bihar)	The Land of Leechi
Nagpur (Maharashtra)	1. Orange City 2. Tiger Capital
Akola (Maharashtra)	The Cotton City
Patiala (Punjab)	Royal City
Panipat (Haryana)	City of Weavers
Pondicherry (Puducherry)	Paris of the East
Pune (Maharashtra)	1. Oxford of the East 2. Queen of Deccan
Siliguri (West Bengal)	Gateway to the Dooars
Surat (Gujarat)	Diamond City
Tezpur (Assam)	City of Blood
Tirunelveli (Tamil Nadu)	1. Oxford city of south India 2. Halwa city of India 3. City of paddy fields
Thoothukudi (Tamil Nadu)	Pearl City
Udaipur (Rajasthan)	1. White City 2. City of Lakes
Trivandrum (Kerala)	Evergreen City of India

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Vadodara (Gujarat)	1. Banyan City 2. Cultural Capital of Gujarat/ Sanskari Nagari 3. Power Equipment Manufacturing Hub of India 4. Pensioners' City

Q46. Answer: (a) Alluvial

Correct Answer is Alluvial

Key Points:Northern Plains:

• The great Northern Plains have been formed by alluvium deposits brought by rivers flowing from the Himalayas and the Great Indian Plateau.

• This plain is dead flat, with almost negligible slope.

• The plain is of two types Bangar and khadar.

• The Great Northern Plain can be divided into four parts - Western Plain, North Central Plain, Eastern Plain, and Brahmaputra Plain.

Additional Information

• Red Soil: Red soil develops on crystalline igneous rocks in areas of low rainfall in the eastern and southern parts of the Deccan Plateau.

• Laterite Soil: The laterite soils develop in areas with high temperatures and high rainfall.

• Black Soil: Black soil covers most of the Deccan Plateau which includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, and some parts of Tamil Nadu.

Q47. Answer: (a) 2016

The correct answer is 2016

Key Points:

• Start-up India, Stand up India campaign is launched to promote bank financing for starting businesses by the youths.

• This initiative is planned by the government to encourage Dalits, Adivasi, and women towards entrepreneurship.

• Stand Up India Scheme facilitates bank loans between 10 lakhs and 1 crore to at least one scheduled caste (SC) or Scheduled Tribe, borrower, and at least one woman per bank branch for setting up a greenfield enterprise.

• This enterprise may be in manufacturing, services, or the trading sector.

• The scheme was announced by PM Modi in his speech on Independence Day 2015.

• Start-Up India, Stand Up India is a scheme launched by the Modi Government on 16th January 2016.

• It is organized by the Department of Industrial Policy and Programmes (DIPP).

Additional Information:

• Stand Up India Scheme facilitates bank loans to finance SC/ST and/or Women Entrepreneurs.

• SC/ST and/or women entrepreneurs; above 18 years of age are eligible for the loan.

• Loans under the scheme are available for the only greenfield project.

• Pradhan Mantri Kaushal Vikas Yojana (PMKVY) is the flagship scheme of the Ministry of Skill Development & Entrepreneurship (MSDE) implemented by the National Skill Development Corporation.

• The objective of this Skill Certification Scheme is to enable a large number of Indian youth to take up industry-relevant skill training that will help them in securing a better livelihood.

• Individuals with prior learning experience or skills will also be assessed and certified under Recognition of Prior Learning (RPL).

• Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one of the largest work guarantee programs in the world.

• Objective: The primary objective of the scheme is to guarantee 100 days of employment in every financial year to adult members of any rural household willing to do public work-related unskilled manual work.

• The Mahatma Gandhi National Rural Employment Guarantee Act, earlier known as the National Rural Employment Guarantee Act was passed in 2005 to augment employment generation and social security in India.

• The Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA) was notified on September 7, 2005.

• It covers all districts of India except the ones with a 100% urban population.

Q48. Answer: (a) 1940

The correct answer is 1940.

Key Points:

• The Muslim League advocated autonomy for the areas of the subcontinent with a majority of Muslims, which were the geographically adjacent territories in the North-West and the East, in its 1940 Resolution.

• These were to be "independent states," with full autonomy and sovereignty.

• However, at this time, neither the concept of a formal "Pakistan" nor the ambiguity of their decision spoke to any kind of separation.

• It ultimately led to the partition of India in 1947 by the British Empire.

Additional Information:

• All India Muslim League was founded in 1906 to safeguard the rights of Indian Muslims.

• Founders: Muhammad Ali Jinnah, Aga Khan III, Hakim Ajmal Khan, Khwaja Salimullah, Waqar-ul-Mulk

• Founded: 30 December 1906

Q49. Answer: (b) Buddhist

Correct Answer is Buddhist

Key Points:Thangka Painting:

• Presently belonging to the Indian States of Sikkim, Himachal Pradesh, Ladakh region, and Arunachal Pradesh, Thangka was originally used as a medium of reverence that evoked the highest ideals of Buddhism.

