SSC CHSL Tier-1 2022: Official Paper (Held On: 17 March, 2023 Shift 3) (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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ENGLISH LANGUAGE

Q1. Select the option in which the numbers share the same relationship in set as that shared by the numbers in the given sets. (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g.13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(15, 13, 56)

(17, 11, 168)

(a) (15, 11, 114)
(b) (23, 21, 78)
(c) (20, 14, 204)
(d) (22, 16, 238)

Q2. If 132 F 624 = 657 and 84 F 321 = 504, then 168 F 27 = ?

(a) 591
(b) 203
(c) 195
(d) 793

Q3. In the following question, select the related letters from the given alternatives.

OQ : PT :: WZ : ?

(a) ZW
(b) ID
(c) XC
(d) WC

Q4. In a certain code language, ‘RATHER’ is coded as ‘TGJUBS’. What is the code for ‘SAFETY’ in that code language?

(a) AVGHBT
(b) AVGBGT
(c) AVHGBT
(d) AVGGBT

Q5. By Interchanging the given two numbers (Not digits) which of the following equation will be correct?

5 and 9

I. 7 × 9 + 5 – 8 ÷ 4 = 42

II. 9 × 3 + 5 ÷ 1 – 4 = 20

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

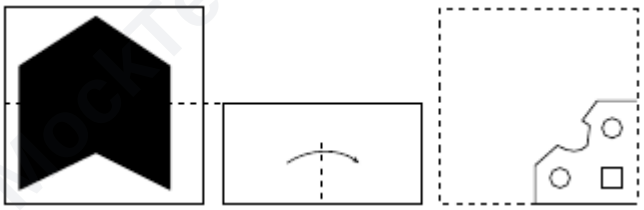
Q6. In the following question, four number pairs are given. In each pair the number on left side of (–) is related to the number of the right side of (–) with some Logic/Rule /Relation. Three pairs are similar on basis of same Logic/Rule/Relation. Select the odd one out from the given alternatives. (NOTE: 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) 2278 – 6834
(b) 3072 – 9216
(c) 1008 – 3024
(d) 3744 – 11322

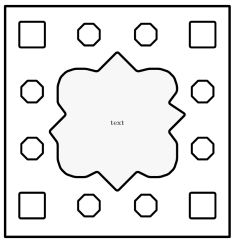
Q7. In the following question, select the odd word pair from the given alternatives.

(a) Court – Tennis
(b) Gymnasium – Exercise
(c) Wrestling – Arena
(d) Pitch – Cricket

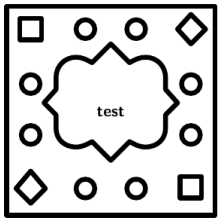
Q8. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



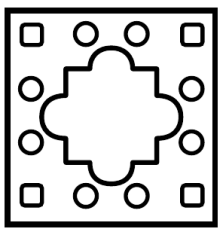
(a)



(b)

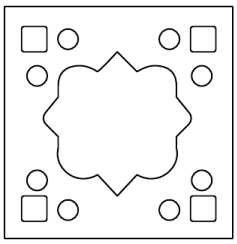


(c)



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(d)



Q9. In the following question some statements are given, followed by some conclusions based on those statements. Taking the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion logically follows the given statements.

Statements:

I. All S are R.

II. No R is T.

Conclusions:

I. No T is R.

II. No S is T.

III. No R is S.

(a) All conclusion follows

(b) Both conclusions I and II follows

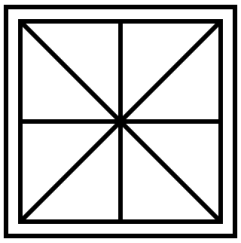
(c) Both conclusions II and III follows

(d) Both conclusions I and III follows

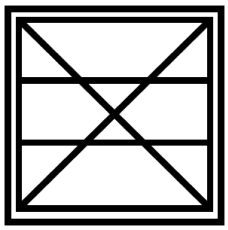
Q10. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



(a)

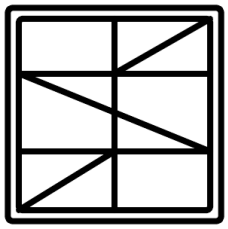


(b)

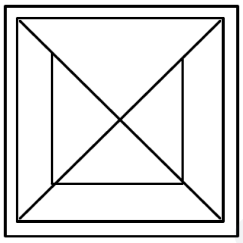


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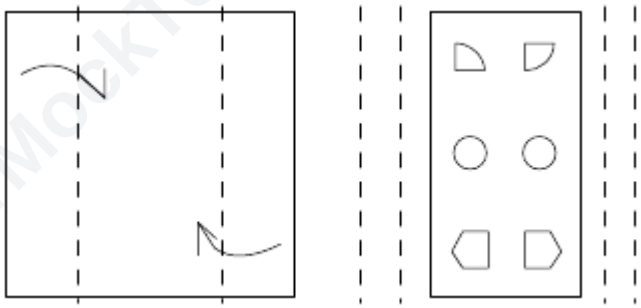
(c)



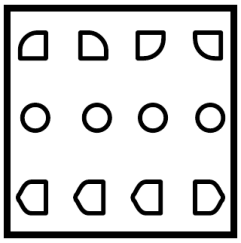
(d)



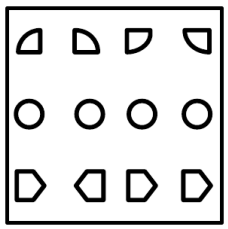
Q11. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



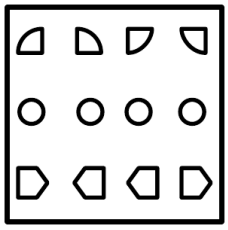
(a)



(b)

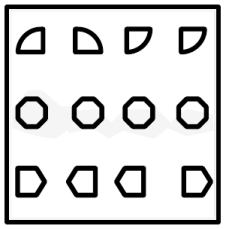


(c)

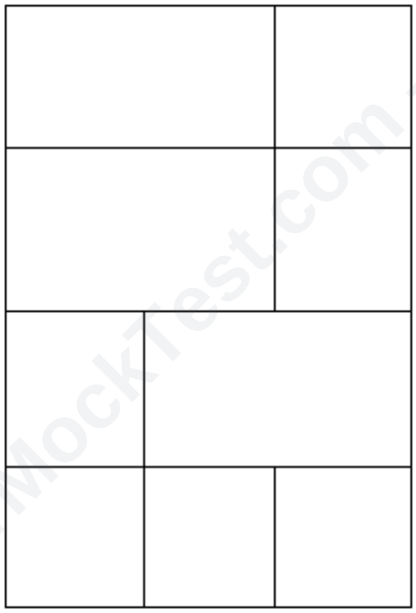


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(d)



Q12. How many quadrilaterals are there in the given figure?



(a) 23
(b) 22
(c) 24
(d) 25

Q13. 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)

(6, 36, 108)

(7, 49, 147)

(a) (8, 64, 96)
(b) (8, 32, 64)
(c) (4, 16, 48)
(d) (4, 16, 64)

Q14. 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

Arena : Wrestling :: ?

(a) Pitch : Exercise
(b) Athletics : Stadium
(c) Tennis : Court
(d) Rink : Skating

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Q15. In the following question, select the missing number from the given series.

729, 512, 343, 216, ?

(a) 36
(b) 125
(c) 25
(d) 64

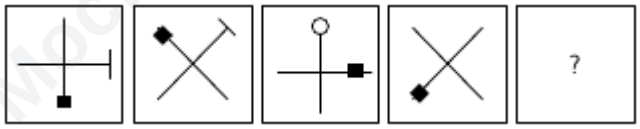
Q16. In the following question, select the odd letter/letters from the given alternatives.

(a) IHEW
(b) ONKP
(c) EDAZ
(d) YXUF

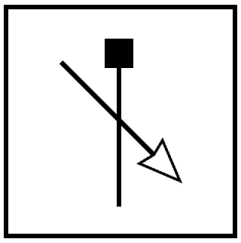
Q17. In a certain code language, 'TALE' is coded as '7234', 'TOLK' is coded as '9172', 'KITE' is coded as '1283', 'SEAN' is coded as '3064'. What is the code for 'SON' in that code language?

(a) 906
(b) 916
(c) 896
(d) 914

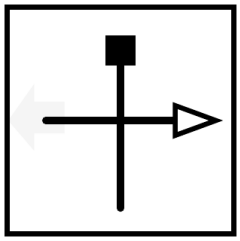
Q18. Select the figure from the given options that can replace the question mark (?) in the following series.