• Traditionally made by Buddhist monks and particular ethnic groups, the skill of these paintings has been passed from one generation to the other.

• It has now spread to a greater number of people and to an extent been commercialized.

• The earnings from the paintings are used not only to keep the art form alive and sustain the artist but also to help the monasteries.

• Thangkas are painted on a base of cotton canvas (white background) with paints made from natural vegetable dyes or mineral dyes.

• The colours used in the paintings have their own significance.

Q50. Answer: (c) Anil Chauhan

The correct answer is Anil Chauhan.

Key Points:

• The Government announced Lt General Anil Chauhan (retired) as the new CDS.

• He is the second CDS of India.

• General Anil Chauhan, PVSM, UYSM, AVSM, SM, and VSM assumed office as the Chief of Defence Staff (CDS) on September 30, 2022.

Additional Information:

• The Chief of Defence Staff (CDS) is the military head and acts as the single-point advisor to the Government of India in matters of India’s military.

• He is also the permanent Chairman of the Chiefs of Staff Committee (CoSC) of the Indian Armed Forces.

• The Chief also heads the Department of Military Affairs.

• The first Chief of Defence Staff, General Bipin Rawat took office on 1 January 2020.

• The creation of the post of CDS was first recommended after the 1999 Kargil War.

Q51. Answer: (b) 13

Shortcut Trick

Assume the numbers are 10 units and 13 units.

80% of 10 units = 8 units.

8 units = 16 => 1 unit = 2.

The second number = 13 units × 2 = 26.

50% of the second number = 26 ÷ 2 = 13.

Therefore The correct answer is 13.

Alternate Method

Given:

Ratio of two numbers = 10 : 13

80% of the first number = 16

Formula used:

Percentage Value = (Percentage/100) × Number

Let the first and second numbers be 10x and 13x respectively.

According to the question:

=> 80% of 10x = 16

=> (80/100) × 10x = 16
=> 8x = 16
=> x = 16 ÷ 8
=> x = 2
Now, find the second number:
=> Second number = 13x = 13 × 2 = 26
Finally, calculate 50% of the second number:
=> 50% of 26 = (50/100) × 26
=> 0.5 × 26 = 13
Therefore The correct answer is 13.
Additional Information
Concept of Ratio Multiplier
When numbers are in ratio a : b, they can be expressed as ax and bx, where x is the common hcf or multiplier.
Percentage to Fraction Conversion
Common fractions like 50% = 1/2, 80% = 4/5, and 25% = 1/4 can speed up calculations significantly.
Percentage Change
Percentage change = (Difference ÷ Original Value) × 100. This is used for comparing numbers in ratio problems.

Q52. Answer: (b) 2 : 1

Calculation:
According to the question:
The ratio is
C1 : C6
100 : 50
2 : 1
Therefore Option 2 is the correct answer.

Q53. Answer: (d) 108.33 percent

Calculation:
Total cost price of D, E, and F = Cost price of D + Cost price of E + Cost price of F
550 + 750 + 650
1950
The total selling price of E, F, and G = Selling price of E + Selling price of F + Selling price of G
700 + 450 + 650
1800
According to the question
(1950/1800) × 100
=108.33%
Therefore, the total cost price of articles D, E, and F is approximately 108.33% of the total selling price of articles E, F, and G.

Q54. Answer: (d) 1

Given
sec θ × √(1 - sin² θ)
Formulas Used
Pythagorean Trigonometric Identity: 1 = sin² θ + cos² θ
solution
=> cos² θ = 1 - sin² θ
=> sec θ = 1 / cos θ
=> sec θ × √(1 - sin² θ) = 1 / cos θ × cos θ = 1
Therefore, the value of sec θ * √(1 - sin² θ) is 1

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Q55. Answer: (c) 3/5

Given

3 tan θ = 5 sin θ

Formulas Used

Trigonometric Identities: tan θ = sin θ/cos θ

Solution

=> 3 sin θ/cos θ = 5 sin θ

=> 3/cos θ = 5

=> cos θ = 3/5

Therefore, the value of cos θ is 3/5

Q56. Answer: (a) 68 years

Shortcut Trick

Present average of Abhay, wife, and child = 42 + 6 = 48 years

Total present age of the three = 48 × 3 = 144 years

Present average of wife and child = 30 + 8 = 38 years

Total present age of wife and child = 38 × 2 = 76 years

Present age of Abhay = 144 − 76 = 68 years

Therefore The correct answer is 68 years.

Alternate Method

Given:

Average age of Abhay (A), Wife (W), and Child (C) 6 years ago = 42 years

Average age of Wife (W) and Child (C) 8 years ago = 30 years

Formula Used:

Sum of ages = Average age × Number of persons

Calculations:

=> Sum of ages of A, W, and C (6 years ago) = 42 × 3 = 126 years

=> Total present age of A, W, and C = 126 + (3 × 6) = 144 years

=> Sum of ages of W and C (8 years ago) = 30 × 2 = 60 years

=> Total present age of W and C = 60 + (2 × 8) = 76 years

=> Present age of Abhay = (A + W + C)_(present) − (W + C)_(present)

=> Present age of Abhay = 144 − 76 = 68 years

Therefore The correct answer is 68 years.

Additional Information

Average Age Property

If the average age of 'n' persons is 'X' years, then 'k' years ago, their average age was (X − k) years, and 'k' years later, it will be (X + k) years.

Total Age Calculation

Total Age = Average Age × Number of Persons. This formula is fundamental for solving any problem involving group averages and individual age changes.

Age Gap Consistency

The difference between the ages of two people remains constant regardless of the number of years that pass or have passed.

Q57. Answer: (a) 10

Given

3A215 is divisible by 11

56B26 is divisible by 9

Concept Used

Divisibility rule of 11: The difference between the sum of odd-placed digits and even-placed digits should be either 0 or divisible by 11.

Divisibility rule of 9: The sum of the digits in the number should be divisible by 9.

Solution

=> For 73A215, |(7 + A + 1) - (3 + 2 + 5)| = |A - 2| is divisible by 11, A = 2

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=> For 56B26, 5 + 6 + B + 2 + 6 = 19 + B is divisible by 9, B = 8

=> A + B = 2 + 8 = 10

Therefore, the value of A + B is 10.

Q58. Answer: (c) -145

Shortcut Trick

Use the algebraic identity: $p^3 + q^3 = (p + q)^3 - 3pq(p + q)$

Given $(p + q) = 5$ and $pq = 18$.

$p^3 + q^3 = (5)^3 - 3 \times 18 \times 5$

$p^3 + q^3 = 125 - 270 = -145$

Therefore The correct answer is -145.

Alternate Method

Given:

Sum of variables $(p + q) = 5$

Product of variables $(pq) = 18$

Formula used:

$p^3 + q^3 = (p + q)(p^2 - pq + q^2)$ OR $p^3 + q^3 = (p + q)^3 - 3pq(p + q)$

Calculations:

=> $p^3 + q^3 = (p + q)^3 - 3pq(p + q)$

=> $p^3 + q^3 = (5)^3 - 3 \times (18) \times (5)$

=> $p^3 + q^3 = 125 - 270$

=> $p^3 + q^3 = -145$

Therefore, the correct option is (3).

Therefore The correct answer is -145.

Additional Information

Sum of Cubes Identity

The expression can also be written as: $p^3 + q^3 = (p + q)(p^2 - pq + q^2)$.

Difference of Cubes Identity

For subtraction: $p^3 - q^3 = (p - q)(p^2 + pq + q^2) = (p - q)^3 + 3pq(p - q)$.

Square Identity

$(p + q)^2 = p^2 + q^2 + 2pq$. This is used to find $p^2 + q^2$ when individual values are needed.

Q59. Answer: (a) 826

Given

60% of 870 - √1444 + 18 × 19

Concept used:

Solution

60% of 870 - √1444 + 18 × 19

522 - 38 + 342 = 826

Therefore, the value of 60% of 870 - √1444 + 18 x 19 = 826

Q60. Answer: (c) 40%

Given

70% of (x - y) = 30% of (x + y)

Solution

7(x - y) = 3(x + y)

7x - 7y = 3x + 3y

4x = 10y

x = 2.5y

y = x/2.5 = 0.4x

Therefore, y is 40% of x

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Q61. Answer: (c) 21%

Given

Radius of a circle is increased by 10%

Formulas Used

Area of a Circle: πr^2

Percentage Increase in Area due to increasing in radius

Solution

If the radius increases by 10%, the new radius = 1.1r

New area = $\pi(1.1r)^2 = 1.21\pi r^2$

The increase in area is $1.21\pi r^2 - \pi r^2 = 0.21\pi r^2$, which is a 21% increase in the original area

Therefore, if the radius of a circle is increased by 10%, its area would increase by 21%

Q62. Answer: (c) 0

Given

$(a + b)^2 = 100$

$ab = 25$

Formulas Used

$(a - b)^2 = (a + b)^2 - 4ab$

Solution

$(a - b)^2 = 100 - 4 \times 25 = 0$

$a - b = 0$

Therefore, the value of (a - b) is 0

Q63. Answer: (a) 60 tonnes

Calculation:

60 + 80 + 62 + 50 + 48 = 300 So the average is 300/50 = 60 tonnes.

Therefore Option 1 is the correct answer.

Q64. Answer: (c) -7

Given:

x = -2 and y = 1

Calculation:

$(4/x + y)\ (16/(x^2) + y^2 - 4y/x)$

$(4/(-2) + 1)\ (16/((-2)^2) + 1^2 - 4/(-2))$

$(-2 + 1)(4 + 1 + 2)$

-7

Therefore Option 3 is the correct answer.