(a)



(b)

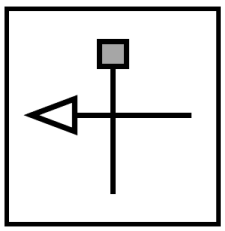


(c)



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(d)



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

391 : 626 :: 426 : ? :: 173 : 408

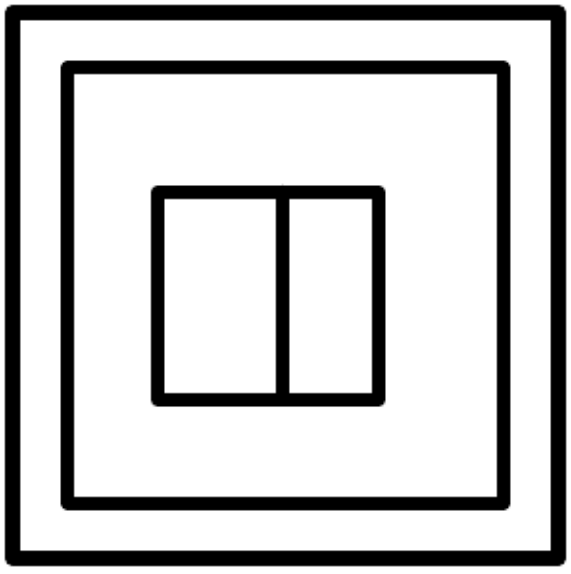
(a) 711
(b) 661
(c) 701
(d) 681

Q20. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

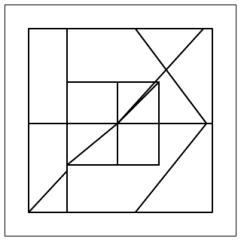
p _ nj _ c _ r _ jlcp _ njl _ pr _ _ lc

(a) rlpnrcnj
(b) rppnrcnj
(c) rllnrcnj
(d) rlprncnj

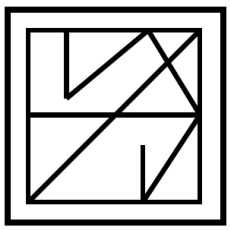
Q21. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



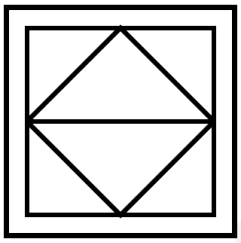
(a)



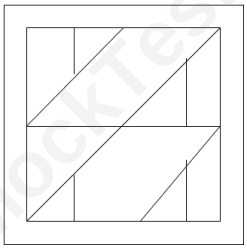
(b)



(c)



(d)



Q22. Pointing towards a man, Parkhi said, “He is the brother of my son’s mother”. How that man is related to Parkhi’s husband?

(a) Son
(b) Maternal Uncle
(c) Nephew
(d) Brother in law

Q23. After arranging the given words according to dictionary order, which word will come at ‘Fifth’ position?

1. Superstition
2. Superintend
3. Supervene
4. Supervise
5. Superpose

(a) Superstition
(b) Supervene
(c) Supervise
(d) Superintend

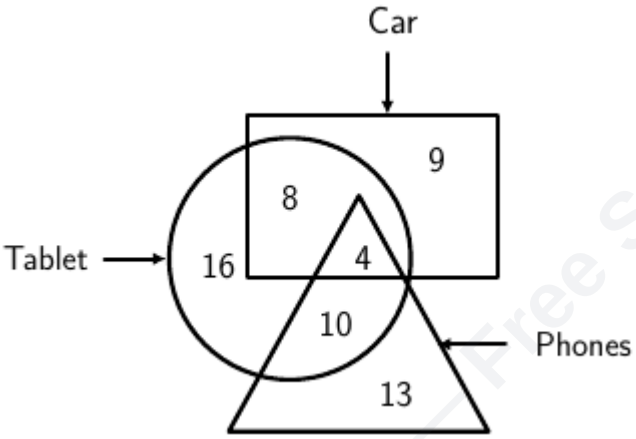
Q24. Select the option that is related to the third word on the same basis as the second word is related to the first word.

Tokyo : Japan :: Paris : ?

(a) Ireland
(b) France
(c) Italy
(d) Switzerland

Q25. How many tablet are only car?

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(a) 4
(b) 12
(c) 8
(d) 17

GENERAL INTELLIGENCE

Q26. Which of the following statements is NOT correct regarding the rabi crops?
(a) Southern and southeastern states are important for the production of wheat and other rabi crops.
(b) These crops are harvested in summer from April to June.
(c) Some of the important rabi crops are wheat, barley, peas, gram and mustard.
(d) Rabi crops are sown in winter from October to December.

Q27. Which of the following pairs is correct regarding the East India Company army?
I. Sawar – Men on horses
II. Musket – A heavy gun used by infantry soldiers
(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Q28. Which of the following is related to the concurrent list of the seventh schedule of the Indian constitution?
(a) Taxes on agricultural income
(b) Tolls
(c) Factories
(d) Taxes on income other than agricultural income

Q29. As on 1st November 2022, who is the chairperson of SEBI's Market Data Advisory Committee (MDAC)?
(a) Suresh N Patel
(b) M.S. Sahoo
(c) K.V. Kamath
(d) Ajay Tyagi

Q30. An isotope of which of the following is used in the treatment of cancer?
(a) Cobalt
(b) Aluminium
(c) Nickel
(d) Iron

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Q31. How many non-major (minor) ports are there in India as on 31st October 2022?

(a) 154
(b) 168
(c) 200
(d) 246

Q32. Who won the best actress award in the NEXA International Indian Film Academy Awards 2022?

(a) Kriti Sanon
(b) Jhanvi Kapoor
(c) Alia Bhatt
(d) Deepika Padukone

Q33. Indian Army's 1st women combat aviator is _____.

(a) Punita Arora
(b) Divya Ajit Kumar
(c) Abhilasha Barak
(d) Priya Semwal

Q34. Raja Parba, also known as Mithuna Sankranti, is a _____ -day-long festival of womanhood celebrated in Odisha, India.

(a) five
(b) six
(c) four
(d) three

Q35. Which of the following statement is correct regarding inertia?

I. Inertia is the natural tendency of an object to resist a change in its state of motion or of rest.

II. The mass of an object is a measure of its inertia.

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

Q36. How many gold medals did Maharashtra win in the fourth edition of Khelo India Youth Games?

(a) 41
(b) 38
(c) 54
(d) 45

Q37. Which of the following is NOT a part of western coastal plains?

(a) Konkan
(b) Coromandel Coast
(c) Kannada Plain
(d) Malabar coast

Q38. Pick the odd one out in Central Processing Unit (CPU) of a computer.

(a) ALU and Control Unit both
(b) Control Unit
(c) ALU (Arithmetic Logic Unit)
(d) Output Unit

Q39. _____ diseases last for only shorter periods of time.

(a) Hereditary
(b) Chronic
(c) Acute

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(d) Genetic

Q40. In which year was the Insurance Regulatory and Development Authority of India set up?

(a) 1999
(b) 2011
(c) 1995
(d) 2002

Q41. Which of the following is the largest freshwater lake in India?

(a) Barapani
(b) Wular
(c) Bhimtal
(d) Loktak

Q42. LTE technology is used in which of the following generation of wireless technologies?

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

Q43. Macroeconomics deals with which of the following studies?

I. Reasons behind the unemployment of resources
II. Determination of total output

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

Q44. Indian cricket team lost 2021 ICC World Test Championship Final to which country?

(a) New Zealand
(b) Australia
(c) England
(d) Pakistan

Q45. '281 and beyond' is the autobiography of which veteran cricketer?

(a) Kapil Dev
(b) VVS Laxman
(c) Sourav Ganguly
(d) Ajinkya Rahane

Q46. In which year was the Citizenship Act passed in India?

(a) 1951
(b) 1955
(c) 1959
(d) 1964

Q47. _____ is an Act of the Parliament of the United Kingdom that partitioned British India into two new independent dominions of India and Pakistan in 1947.

(a) Rowlatt Act
(b) Indian Independence Act
(c) Government of India Act
(d) Pitt's India Act

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Q48. Who won the women's singles title in Australian Open 2022?

(a) Ashley Barty
(b) Elena Rybakina
(c) Ons Jebure
(d) Serena Williams

Q49. Birju Maharaj was a noted dancer of _____.