Q65. Answer: (d) 10 cm

Given

The longest side (hypotenuse) of a right-angled triangle = 26 cm

One of the other sides = 24 cm

Formulas Used

Pythagoras Theorem: $a^2 + b^2 = c^2$ (where c is the hypotenuse)

Solution

$\Rightarrow 26^2 - 24^2 = a^2$

$\Rightarrow a^2 = 100$

$\Rightarrow a = \sqrt{100} = 10$ cm

Therefore, the length of the third side is 10 cm

Q66. Answer: (d) 30 cm

Given

Angle subtended by a chord PQ on the circumference is 90 degree

Radius of this circle is 15 cm
Concept Used
In a circle, the chord subtends a right angle at the circumference if and only if the chord is a diameter of the circle.
Solution
The length of PQ (which is a diameter) = 2 × radius = 2 × 15 cm = 30 cm
Therefore, the length of PQ is 30 cm

Q67. Answer: (d) Rs. 20,000

Given
A cell phone was bought for Rs.18,400 after getting a discount of 8% on its marked price
Formulas Used
Marked Price - Discount = Selling Price
Solution
Let the marked price be x.
x - 0.08x = Rs.18,400
0.92x = Rs.18,400
x = Rs.18,400/0.92 = Rs.20,000
Therefore, the marked price of the cell phone is Rs. 20,000

Q68. Answer: (b) 2160

Calculation:
Total percentage of car sold in Jan and April 24 + 28 = 52
Car sold in May = 12%
According to the question:
(52 - 12)% × 5400
(40)% × 5400
2160
Therefore Option 2 is the correct answer.

Q69. Answer: (a) Rs. 5,440

Shortcut Trick
Original Simple Interest = 4960 − 4000 = Rs. 960
Since Simple Interest is directly proportional to the rate, New Interest = 1.5 × 960 = Rs. 1440
New Amount = Principal + New Interest = 4000 + 1440 = Rs. 5440
Therefore The correct answer is Rs. 5,440.
Alternate Method
Given:
Principal (P) = Rs. 4000
Original Amount (A) = Rs. 4960
Time (T) = 4 years
Formula Used:
Simple Interest (SI) = (P × R × T) ÷ 100
Amount = Principal + SI
P = Rs. 4000
SI = Rs. 960
Rate = R%
SI = Rs. 1440
Rate = 1.5R%
A = Rs. 5440
Direct proportionality: SI prop. to Rate
Calculations:
=> Original SI = Amount − Principal = 4960 − 4000 = Rs. 960
=> 960 = (4000 × R × 4) ÷ 100

=> 960 = 160 × R

=> R = 960 ÷ 160 = 6%

=> New Rate = 1.5 × 6% = 9%

=> New SI = (4000 × 9 × 4) ÷ 100

=> New SI = 40 × 36 = Rs. 1440

=> New Amount = P + New SI = 4000 + 1440 = Rs. 5440

Therefore The correct answer is Rs. 5,440.

Additional Information

Simple Interest Formula

SI = (P × R × T) ÷ 100, where P is Principal, R is Rate of Interest, and T is Time. The total amount A is calculated as A = P + SI.

Direct Proportionality in SI

Since SI is directly proportional to Rate (R), if Principal and Time remain constant, increasing the rate by a factor of n will increase the simple interest by the exact same factor n.

Compound Interest vs Simple Interest

Simple interest remains constant for each successive year, whereas compound interest increases every year because it is calculated on the updated amount (Principal + previous Interest).

Q70. Answer: (c) 25

Shortcut Trick

Efficiency ratio (Initial : New) = 100% : 80% = 5 : 4

Time is inversely proportional to efficiency: Time ratio = 4 : 5

Given: 4 units of time = 20 days

1 unit = 20 ÷ 4 = 5 days

New time = 5 units = 5 × 5 = 25 days

Therefore The correct answer is 25 days.

Alternate Method

Given: Initial time = 20 days, Efficiency decrease = 20%.

Formula Used: Total Work = Efficiency × Time

=> Let the initial efficiency of A be 100 units/day.

=> Total Work = Efficiency × Time = 100 × 20 = 2000 units.

=> New efficiency of A = 100 − (20% of 100) = 80 units/day.

=> New Time taken = Total Work ÷ New Efficiency

=> New Time = 2000 ÷ 80 = 25 days.

Therefore The correct answer is 25 days.

Additional Information

Inverse Proportion in Work

When Total Work is constant, the time required to complete the work is inversely proportional to the efficiency (T prop. to 1/E).

Percentage and Time

If efficiency increases by x%, the new time is T ÷ (1 + x/100). If efficiency decreases by x%, the new time is T ÷ (1 − x/100).

Work Equivalence Formula

M1D1H1/W1 = M2D2H2/W2, where M is efficiency/number of workers, D is days, H is hours, and W is work.

Q71. Answer: (a) 8.8 minutes

Shortcut Trick

Distance (Circumference) = (22/7) × 420 = 1320 m

Speed in m/min = 9 × (1000 ÷ 60) = 150 m/min

Time taken = Distance ÷ Speed = 1320 ÷ 150 = 8.8 min

Therefore The correct answer is 8.8 min.

Alternate Method

Given:

Diameter of the circular park (d) = 420 m

Speed of Mohan = 9 km/h

Formula Used:

Circumference of circle = (22/7) × d
Time = Distance ÷ Speed
Calculations:
=> Distance = (22/7) × 420
=> Distance = 22 × 60 = 1320 m
=> Speed = 9 km/h = 9 × (5/18) m/s
=> Speed = 2.5 m/s
=> Time (in seconds) = 1320 ÷ 2.5
=> Time = 528 seconds
=> Time (in minutes) = 528 ÷ 60
=> Time = 8.8 min
Therefore The correct answer is 8.8 min.
Additional Information
Circumference of a Circle
The total length of the boundary of a circle is called its circumference, calculated as C = 2 × (22/7) × r or C = (22/7) × d.
Speed Conversion
To convert speed from km/h to m/s, multiply by 5/18. To convert from km/h to m/min, multiply by 1000/60 or 50/3.
Relationship between Speed, Distance, and Time
The fundamental relation is Distance = Speed × Time. Always ensure units are consistent before calculation.

Q72. Answer: (c) 17 : 5

Shortcut Trick
Side of the square = √1156 = 34 cm.
Length of the rectangle = 34 × 2 = 68 cm.
Breadth of the rectangle = 34 − 14 = 20 cm.
Required Ratio = 68 : 20 = 17 : 5.
Therefore The correct answer is 17 : 5.
Alternate Method
Given:
Area of the square = 1156 cm^2
Length of rectangle (L) = 2 × side of square
Breadth of rectangle (B) = side of square − 14 cm
Formula used:
Area of square = $(Side)^2$
Ratio = L : B
=> Let the side of the square be 's'.
=> $s^2 = 1156$
=> s = √1156 = 34 cm
=> Length of rectangle (L) = 2 × 34 = 68 cm
=> Breadth of rectangle (B) = 34 − 14 = 20 cm
=> Respective Ratio = L : B = 68 : 20
=> Required Ratio = (68 ÷ 4) : (20 ÷ 4) = 17 : 5
Therefore The correct answer is 17 : 5.
Additional Information
Perimeter of Rectangle
The total boundary length of a rectangle is calculated as 2 × (Length + Breadth).
Diagonal of a Square
The distance between opposite corners of a square is given by Side × √2.
Area of Rectangle
The total space occupied by a rectangle is given by the product of its length and breadth (L × B).

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Q73. Answer: (c) 120 minutes

Given

Distance covered by walking = Distance covered by cycling

Speed of walking = 12 km/hr

Speed of cycling = 13 km/hr

Time taken to walk = 2 hours 10 minutes = 2.167 hours

Formulas Used

Time = Distance/Speed

Solution

Distance = Speed of walking × Time taken to walk = 12 km/hr × 2.167 hours = 26 km

Time taken to cycle = Distance/Speed of cycling = 26 km/13 km/hr = 2 hours = 120 minutes

Therefore, the time taken to cover the same distance on a cycle is 120 minutes

Q74. Answer: (d) 2

Given

sec 60° + tan 45° - sin290°

Concept Used

Trigonometric values of specific angles

Solution

sec 60° = 2

tan 45° = 1

sin 90° = 1

sec 60° + tan 45° - $\sin^2$ 90° = 2 + 1 - (1) = 2

Therefore Option 4 is the correct answer.

Q75. Answer: (c) 10%

Calculation:

Total cost = Buying price + Repair cost

Rs. 4,500 + Rs. 500

Rs. 5,000

Loss = Total cost - Selling price

Rs. 5,000 - Rs. 4,500

Rs. 500

Loss percentage = (Loss/Total cost) × 100

(500/5,000) × 100

10%

Therefore, Amar has a loss of 10% when selling the washing machine.

Q76. Answer: (a) PRSQ

The correct answer is 'Option 1'.

Key PointsLet's break down each part:

• P - This part indicates a specific type of electricity generation - nuclear power. It is a continuation of the introduction about global electricity generation given in the initial part of the sentence.

• R - This part introduces the timeframe for the expected changes - over the next three decades. It logically follows P as it continues to provide details about nuclear power.

• S - This part specifies the necessary action in response to the change in global electricity generation - expansion. It is the response to the situation introduced in P and R.

• Q - This part explains the reason for the action described in S - to maintain the current share of the mix. It naturally follows S to conclude the sentence.

Therefore, the sentence then reads: "As global electricity generation is expected to double over the next three decades, nuclear power (P) generating capacity would need to expand (S) significantly to maintain its current share of the mix (Q)."

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Q77. Answer: (a) The computer was fixed by my father easily.

The correct answer is 'Option 1'.

Key Points

• In the active voice sentence "My father fixed the computer easily," the subject (my father) performs the action of the verb (fixed).

• In the passive voice, the object of the active voice sentence becomes the subject and the subject of the active voice sentence becomes the agent introduced by "by".