(a) Bharatnatyam
(b) Manipuri
(c) Kathak
(d) Sattriya

Q50. Who among the following was famously known as the "The parrot of India"?

(a) Amir Khusro
(b) Lata Mangeshkar
(c) Pandit Ravishankar
(d) Kalidas

QUANTITATIVE APTITUDE

Q51. Rajiv sells a pen at a profit of 5 percent. If he sells the pen for Rs. 36 more, then he earns a profit of 14 percent. What is the cost price of the pen?

(a) Rs. 600
(b) Rs. 300
(c) Rs. 500
(d) Rs. 400

Q52. What is the value of tan 10°.tan 25° .tan 45°.tan 65°.tan 80°

(a) 0
(b) 2
(c) 1
(d) √3

Q53. If x^4+1/(x^4)=16, then what is the value of $x^2+1/(x^2)$?

(a) 4√2
(b) 3√2
(c) 2√2
(d) 5√2

Q54. The table given below shows the cost price and value of profit of 6 articles.

Articles	Cost Price	Profit
A	300	50
B	250	25
C	150	100
D	200	150
E	100	75
F	350	125

J1 = The value of average cost price of A, B, C and D.

J2 = The total profit of all articles.

What is the value of (J1 : J2)?

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(a) 9 : 7
(b) 7 : 3
(c) 3 : 11
(d) 3 : 7

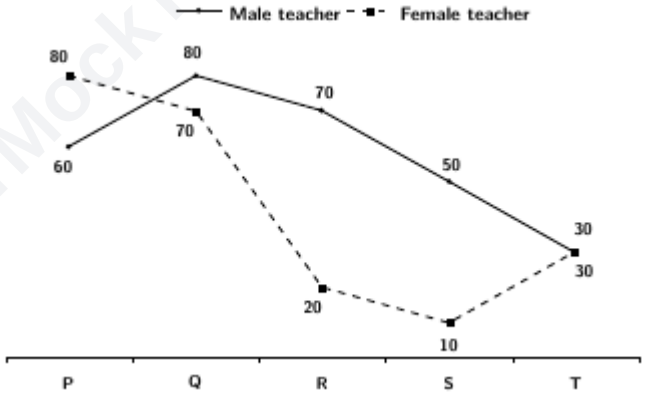
Q55. Piyush marks the price of his article 30 percent more than its cost price. If he sells the article for Rs. 5720 after allowing a discount of 20 percent, then what will be the cost price of the article?

(a) Rs. 5000
(b) Rs. 5350
(c) Rs. 5200
(d) Rs. 5500

Q56. Parallel sides of a trapezium are 21 cm and 14 cm and its area is 875 cm². What is the distance between parallel sides?

(a) 45 cm
(b) 50 cm
(c) 60 cm
(d) 65 cm

Q57. The line chart given below shows the number of male teachers and female teachers in 5 schools.



J1 = Total number of male and female teachers in school P.

J2 = The difference between the total number of male and the total number of female teachers in all the 5 schools.

What is the value of (J1 : J2)?

(a) 4 : 7
(b) 9 : 7
(c) 5 : 7
(d) 7 : 4

Q58. What is the value of (7 of 14÷ 4)/(5×4÷ 2)+(6÷12× 3)/(5÷25× 2)+15÷5×6/(5× 15÷6)?

(a) 7.64
(b) 7.44
(c) 7.62
(d) 7.22

Q59. The ratio of the present age of two girls is 3 : 4. After two year the ratio will be 7 : 9. Which of the following statement(s) is/are correct?

I. Ratio of their ages after 10 year is 6 : 7.

II. Ratio of their ages after 12 years is 6 : 7.

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

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Q60. ABCD is a cyclic quadrilateral in which angle B is opposite to angle D. If angle B = x + 10 degree and angle D = 2x + 35 degree, then what is the value of x?

(a) 35 degree
(b) 40 degree
(c) 50 degree
(d) 45 degree

Q61. P's income is 250 percent of Q's income and P's expenditure is 180 percent of Q's expenditure. If P's income is 400 percent of Q's expenditure, then what is the respective ratio of P's savings and Q's savings?

(a) 8 : 3
(b) 11 : 3
(c) 11 : 5
(d) 5 : 2

Q62. If $\sin\theta = 5/13$, then what is the value of $(\cos^2\theta - \sin^2\theta)/(2\cos\theta.\sin\theta)$?

(a) 115/126
(b) 113/120
(c) 117/136
(d) 119/120

Q63. The perimeter of an isosceles triangle is 91 cm. If one of the equal sides measures 28 cm, then what is the value of the other non-equal side?

(a) 56 cm
(b) 42 cm
(c) 14 cm
(d) 35 cm

Q64. What is the average of all prime numbers between 30 and 50?

(a) 38.5
(b) 39.8
(c) 34.2
(d) 36.5

Q65. In ΔXYZ, I is the incentre of the ΔXYZ. If angle XYZ = 40 degree, then what is the value of angle XIZ?

(a) 115 degree
(b) 110 degree
(c) 120 degree
(d) 130 degree

Q66. The sides of a triangle are 9 cm, 6 cm, and 5 cm. What is the value of the circumradius of this triangle?

(a) $9\sqrt{3}/4$ cm
(b) $9\sqrt{3}/5$ cm
(c) $27\sqrt{2}/8$ cm
(d) $9\sqrt{2}/2$ cm

Q67. S does half as much work as T in 1/8 of the time taken by T. If they together complete a work in 60 days, then how many days shall S alone take to complete that work?

(a) 80 days
(b) 90 days
(c) 75 days
(d) 100 days

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Q68. If sin α = 1/2 and sin β = 1/2, then what is the value of cos (α + β)? (0 degree < α, β < 90 degree)

(a) 1/4
(b) 1
(c) √3/2
(d) 1/2

Q69. If a + b + c = 1, ab + bc + ca = -1 and abc = -1, then what is the value of $a^3 + b^3 + c^3$?

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

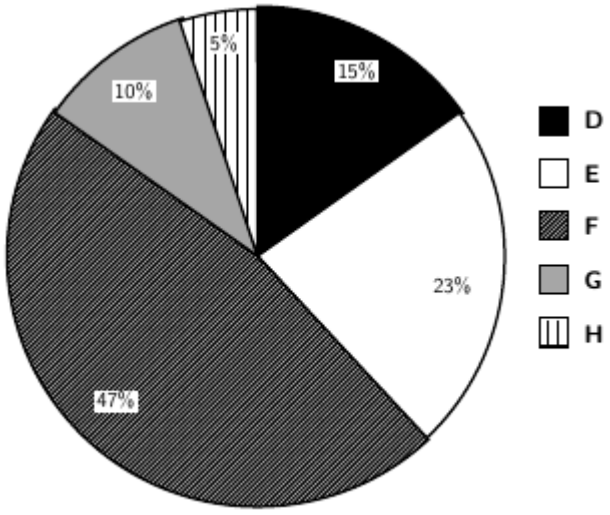
Q70. Initial value of a car is Rs. 20000. The value of car depreciated by 20 percent of its initial value each year. What will be its value after 3 years?

(a) Rs. 10560
(b) Rs. 11980
(c) Rs. 9840
(d) Rs. 10240

Q71. What is the value of $(a + b)^3 - a^3 - b^3$?

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

Q72. The pie chart given below show the runs scored by 5 batsman in a cricket match. Total runs scored by these batsman are 400. Runs scored by a batsman is shown as a percentage of runs scored by all these five batsman:



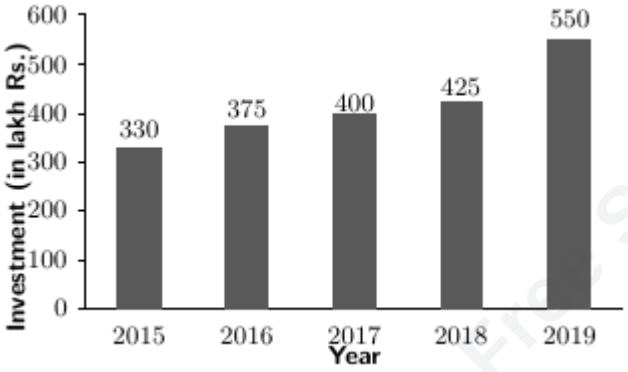
What is the ratio of runs scored by D to the runs scored by H?

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

Q73. The following bar graph shows the amount (in lakh Rs.) investment by a company in purchasing raw materials over the years 2015 to 2019.

By how much percent the company increase its investment on raw materials in 2019, as compared to 2015?

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(a) 33.33%
(b) 66.66%
(c) 11.66%
(d) 20%

Q74. Average of 8 values is 36. If 4 is subtracted from each of the first three values and 5 is added in the each of the next five values, then what will be the new average?

(a) 34.325
(b) 36.350
(c) 38.325
(d) 37.625

Q75. Diameter of wheel of a cycle is 7 cm. A cyclist takes 75 minutes to reach a destination at the speed of 36.3 km/hr. How many revolutions will the wheel make during the journey?

(a) 196280
(b) 206250
(c) 216580
(d) 212520

GENERAL AWARENESS

Q76. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

Our hands have been crucial tools for finding and eat food, and helping us navigate the world.

(a) tools for finding and eat food,
(b) Our hands have been crucial
(c) No error
(d) and helping us navigate the world.

Q77. Improve the underlined part of the sentence. Choose 'No improvement' as an answer if the sentence is grammatically correct.

I can hear the band which is playing patriotic tunes, in the playground.

(a) No improvement
(b) patriot tunes
(c) patriotic tuning
(d) patriotically tuned

Q78. Select the correct passive form of the given sentence.

The manager lost the letter.

(a) The letter was loss by the manager.
(b) The letter was loose by the manager.
(c) The letter was lost by the manager.
(d) The letter was lose by the manager.

Q79. Given below are four jumbled sentences. Pick the option that gives their correct order.

P. The earliest years of a child's life are critical.

Q. This is why an establishment has been created for the protection of children in these crucial years, known as ECCE.

R. It is during the early years that children develop the cognitive, physical, social and emotional skills that they need to succeed in life.

S. These years determine child's survival and thriving in life, and lay the foundations for her/ his learning and holistic development.

(a) RSPQ
(b) PSRQ
(c) PSQR
(d) QPSR

Q80. Identify the segment in the sentence which contains a grammatical error. If there is no error, then select the option "No error".

A witness had seen a youth, / perhaps aged young as/ ten or eleven, acting suspiciously.

(a) No error
(b) A witness had seen a youth,
(c) perhaps aged young as
(d) ten or eleven, acting suspiciously.

Q81. Improve the underlined part of the sentence. Choose 'No improvement' as an answer if the sentence is grammatically correct.

I won't bore you with the details, but I finally finish my taxes.

(a) No improvement
(b) finally finished
(c) final finishing
(d) finally finishing

Q82. Choose the word that is opposite in meaning to the given word.

Inchoate

(a) Artless
(b) Refined
(c) Articulate
(d) Formless

Q83. Select the most appropriate one-word substitution for the given group of words.

The violation or profanation of anything sacred or held sacred

(a) Pious
(b) Sacramental
(c) Holy
(d) Sacrilege

Q84. Select the option that will improve the (bracketed) part of the sentence. In case of no improvement select the option 'No improvement'.

Check all radiators for (meagre leaks, special) round pipework connections.

(a) small leaks, especially
(b) No improvement
(c) modest leaks, specially
(d) cramped leaks, specially

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Q85. Fill in the blank with an appropriate option.

David always kept his _____ open for anything that might put them at risk.

(a) black eye
(b) starry eyes
(c) eagle eyes
(d) sheep eyes

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

Attune

(a) Assimilate
(b) Skew
(c) Estrange
(d) Disrupt

Q87. Select the wrongly spelt word

(a) Innocuous
(b) Ingenous
(c) Inimical
(d) Invulnerable

Q88. Select the most appropriate antonym of the given word.

BABBLE

(a) DRIVEL
(b) SENSE
(c) JARGON
(d) GIBBERISH

Q89. Rearrange the parts of the sentence in correct order.

It could be

P. became a byword for superhuman intellectual ability

Q. argued that 1919 was the year when Einstein's name

R. making possible the small industry of

S. Einstein-themed merchandise that still exists today

(a) QPRS
(b) PSQR
(c) RSPQ
(d) PQRS

Q90. Select the most appropriate meaning of the given idiom.

All bark and no bite

(a) Someone who sticks to his words
(b) Actions are stronger than mere words
(c) Not being able to understand anything
(d) Full of talk, but low on action

Q91. Choose the word that is opposite in meaning to the given word.

Leisure

(a) Retire
(b) Worship
(c) Work
(d) Play

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Q92. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Appeal to Caesar

(a) An authority given to a foolish person
(b) To expect good from a wrong person
(c) To live in a false reality
(d) Appeal to the highest possible authority

Q93. Select the most appropriate one-word substitution for the given group of words.

One who is a centre of attraction

(a) Exposure
(b) Cynosure
(c) Commissure
(d) Censure

Q94. Choose the option that is the correct indirect form of the sentence.

Rahul asked me, "Are we going to New York next year?"

(a) Rahul asked that are we going to New York next year.
(b) Rahul asked me that were we going to New York next year.
(c) Rahul asked me that would we go to New York next year?
(d) Rahul asked me if we were going to New York next year.

Q95. Select the wrongly spelt word

(a) gauche
(b) fallacious
(c) erudite
(d) harange

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 blank.

Data 1. _____ the Pioneer spacecraft of NASA apparently prove the theory that the high surface temperature of Venus is 2. ___ to an atmospheric greenhouse effect caused mainly by a blanket of carbon dioxide. Such a greenhouse 3. ___ is created when energy in the form of sunlight easily passes through a planet's atmosphere, warms its 4. ___ and is converted to heat radiation that is then held in by the atmosphere from top to bottom. Venus has a relatively thin atmosphere like the Earth's, but Venus' atmosphere consists of more than ninety percent carbon dioxide, compared to less than four percent in that of the 5. _____.

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

(a) on
(b) across
(c) from
(d) through

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

(a) due
(b) understood
(c) because
(d) cause

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

(a) affect
(b) displacement
(c) contour
(d) effect

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

(a) surface
(b) walls
(c) atmosphere
(d) core

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

(a) Pluto
(b) Mars
(c) Earth
(d) Mercury

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) (20, 14, 204)

The logic followed here is:
Logic: (First number)² - (Second number)² = Third number
• (15, 13, 56) → 15² - 13² = 225 - 169 = 56
• (17, 11, 168) → 17² - 11² = 289 - 121 = 168
Similarly,
• (20, 14, 204) → 20² - 14² = 400 - 196 = 204
Hence, '(20, 14, 204)' is the correct answer.

Q2. Answer: (a) 591

The logic followed here is:
• 132 F 624 = 657 → 132 + 624 = 756
• 756 when written from right to left, gives the number 657
• 84 F 321 = 504 → 84 + 321 = 405
• 405 when written from right to left, gives the number 504
Similarly,
• 168 F 27 = ? → 168 + 27 = 195
• 195 when written from right to left, gives the number 591
Hence, '591' is the correct answer.

Q3. Answer: (c) XC

The logic followed here is:
Logic: 1 has been added in the first letter's positional value to get the corresponding first letter.

3 has been added in the second letter's positional value to get the corresponding second letter.
OQ: PT
Similarly,
WZ:?
Hence, the correct answer is "XC".

Q4. Answer: (d) AVGGBT

The logic followed here is:
Similarly,
Hence, 'AVGGBT' is the correct answer.

Q5. Answer: (a) Both I and II

I. 7 × 9 + 5 – 8 ÷ 4 = 42
After interchanging 5 and 9, we get:
7 × 5 + 9 – 8 ÷ 4 = 42
=> 35 + 9 - 2 = 42
=> 44 - 2 = 42
=> 42 = 42
II. 9 × 3 + 5 ÷ 1 – 4 = 20
After interchanging 5 and 9, we get:
5 × 3 + 9 ÷ 1 – 4 = 20
=> 15 + 9 - 4 = 20
=> 24 - 4 = 20
=> 20 = 20
Hence, ‘Both I and II’ is the correct answer.

Q6. Answer: (d) 3744 – 11322

The logic followed here is:
Logic: First number × 3 = Second number
1. 2278 – 6834 → 2278 × 3 = 6834
2. 3072 – 9216 → 3072 × 3 = 9216
3. 1008 – 3024 → 1008 × 3 = 3024
4. 3744 – 11322 → 3744 × 3 = 11232 ≠ 11322
Hence, '3744 – 11322' is the correct answer.