• "The computer was fixed by my father easily." - This is the correct passive form.

• The past simple tense is represented in passive voice with 'was/were' + past participle (fixed).

Therefore, the correct sentence is: 'The computer was fixed by my father easily.'

Additional Information

• Now let's explain this in more detail:

• "The computer is fixed by my father easily." - This is the incorrect form. The verb 'is' is used for present simple tense, but the original sentence is in the past simple tense.

• "The computer was fix by my father easily." - This is incorrect because the past participle of the verb "fix" is "fixed," not "fix".

• "The computer fixed by my father easily." - This is incorrect. It lacks the auxiliary verb 'was' that is necessary to form the passive voice in the past simple tense.

Q78. Answer: (b) To become a nun

The solution is in Hindi. Read it online.

Q79. Answer: (b) Emphatic

The solution is in Hindi. Read it online.

Q80. Answer: (c) INCOMPLETE

The solution is in Hindi. Read it online.

Q81. Answer: (d) also been made from agricultural ingredients,

The correct answer is 'Option 4'.

Key Points

• The error in the sentence is in part 4) "also been made from agricultural ingredients,".

• In the incorrect sentence, the verb "been" is used incorrectly.

• "Been" is the past participle of "be" and is typically used in the perfect tenses.

• Here, the present simple tense is appropriate, so we should use the base form of the verb "be".

Therefore, the correct sentence should be: "Personal care products can also be made from agricultural ingredients, such as flower or fruit extracts and oils."

Q82. Answer: (d) deed

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

Key Points

• A "deed" in this context refers to an action or a task.

• When referring to a "good deed," we're discussing a beneficial, kind, or helpful act that one person does for another.

• This aligns best with the overall meaning of the sentence which suggests a single beneficial action making a significant impact on both the performer and the recipient of the action.

Therefore, the correct sentence is: 'Sometimes, even one good deed can make a big impact on both the person doing it and the person receiving it.

Additional Information

• Let's explain all the options:

• Deal: In this context, a "deal" would usually refer to a business agreement or transaction. It doesn't fit well in this sentence as it doesn't convey the intended meaning of a beneficial action performed for someone else.

• Dwell: "Dwell" primarily means to live in a specified place or to think, speak, or write at length about a particular subject, especially one that is a source of unhappiness, anxiety, or dissatisfaction. It does not fit in this context.

• Drill: In this context, a "drill" would refer to a training exercise or a tool for making holes. Neither of these meanings fits well in this sentence.

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Q83. Answer: (a) DEBUCHERY

The solution is in Hindi. Read it online.

Q84. Answer: (c) Flounder

The solution is in Hindi. Read it online.

Q85. Answer: (d) DCBA

The correct answer is 'Option 4'.

Key Points

• The correct sequence of the sentences to form a meaningful and grammatically correct paragraph is 4) DCBA.

• Here's the rationale:

• D. The wheels rotated on a fixed axle linked by a shaft to the yoke.

• This sentence should come first as it introduces the fact that the carts have wheels, which is a necessary detail before we discuss the wheels' decoration (B), their material (C), and their structure (A).

• C. The chassis of the two carts are made of wood and covered with thick copper sheets.

• This sentence follows nicely from D, further describing the construction of the carts and the materials used.

• B. The wheels are decorated with triangles made of copper.

• After discussing the materials of the carts, it's appropriate to move on to the decoration of the wheels.

• A. The triangles are distributed in three concentric circles.

• Finally, this sentence goes into more specific detail about the decoration mentioned in B, closing the paragraph nicely by describing how the triangles are arranged.

Therefore, the correct sequence is DCBA: "The wheels rotated on a fixed axle linked by a shaft to the yoke. The chassis of the two carts are made of wood and covered with thick copper sheets. The wheels are decorated with triangles made of copper. The triangles are distributed in three concentric circles."

Q86. Answer: (a) Drought

The solution is in Hindi. Read it online.

Q87. Answer: (d) set

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

Key Points

• In this context, the word "set" means to adjust or establish something to achieve a desired state or condition.

• So when we say "The machine can be set to deliver a certain number of coins", we mean that the machine can be adjusted or programmed to deliver a specific amount of coins.

Therefore, the correct sentence is: 'The machine can be set to deliver a certain number of coins.'

Additional Information

• Let's take a look at the other options:

• "Met": This is the past tense and past participle of "meet". It does not make sense in this context.

• "Abet": This means to encourage or assist someone to do something wrong, in particular, to commit a crime or other offense. It does not make sense in this context.

• "Slashed": This means to cut something with a violent sweeping movement. In a different context, it could also mean to reduce something drastically. Neither of these meanings fit in this context.

Q88. Answer: (b) Physiology

The solution is in Hindi. Read it online.

Q89. Answer: (a) rises

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

Key Points

• The sun "rises" in the east and sets in the west.

• This is a common phrase used to describe the apparent movement of the sun across the sky due to the rotation of the earth.

Therefore, the correct answer is: 'The sun rises directly in the east and sets directly in the west.'