Q7. Answer: (c) Wrestling – Arena

The logic used here is:
Logic: The first word is a venue or location, and the second word is an activity or sports typically associated with that location.
Let's check each option as per the logic,
1) Court – Tennis:
→ Tennis is played in the court.
2) Gymnasium – Exercise:
→ Exercise is done in the Gymnasium.
3) Wrestling – Arena:
→ Wrestling is done in the Arena. But the order of the words is incorrect. => Doesn't follow the logic.
4) Pitch – Cricket:
→ Cricket is played on the pitch.
Here, we can see that only Option 3 doesn't follow the logic.
Hence, the correct answer is "Wrestling – Arena".

Q8. Answer: (a) [figure]

When the paper is unfolded, the image we get is shown below:
Hence, the correct answer is "Option 1".

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Q9. Answer: (b) Both conclusions I and II follows

The least possible Venn diagram is shown below:

Conclusions:

I. No T is R. → Follows (As, No R is T)

II. No S is T. → Follows (As, All S are R and No R is T)

III. No R is S. → Does not follow (As, All S are R)

Hence, 'both conclusions I and II follows' is the correct answer.

Q10. Answer: (b) [figure]

The image embedded in given figure is as shown below:

Hence, 'option 2' is the correct answer.

Q11. Answer: (c) [figure]

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

Hence, the correct answer is "Option 3".

Q12. Answer: (d) 25

The number of quadrilaterals in the given figure is shown below:

Hence, '25' is the correct answer.

Q13. Answer: (c) (4, 16, 48)

The logic followed here is:

Logic: Second Number = (First Number)2

Third Number = (Second Number × 3) 64

(6, 36, 108):

→ 36 = (6)2

→ 108 = 36 × 3

(7, 49, 147):

→ 49 = $(7)^2$

→ 147 = 49 × 3

Let's check each option as per the logic,

1) (8, 64, 96):

→ 64 = $(8)^2$

→ 96 ≠ 64 × 3

2) (8, 32, 64):

→ 32 ≠ $(8)^2$

3) (4, 16, 48):

→ 16 = $(4)^2$

→ 48 = 16 × 3 => Follow the logic.

4) (4, 16, 64):

→ 16 = $(4)^2$

→ 64 ≠ 16 × 3

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

Hence, the correct answer is "(4, 16, 48)".

Q14. Answer: (d) Rink : Skating

The logic followed here is:

Logic: The pair "Arena : Wrestling" represents a place where an activity is performed, namely, wrestling is done in an arena.

Let's check each option as per the logic,

1) Pitch : Exercise

→ Pitch is associated with cricket, not specifically exercise.

2) Athletics : Stadium

→ The order is reversed, so this doesn't match.

3) Tennis : Court

→ The order is reversed, so this doesn't match.

4) Rink : Skating

→ Skating is done in a rink, so this matches the logic.

Here, we can see that only Option 4 follow the logic.

Hence, the correct answer is "Rink : Skating".

Q15. Answer: (b) 125

The logic followed here is:

Logic: The terms are the cubes of the consecutive numbers starting from 9 in the reversed order.

Hence, the correct answer is "125".

Q16. Answer: (a) IHEW

The logic followed here is:

1. IHEW → I - 1 = H; H - 3 = E; E <=> V ≠ W
2. ONKP → O - 1 = N; N - 3 = K; K <=> P
3. EDAZ → E - 1 = D; D - 3 = A; A <=> Z
4. YXUF → Y - 1 = X; X - 3 = U; U <=> F

Hence, 'IHEW' is the correct answer.

Q17. Answer: (a) 906

The code for each letter is shown below:

Code for:

O is 9

S and N is 0 or 6

Clearly, the code for SON is 906.

Hence, ‘906’ is the correct answer.

Q18. Answer: (d) [figure]

The logic followed here is:

Logic: The line with square box attached is rotating 135º in clockwise direction.

→ The figure attached with the other line is changing after two terms and rotating 45º in anti - clockwise direction.

The next term of the series:

Hence, the correct answer is "Option 4".

Q19. Answer: (b) 661

The logic followed here is:

Logic: First number + 235 = Second number

- 391 : 626 → 391 + 235 = 626
- 173 : 408 → 173 + 235 = 408

Similarly,

- 426 : ? → 426 + 235 = 661

Hence, '661' is the correct answer.

Q20. Answer: (a) rlpnrcnj

Given sequence: p _ nj _ c _ r _ jlcp _ njl _ pr _ _ lc

1. rlpnrcnj → p r nj l c / p r n jlc / p r njl c / pr n j lc
2. rppnrcnj → p r nj p c / p r n jlc / p r njl c / pr n j lc
3. rllnrcnj → p r nj l c / l r n jlc / p r njl c / pr n j lc
4. rlprncnj → p r nj l c / p r r jlc / p n njl c / pr n j lc

- In option 1, 'prnjlc' is repeated.

Hence, ‘rlpnrcnj’ is the correct answer.

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Q21. Answer: (a) [figure]

The image embedded in given figure is as shown below:

Hence, 'option 1' is the correct answer.

Q22. Answer: (d) Brother in law

By using the symbols in the table given below, we can draw the following family tree:

Pointing towards a man, Parkhi said, “He is the brother of my son’s mother” → My son's mother is Parkhi herself.

brother of my son’s mother → The man is brother of Parkhi.

Clearly, Husband of Parkhi is brother-in-law of the man.

Hence, ‘Brother in law’ is the correct answer.

Q23. Answer: (c) Supervise

The correct order as per the dictionary is:

2) Superintend

5) Superpose

1) Superstition

3) Supervene

4) Supervise

Here, we can see that the word at the fifth position is Supervise.

Hence, the correct answer is "Supervise".

Q24. Answer: (b) France

The logic followed here is:

Logic: The first word is the capital city of the second word which is a country.

Tokyo : Japan

→ Tokyo is the capital city of Japan.

Similarly,

Paris : ?

→ Paris is the capital city of France.

Hence, the correct answer is "France".

Additional Information Capital of other Countries mentioned are as follows:

• Ireland - Dublin

• Italy - Rome

• Switzerland - Bern

Q25. Answer: (c) 8

Number of tablets that are only car is shown below:

Hence, ‘8’ is the correct answer.

Q26. Answer: (a) Southern and southeastern states are important for the production of wheat and other rabi crops.

The correct answer is Southern and southeastern states are important for the production of wheat and other rabi crops.

Key Points

• Punjab, Haryana, Uttar Pradesh, and Madhya Pradesh, are major contributors to the production of wheat, barley, and other rabi crops. Hence Option 1 is incorrect.

• These regions have favorable climatic conditions and fertile soil, making them suitable for the cultivation of rabi crops.

• Wheat is one of the most important rabi crops grown in these states, and they significantly contribute to the overall wheat production in the country.

• Other rabi crops like barley, peas, gram, and mustard are also cultivated in these regions.

Additional Information

• Kharif crops

• Kharif Crops are planted at the onset of the South-West monsoon, primarily in India, Pakistan, and Bangladesh, during the rainy season.

• The sowing of these crops takes place between the months of June and July.

• Upon reaching maturity, typically in October, these crops are harvested in the Autumn season.

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• Examples of Kharif crops include rice, cotton, corn, sugarcane, turmeric, pigeon pea, and more.
• Zaid crops
• Zaid Crops are grown during the summer season in regions with a tropical climate.
• These crops are typically cultivated between the months of March and June.
• Zaid crops are known for their quick growth and shorter duration compared to Kharif and Rabi crops.
• Examples of Zaid crops include cucumber, watermelon, bitter gourd and cowpea.
• These crops are often irrigated using modern techniques and are harvested before the onset of the monsoon season.

Q27. Answer: (c) Both I and II

The correct answer is Both I and II.

Key Points

• "Sawar" refers to a cavalry soldier mounted on a horse.
• The East India Company army did have cavalry units composed of soldiers on horseback. Hence Statement I is correct.
• The musket was a widely used firearm during the time of the East India Company.
• It was a heavy gun typically carried and operated by infantry soldiers. Hence Statement II is also correct.

Additional Information

• The East India Company was an English, and later British, joint-stock company founded in 1600.
• It was formed to trade in the Indian Ocean region, initially with the East Indies, and later with East Asia.
• In 1600, a group of English businessmen asked Elizabeth I for a royal charter that would let their voyage to the East Indies on behalf of the crown in exchange for a monopoly on trade.
• The merchants put up nearly 70,000 pounds of their own money to finance the venture, and the East India Company was born.

Q28. Answer: (c) Factories

The correct answer is Factories.

Key Points

• The seventh schedule of the Indian constitution deals with the division of powers between the central government and the state governments through three lists: the Union List, the State List, and the Concurrent List.
• The Concurrent List consists of subjects on which both the central government and state governments have the power to legislate, such as criminal law, marriage and divorce, bankruptcy and insolvency, factories, education, forests, and more. Hence option c is correct.
• Both the central and state governments can make laws, regulate, and govern the subjects mentioned in the Concurrent List simultaneously, subject to certain limitations and guidelines.
• In case of a conflict between central and state laws on Concurrent List subjects, the law made by the central government prevails, provided it receives the President's assent.
• Any amendment to the Concurrent List requires the approval of the Parliament, and state legislatures can also make laws on these subjects unless they conflict with existing central laws.

Additional Information

• Union List:
• The Union List consists of around 100 items over which the central government has exclusive legislative authority, including defence, foreign affairs, atomic energy, banking, and telecommunications.
• The central government has the power to make laws, regulate, and govern the subjects mentioned in the Union List uniformly across all states and union territories in India.
• Items in the Union List ensure the central government's authority in critical areas such as national security, inter-state trade and commerce, currency, copyright, air and water pollution, and more.
• Any amendment to the Union List requires the approval of the Parliament through a prescribed legislative process, ensuring that changes to these subjects are made at the national level.
• State List:
• The State List consists of subjects over which state governments have exclusive legislative authority, including public order, police, public health, local government, agriculture, state taxation, and more.
• State governments exercise their legislative and executive powers to make laws, regulate, and govern the subjects mentioned in the State List within their respective states.
• Subjects in the State List allow state governments to address regional and local concerns, implement policies specific to their states, and ensure effective governance at the state level.
• Any amendment to the State List requires the approval of the state legislature concerned and does not require the consent of the Parliament, providing states with autonomy in making changes to these subjects.

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Q29. Answer: (b) M.S. Sahoo

The correct answer is M.S. Sahoo.

Key Points

• As on 1st November 2022, the chairperson of SEBI's Market Data Advisory Committee (MDAC) was M S Sahoo,

• He is the professor at National Law University, Delhi and former chairperson of Insolvency and Bankruptcy Board of India (IBBI).

• MDAC stands for Market Data Advisory Committee.

• It is a standing committee constituted by SEBI to recommend appropriate policy for access to securities market data, identify segment-wise data perimeters, data needs and gaps, and recommend data privacy and data access regulations applicable to market data.

Additional InformationSEBI

• SEBI stands for Securities and Exchange Board of India.

• The headquarters of SEBI is situated in Mumbai. The regional offices of SEBI are located in Ahmedabad, Kolkata, Chennai, and Delhi.

• It is a statutory regulatory body established by the Government of India in 1992 to protect the interests of investors investing in securities and to regulate the securities market.

• SEBI also regulates how the stock market and mutual funds function.

Q30. Answer: (a) Cobalt

The correct answer is Cobalt.

Key Points

• Cobalt-60, an isotope of cobalt, is commonly used in the treatment of cancer.

• It emits high-energy gamma rays, which can penetrate tissues and destroy cancer cells.

• Cobalt-60 has a relatively long half-life of 5.27 years, which means it remains radioactive for a significant period.

• This makes it suitable for long-term treatment and allows for the production and distribution of radioactive sources to medical facilities.

Additional Information

• Aluminum

• Aluminum compounds are sometimes used in antacids to help neutralize stomach acid and provide relief from heartburn or indigestion.

• Additionally, aluminum-based adjuvants are commonly used in vaccines to enhance the body's immune response to the vaccine.

• Nickel

• It is sometimes used in medical implants and devices, such as orthopedic implants or dental materials.

• However, it's important to note that some individuals may have an allergic reaction to nickel, so its use in medical devices is carefully considered.

• Iron

• It is an essential mineral for the human body and is involved in various physiological processes.

• Iron supplements are commonly prescribed to individuals with iron deficiency or anemia.

• Iron is necessary for the production of red blood cells, and supplements can help restore iron levels in the body.

Q31. Answer: (c) 200

The correct answer is 200.

Key Points

• India has 13 major ports and more than 200 notified minor and intermediate ports.

• Minor ports are managed by the state government whereas Major ports are managed by the central government.

• Minor ports Handle coastal and fishing trade.

Additional Information

• 13 Major Ports of India-

• There are 12 government ports and 1 corporate port.

Major Ports	State
Kolkata Port Trust	West Bengal
Paradip Port Trust	Odisha
Visakhapatnam Port Trust	Andhra Pradesh

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Chennai Port Trust	Tamil Nadu
Tuticorin Port Trust	Tamil Nadu
Cochin Port Trust	Kerala
New Mangalore Port Trust	Karnataka
Mormugao Port Trust	Goa
Mumbai Port Trust	Maharastra
Jawaharlal Nehru Port Trust	Maharastra
Deendayal Port Trust	Gujarat
Ennore Port Trust	Tamil Nadu
Vadhavan port	Maharashtra

Q32. Answer: (a) Kriti Sanon

The correct answer is Kriti Sanon.

Key Points

• IIFA Awards:

• The NEXA IIFA Awards, also known as the International Indian Film Academy Awards, is an annual event that celebrates the achievements and excellence in Indian cinema.

• The awards were initiated by the International Indian Film Academy (IIFA) in the year 2000.

• The first NEXA IIFA Awards ceremony took place in London, United Kingdom, and was aimed at promoting Indian films internationally.

• The main award categories, the NEXA IIFA Awards also include special awards and recognition for various aspects of filmmaking, such as Best Director, Best Actor, Best Actress, Best Music Director, and many more.

• The NEXA IIFA Awards continue to evolve each year, with new themes, concepts, and innovations, contributing to the promotion and growth of Indian cinema worldwide.

Important Points

• NEXA International Indian Film Academy Awards 2022:

• Best Actor (Male): Vicky Kaushal (Sardar Udham)

• Best Actor (Female): Kriti Sanon (Mimi)

• Best Director: Vishnuvaradhan (Shershaah)

• Best Film: Shershaah

• Best Playback Singer Female: Asees Kaur for ‘Raataan Lambiyan’, (Shershaah)

• Best Playback Singer Male: Jubin Nautiyal for song ‘Raataan Lambiyan’, (Shershaah)

• Best Lyrics: Kausar Munir for ‘Lehra Do’, 83

• Best Music Direction: A R Rahman for Atrangi Re and Jasleen Royal, Javed-Mohsin, Vikram Montrose, B Praak, Jaani for Shershaah

• Best Male Debut: Ahan Shetty (Tadap)

• Best Female Debut: Sharvari Wagh (Bunty Aur Babli 2)

• Best Story Adapted: Kabir Khan, Sanjay Puran Singh Chauhan for 83

• Best Original Story: Ludo by Anurag Basu

• Best Supporting Actor Female: Sai Tamhankar (Mimi)

• Best Supporting Actor Male: Pankaj Tripathi (Ludo)

Q33. Answer: (c) Abhilasha Barak

The correct answer is Abhilasha Barak.

Key Points

• Captain Abhilasha Barak has created history by becoming the first woman officer to join the Army Aviation Corps as Combat Aviator.

• Captain Barak's achievement has been described as a "Golden Letter Day" in the history of Indian Army Aviation.

• She was awarded the coveted wings along with 36 other army pilots during a ceremony held at the Combat Army Aviation Training School in Nashik.

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• Abhilasha Barak hails from Haryana, India.

Important Points

• India's 1st woman Rafale fighter jet pilot Shivangi Singh was part of the Indian Air Force tableau at the Republic Day Parade 2022.

• She is only the 2nd woman fighter jet pilot to be part of the IAF tableau.

• In 2021, Flight Lieutenant Bhawna Kanth became the first female fighter jet pilot to be part of the IAF tableau.

• The IAF tableau's theme- 'Indian Air Force transforming for the future'.

• Avani Chaturvedi is one of the three first three Indian female fighter pilots who received the 'Nari Shakti Puraskar 2019' on 8th March 2020.

• The President of India presented the prize to Avani Chaturvedi along with Mohana Jitarwa and Bhawna Kanth.

• The trio was inducted into the IAF's fighter squadron after the Government of India decided to open a fighter stream in the force for women on an experimental basis.

• The three were the first to be inducted into the squadron and conduct a solo flight in MIG-21 in 2018.

Q34. Answer: (d) three

The correct answer is three.