Additional Information

• Here's why the other options are incorrect:

• "Sums": This verb is used in the context of adding up numbers or amounts. It doesn't make sense in this context.

• "Expands": This verb means to increase in size, volume, quantity, or scope. It doesn't make sense to say the sun "expands" in

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the east.

• "Elevates": This verb means to raise or lift something up to a higher position. While the sun does appear to move higher in the sky after sunrise, the standard term used to describe this phenomenon is "rise", not "elevate".

Q90. Answer: (a) PQRS

The correct answer is 'Option 1'.

Key Points

• The correct sequence of the sentences to form a meaningful and grammatically correct paragraph is 1) PQRS.

• Here's the rationale:

• P. The Spanish flu, also known as the 1918 flu pandemic, was a deadly pandemic in recent history.

• This sentence should come first as it introduces the subject, which is the Spanish flu.

• Q. It spread worldwide during the year 1918-1919.

• This sentence logically follows P, providing information about when and where the Spanish flu spread.

• R. The virus infected 500 million people – about a third of the world's population at the time.

• After stating when and where the flu spread, this sentence gives specifics about how many people were affected, providing additional information about the severity of the Spanish flu.

• S. The death toll was estimated to be at least 50 million worldwide, possibly as high as 100 million this makes it the severest pandemic in human history.

• Finally, this sentence further underscores the severity of the Spanish flu by discussing the death toll, which makes it a fitting conclusion to the paragraph.

Therefore, the correct sequence is PQRS: "The Spanish flu, also known as the 1918 flu pandemic, was a deadly pandemic in recent history. It spread worldwide during the year 1918-1919. The virus infected 500 million people – about a third of the world's population at the time. The death toll was estimated to be at least 50 million worldwide, possibly as high as 100 million this makes it the severest pandemic in human history."

Q91. Answer: (d) And so for the sakes

The correct answer is 'Option 4'.

Key Points

• The correct answer is 4) "And so for the sakes".

• The error in this segment is the use of "sakes" instead of "sake".

• "Sake" is a noun used to refer to the purpose of, or in the interest of, something or someone.

• It is generally used in singular form.

Therefore, the correct sentence should be: "And so for the sake of his son, he remained absolutely calm."

Q92. Answer: (b) Ravi said that he might sell that tie.

The correct answer is 'Option 2'.

Key Points

• The correct answer is 2) "Ravi said that he might sell that tie."

• When converting direct speech into indirect speech, the tense of the verb usually shifts back.

• In this case, "may" in direct speech becomes "might" in indirect speech.

• 'This' will be changed to 'That'.

• 'I' will be changed into 'He'.

Therefore, the correct sentence is: 'Ravi said that he might sell that tie'.

Additional Information

• The other options are incorrect because:

• "Ravi said that he may sell that tie." This does not correctly backshift the verb "may" to "might".

• "Ravi said that I might sell that tie." This incorrectly changes the subject from "he" to "I".

• "Ravi said that he should sell this tie." This changes the meaning of the sentence by replacing "may" with "should", and it incorrectly retains "this" instead of changing it to "that".

Q93. Answer: (a) brainstorm

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

Key Points

• Brainstorming is a process in which a group or an individual comes up with ideas for a specific purpose.

• It fits perfectly in this context as it suggests that Googlers (employees of Google) gather to think creatively and decide which

events will be celebrated with a doodle.

Therefore, the correct sentence is: A group of Googlers get together regularly to brainstorm and decide which events will be celebrated with a doodle.

Additional Information

• Let's examine the other options:

• "Discredit": This means to harm the good reputation of someone or something. It does not fit the context as Googlers are not gathering to harm the reputation of anything.

• "Relief": In this context, this noun would mean a feeling of reassurance and relaxation following the removal of stress or discomfort. It doesn't make sense as a verb describing what the group of Googlers are doing.

• "Salute": This typically means to show respect to someone or something, often through a formal sign such as a raised hand or a bow. While Google Doodles often do honor individuals or events, the act of deciding which ones to honor would be more accurately described as brainstorming than saluting.

Q94. Answer: (a) Concealment

The solution is in Hindi. Read it online.

Q95. Answer: (b) To do something as though it is coming naturally

The solution is in Hindi. Read it online.

Q96. Answer: (c) began

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

Key Points

• In this sentence, the blank should be filled with a verb in the past tense, because the context of the sentence is in the past.

• The action that they took was to create a strategy, which is an action that occurred in the past.

• "Began" is the past tense of "begin", and it indicates the start of an action.

• It fits in this context because the sentence is talking about the start of their strategy, which was to kill Jarasandha.

Therefore, the correct sentence is: 'Krishna helped my husbands create a strategy. They began by killing Jarasandha, the most feared (2) _____ of the time—and incidentally, a long time enemy of Krishna. (3) ____ released the many kings Jarasandha had imprisoned in his labyrinths and gave them back (4) ____ kingdoms. This made my husband so popular that (5) _____ they went after that, they were greeted with friendship.'