Key Points

• Raja Parba (Mithuna Sankranti)-

• Raja Parba, also known as Mithuna Sankranti, is a cultural festival celebrated in the Indian state of Odisha.

• It marks the onset of the agricultural season and is observed during the mid-June period, coinciding with the solar transition of the zodiac sign Gemini (Mithuna).

• It is a three-day-long festival celebrating womanhood.

• 2^(nd) day of the festival marks the beginning of the solar month of Mithuna, on which the season of rains starts.

• It is believed that Mother Goddess Earth undergoes menstruation during the first three days.

• 4th day is called Vasumati Snana.

• Folk songs and dance performances, especially the "Dalkhai" dance, are an integral part of the Raja Parba celebrations.

• The festival signifies the importance of nature, agriculture, and the vitality of women in Odisha's culture and tradition

Additional Information

• Other Important festivals of Odisha:

Festival Name	Day/Month	Description
Raja Parba	Mid-June	Celebrates womanhood and fertility. Women take a break from household chores and enjoy swings.
Rath Yatra	June/July	Annual chariot festival of Lord Jagannath, where deities are carried on grand chariots.
Durga Puja	September/October	Worship of Goddess Durga with elaborate rituals and cultural festivities.
Kumar Purnima	October/November	Celebrated on the full moon day of Kartik month, associated with the worship of Lord Kartikeya.
Bali Yatra	November	Commemorates the ancient maritime tradition of Odisha and honors the voyage of traders.
Puri Beach Festival	November	Showcases cultural performances, sand art, beach sports, and seafood delicacies at Puri beach.
Konark Dance Festival	December	Renowned classical dance festival held at the backdrop of the Konark Sun Temple.
Makar Sankranti	January	Celebrates the harvest festival and the transition of the sun into the zodiac sign Capricorn.

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Ratha Saptami	February	Worship of the Sun God on the seventh day of the bright half of the lunar month of Magha.
Maha Shivaratri	February/March	Devoted to Lord Shiva, observed with fasting, night-long vigils, and temple visits.

Q35. Answer: (d) Both I and II

The correct answer is Both I and II

Key Points

• Newton's first law of motion

• States that "An object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force."

• Objects tend to "keep on doing what they're doing."

• In fact, it is the natural tendency of objects to resist changes in their state of motion.

• This tendency to resist changes in their state of motion is described as inertia.

(Hence statement I is correct)

• Inertia:

• The resistance an object has to a change in its state of motion.

• All objects resist changes in their state of motion. All objects have this tendency - they have inertia.

• The tendency of an object to resist changes in its state of motion varies with mass.

((Hence statement II is correct))

• Mass is that quantity that is solely dependent upon the inertia of an object.

• The more inertia that an object has, the more mass that it has.

• A more massive object has a greater tendency to resist changes in its state of motion.

Additional Information

• Laws of motion:

Law of Motion	Description	Example
Newton's First Law	An object at rest tends to stay at rest, and an object in motion tends to stay in motion with the same speed and direction unless acted upon by an external force.	A book resting on a table will remain at rest until an external force, such as pushing it, is applied.
Newton's Second Law	The acceleration of an object is directly proportional to the net force acting on it and inversely proportional to its mass.	If you push a small ball and a large ball with the same amount of force, the smaller ball will experience a larger acceleration due to its lower mass.
Newton's Third Law	For every action, there is an equal and opposite reaction.	When you swim, the action of pushing the water backwards with your arms and legs creates an equal and opposite reaction that propels you forward.

Q36. Answer: (d) 45

The correct answer is 45.

Key Points

• About Khelo India Programme:

• Khelo India was formed by merging three schemes: Rajiv Gandhi Khel Abhiyan, Urban Sports Infrastructure Scheme, and National Sports Talent Search Scheme.

• It works to promote "Sports for All" and "Sports for Excellence".

• Its aim is the mass participation of youth in annual sports competitions through a structured competition.

• Khelo India Youth Games 2021:-

• The 4th edition of the Khelo India Youth Games was held in Haryana.

• The Games were held in Panchkula.

• Gatka, Kalaripayattu, Thang-Ta, and Mallakhamba, four indigenous games were added in December 2020.

• This was announced by Sports Minister Kiren Rijiju and Haryana Chief Minister Manohar Lal Khattar.

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• Usually, the Khelo India Youth Games take place in January every year.

• Haryana came second in both Khelo India Youth Games 2019 and 2020 editions (200 medals in 2020 and 159 medals in 2019).

• The Haryana government decided to organize the Khelo India Youth Games in February 2022, in view of the possible third wave of the Covid-19 pandemic.

Additional Information Fifth Edition of Khelo India Youth Games:-

• Khelo India Youth Games 2022 was organized in 8 cities of Madhya Pradesh from 31 January to 11 February 2023.

• These were organized in Madhya Pradesh's Bhopal, Balaghat, Mandla, Maheshwar, Jabalpur, Ujjain, Gwalior and ,Indore.

• There were a total of 28 sports in this game.

• This time, break dance and Malkhamb was also been included in the games.

• The Khelo India Youth Games were started on 31 January 2018 at the Indira Gandhi Indoor Stadium in New Delhi.

5th Khelo India games medal tally-

State	Gold	Silver	Bronze	Total
Maharashtra	56	55	50	161
Haryana	41	32	55	128
Madhya Pradesh	39	30	27	96

Q37. Answer: (b) Coromandel Coast

The correct answer is Coromandel Coast.

Key Points

• The Coromandel Coast is located on the eastern coast of India.

• It is the coastal plain in eastern Tamil Nadu state.

• It is bounded by the Utkal Plains to the north, the Bay of Bengal to the east, the Kaveri Delta to the south, and the Eastern Ghats to the west.

• Extending over an area of about 22,800 square kilometres.

Important Points

• Eastern Coastal Plains of India-

• The eastern coastal plains stretch from West Bengal in the north to Tamil Nadu in the south and pass through Andhra Pradesh and Odisha.

• The Eastern coast is again divided into three categories:

• Utkal coast- Extending between the Chilika Lake and Kolleru Lake, they are much wider than the western coastal plains and undergo immense rainfall.

• Andhra coast- Extending between the Kolleru Lake and Pulicat Lake, the Andra coast forms a basin area for the Krishna and the Godavari rivers.

• Coromandel coast- The Coromandel coast extends between Pulicat Lake and Kanyakumari in Tamil Nadu.

• This Indian coastline remains dry in summer and receives rainfall during the winters due to the northeast monsoons.

• Western Coastal Plains of India-

• Western Coastal Plains stretches from Kerala in the south to Gujarat in the north passing through Karnataka, Goa and Maharashtra.

• The western coast is further divided into four categories:

• Kachchh and Kathiawar coast- Kachchh, formerly a gulf is formed by the deposition of silt by the Indus. Kathiawar is situated to the south of Kachchh.

• Konkan coast- It extends between Daman in the north to Goa in the south.

• Rice and cashew are the two important crops of this region.

• Kannada coast- It extends between Marmagaon and Mangalore and is rich in iron deposits.

• Malabar coast- Extending between Mangalore to Kanyakumari, the Malabar coast is relatively broad.

• This region also consists of lagoons running parallel to the coast in southern Kerala.

Q38. Answer: (d) Output Unit

The correct answer is the Output unit.

Key Points

• The central processing unit (CPU) is the core of a computer system and consists of the arithmetic logic unit (ALU) and the control unit and registers.

• The output unit is not a part of the CPU.

(Therefore option 4 -Output unit is the correct answer)

• A central processing unit (CPU), is also called a central processor, main processor, or just processor.

• It is the electronic circuitry that executes instructions comprising a computer program.

• The CPU performs basic arithmetic, logic, controlling, and input/output (I/O) operations specified by the instructions in the program.

• This contrasts with external components such as main memory and I/O circuitry, and specialized processors such as graphics processing units.

Additional InformationThe principal components of a CPU include:

• Control Unit:

• A control unit that orchestrates the fetching (from memory) and execution of instructions by directing the coordinated operations of the ALU, registers and other components.

• The control unit (CU) is a component of a computer's central processing unit (CPU) that directs the operation of the processor.

• It tells the computer's memory, arithmetic logic unit and input and output devices how to respond to the instructions that have been sent to the processor.

• ALU (arithmetic logic unit)-

• The arithmetic logic unit (ALU) performs arithmetic and logic operations.

• In computing, an arithmetic logic unit is a combination digital circuit that performs arithmetic and bitwise operations on integer binary numbers.

• This is in contrast to a floating-point unit, which operates on floating-point numbers.