Additional Information

• Let's examine the other options:

• "Commence": While this verb means to start or begin, it is usually used in formal contexts or in passive constructions. In this case, the simple past tense "began" is more suitable.

• "Begun": This is the past participle of "begin". It needs to be used with an auxiliary verb such as "has" or "had", so it cannot be used here.

• "Initiate": Like "commence", "initiate" also means to start, but it's more commonly used in the context of starting a process or an event. Here, "began" fits better because it refers to starting an action, not a process or event.

Q97. Answer: (a) ruler

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

Key Points

• In this context, the blank should be filled with a noun that can describe Jarasandha.

• The words "most feared" that precede the blank suggest that the word should refer to a person, not a concept or an abstract noun.

• "Ruler" is a noun that refers to a person who rules or governs, often a monarch or other leader in a political context.

• It fits perfectly in this context because Jarasandha is being described as the most feared individual of the time.

Therefore, the correct sentence is: 'Krishna helped my husbands create a strategy. They began by killing Jarasandha, the most feared ruler of the time—and incidentally, a long time enemy of Krishna. (3) _____ released the many kings Jarasandha had imprisoned in his labyrinths and gave them back (4) ____ kingdoms. This made my husband so popular that (5) _____ they went after that, they were greeted with friendship.'

Additional Information

• Let's look at the other options:

• "Dominion": This is an abstract noun that refers to sovereignty or control. It does not refer to a person and thus is not suitable in this context.

• "Rule": This noun refers to the exercise of control or governance, as in the "rule" of a king. It does not fit in this context because

we need a noun that refers to a person, not to an abstract concept of governance.

• "Sovereignty": This is another abstract noun, referring to supreme power or authority, especially in the context of a state or nation. Like "dominion" and "rule", it doesn't fit in this context because we need a noun that refers to a person.

Q98. Answer: (a) They then

The correct answer is 'Option 1' i.e. 'They then'.

Key Points

• In this context, the blank should be filled with words that show the sequence of actions.

• The words should show that the action of releasing the many kings came after the action of killing Jarasandha.

• "They then" is used to denote that something occurred immediately after the previous action.

• It fits in this context because it shows that after killing Jarasandha, they released the many kings.

Therefore, the correct sentence is: 'Krishna helped my husbands create a strategy. They began by killing Jarasandha, the most feared ruler of the time—and incidentally, a long time enemy of Krishna. They then released the many kings Jarasandha had imprisoned in his labyrinths and gave them back (4) _____ kingdoms. This made my husband so popular that (5) _____ they went after that, they were greeted with friendship.'

Additional Information

• Let's examine the other options:

• "Their after they": This option does not make grammatical sense and does not correctly convey the sequence of events.

• "They kept": This phrase suggests that they maintained or preserved something, which does not fit the context here. They didn't 'keep' the kings; they released them.

• "Then after they": This phrase is grammatically incorrect and does not correctly convey the sequence of events.

Q99. Answer: (a) their

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

Key Points

• In this context, the blank should be filled with a word that indicates possession.

• The sentence states that the kings were released and given back something. What were they given back?

• The word in the blank should indicate that they were given back something that belonged to them, and "their" is a possessive adjective that fits this context perfectly.

Therefore, the correct sentence is: 'Krishna helped my husbands create a strategy. They began by killing Jarasandha, the most feared ruler of the time—and incidentally, a long time enemy of Krishna. They then released the many kings Jarasandha had imprisoned in his labyrinths and gave them back their kingdoms. This made my husband so popular that (5) _____ they went after that, they were greeted with friendship.'

Additional Information

• Let's examine the other options:

• "Whose": This is a relative pronoun used to indicate possession, but it's generally used to link clauses or phrases, not to denote simple possession as is required here.

• "There": This word refers to a place or position, and doesn't fit the context here, which is about possession.

• "That": This is a demonstrative adjective used to specify or identify something. It doesn't indicate possession and isn't appropriate in this context.

Q100. Answer: (d) wherever

The correct answer is 'Option 4'.

Key Points

• In this context, the word "wherever" is used to mean 'in or to whatever place'.

• This word correctly indicates that no matter where they went, they were greeted with friendship, which fits perfectly in this sentence.

Therefore, the correct sentence is: 'Krishna helped my husbands create a strategy. They began by killing Jarasandha, the most feared ruler of the time—and incidentally, a long time enemy of Krishna. They then released the many kings Jarasandha had imprisoned in his labyrinths and gave them back their kingdoms. This made my husband so popular that wherever they went after that, they were greeted with friendship.'

Additional Information

• Let's examine the other options:

• "If at all": This phrase suggests a degree of doubt or uncertainty. Using it in this context would imply that they might not have gone anywhere after that, which contradicts the intent of the sentence.

• "Whichever": This word is used to indicate a choice between alternatives. Here, there's no choice to be made; rather, the

sentence is about every place they went.

• "When if": This option is grammatically incorrect and does not make sense in this context.

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