• Registers:

• Processor registers that supply operands to the ALU and store the results of ALU operations.

• A processor register is a quickly accessible location available to a computer's processor.

• Registers usually consist of a small amount of fast storage, although some registers have specific hardware functions, and may be read-only or write-only.

Q39. Answer: (c) Acute

The correct answer is Acute.

Key Points

• Acute diseases

• Some diseases last for only very short periods of time, and these are called acute diseases.

• These diseases occur suddenly and last for a shorter time period.

• Acute disease causes sudden damage to the body.

• Examples of some Acute diseases are Typhoid, bone fracture, heart attack, cholera, common cold, jaundice, malaria, etc.

Important Points

• Diseases are mainly two types based on the duration of time which are Acute and chronic diseases.

• Chronic diseases

• The diseases that occur over a period of time and last a longer duration of time, or even for a lifetime are called chronic diseases.

• These diseases progress gradually and usually end up causing long-term damage to organs and internal systems. sometimes chronic diseases become fatal and cause loss of life.

• Examples of Chronic diseases are Diabetes, cancer, tuberculosis, arthritis, etc.

Additional Information

• Genetic or hereditary diseases

• A hereditary disease is often described as something that “runs in the family.”

• It is passed down from one or both parents to a child, who may then pass it to his or her children.

• Examples of hereditary disorders are: Thalassemia, Haemophilia, Sickle-cell anaemia

Q40. Answer: (a) 1999

The correct answer is 1999

Key Points

• The Insurance Regulatory and Development Authority of India (IRDAI), is a statutory body formed under an Act of Parliament, i.e., the Insurance Regulatory and Development Authority Act, 1999 (IRDAI Act 1999)

• It was founded in 1999.

• It is founded for the overall supervision and development of the Insurance sector in India.
• The body was created on the recommendations of the Malhotra Committee Report.
• Its headquarter is located in Hyderabad.
• It regulates under the Ministry Of Finance.
• Debasish Panda is the chairperson of IRDAI.

Important Points

• Organisational Setup:
• A Chairman
• Five whole-time members
• Four part-time members
• All the members of the Insurance Regulatory and Development Authority of India are appointed by the Government of India.

Q41. Answer: (b) Wular

The correct answer is Wular.

Key Points

• Wular Lake is the largest freshwater lake in India and lies in the Kashmir Valley.
• Wular Lake is also one of the largest freshwater lakes in Asia.
• It is sited in the Bandipora district in Jammu and Kashmir, India.
• The lake basin was formed as a result of tectonic activity and is fed by the Jhelum River.
• The lake's size varies seasonally from 12 to 100 square miles.
• Wular Lake is important to fish habitat, the main species being the common carp, rosy barb, mosquitofish, Nemacheilus species, etc.

Additional InformationLoktak Lake-

• Loktak Lake is the largest freshwater lake in North East India and is famous for the phumdis (heterogeneous mass of vegetation, soil and organic matter at various stages of decomposition) floating over it.
• The lake is located at Moirang in Manipur state, India.
• Loktak Day is observed every year on the 15th of October at the periphery of the Loktak lake.
• This ancient lake plays an important role in the economy of Manipur. It serves as a source of water for hydropower generation, irrigation and drinking water supply.
• The lake is also a source of livelihood for the rural fishermen who live in the surrounding areas and on phumdis, also known as phumshongs.

Bhimtal Lake-

• One of the well-known lake cities in the Kumaon region (Uttarakhand) is Bhimtal.
• In honor of the well-known Mahabharata character Bheem, Bhimtal was formerly called "Bheemsarovar Lake."
• According to mythology, the Pandavas used to travel back to Bhimtal during their exile to visit their home.
• As a result, the Bhimeshwar Mahadev temple was built here in honor of Bheema.

Barapani Lake-

• Barapani Lake is situated in Meghalaya.
• Barapani Lake is also known as Umiam Lake.
• It is an artificial water reservoir created by damming the Umiam river.

Q42. Answer: (c) 4G

The correct answer is 4G.

Key Points

• In Telecommunications, LTE Technology stands for Long-Term Evolution.
• LTE is a standard for wireless broadband communication and is the primary technology used in 4G networks.
• It provides faster data transfer rates, lower latency, and improved spectral efficiency compared to previous generations.
• It allows us to download many things such as music, videos, websites etc.
• It is known for being developed by the 3GPP.
• 4G has the more stability and faster speed when compares to the LTE.
• It is because LTE is a half point between 3G and 4G.
• Its capability is 3.95G which has been marketed as 4G LTE.

Additional Information3G (Third Generation):

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• 3G refers to the third generation of wireless technology.

• Common 3G technologies include UMTS (Universal Mobile Telecommunications System) and CDMA2000 (Code Division Multiple Access 2000).

• 3G networks provided faster data speeds compared to 2G but were slower than 4G.

2G (Second Generation):

• 2G refers to the second generation of wireless technology.

• Common 2G technologies include GSM (Global System for Mobile Communications) and CDMA (Code Division Multiple Access).

• 2G networks primarily focused on voice calls and provided limited data capabilities.

1G (First Generation):

• 1G refers to the first generation of wireless technology.

• 1G networks were analog-based and primarily supported voice calls.

• 1G networks had limited data capabilities and slower transmission speeds compared to subsequent generations.

Q43. Answer: (d) Both I and II

The correct answer is Both I and II.

Key Points

• Macroeconomics is a branch of economics that deals with the structure, performance, and behaviour of the overall economy.

• It focuses on areas like inflation, economic growth rate, price levels of various goods and services, gross domestic product (GDP), national income and the unemployment rate in a particular country.

• The study of macroeconomics is essential to understand the economic performance of a nation and the factors that affect it.

Important Points

• Macroeconomics deals with the following studies:

• Reasons behind the unemployment of resources:

• Macroeconomics focuses on understanding and analyzing the factors that contribute to unemployment on a broader scale.

• It examines the causes and consequences of unemployment, such as changes in aggregate demand, labour market conditions, technological advancements, and government policies that affect employment levels.

• Determination of total output:

• Macroeconomics is concerned with studying and explaining the determinants of a country's total output or national income.

• It analyzes the factors that influence aggregate production and economic growth, including consumption, investment, government spending, and net exports.

• Macroeconomists investigate the relationship between these variables and their impact on overall economic performance.

Additional Information

• John Maynard Keynes is known as the founding father of Macroeconomics as a separate discipline.

• He was born on June 5, 1883, in Cambridge.

• He completed his degree in Mathematics and also joined Civil Services in Britain.

• He represented the British Treasury at the Conference of Versailles.

• He expressed his concerns about the fine imposed on Germany in his book 'The Economic Consequences of Peace'.

Q44. Answer: (a) New Zealand

The correct answer is New Zealand.

Key Points

• The final of the ICC World Test Championship between India and New Zealand will be played in a bio-secure bubble at the Hampshire Bowl in Southampton, England.

• It started on 1 August 2019 with the first Test of the 2019 Ashes series and finished with the Final at the Rose Bowl, Southampton in June 2021.

• New Zealand won the ICC Test Championship mace for the first time and was also awarded the cash prize of US$1.6 million, while India won US$800,0.

• The Captain of New Zealand is Kane Williamson. (As of 2023)

• The ICC World Test Championship is an international cricket competition organized by the International Cricket Council (ICC) for the ten test cricket-playing nations.

Important Points

• International Cricket Council

• It is the world governing body of cricket.

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• It was founded as the Imperial Cricket Conference in 1909.
• It was founded by representatives from Australia, England, and South Africa.
• It was renamed the International Cricket Conference in 1965.
• It took its current name in 1987.
• Headquarters of ICC: Dubai, UAE.

Q45. Answer: (b) VVS Laxman

The correct answer is VVS Laxman.

Key Points

• A stylish batsman who could score against any kind of bowling, VVS Laxman played over a hundred Tests to aggregate more than 8,000 runs.
• Cricket fans still remember with awe his game-changing knock of 281 against Australia in 2001 at Eden Gardens.
• Vangipurapu Venkata Sai Laxman is a former Indian international cricketer and a former cricket commentator and pundit.
• A right-hand batsman known for his elegant stroke play, Laxman played as a middle-order batsman in Test cricket.
• He was born on 1 November 1974.
• Book: 281 AND BEYOND Author: VVS Laxman with R Kaushik Publisher: Westland Sport.

Additional Information

• The Test of My Life is the biography of Yuvraj Singh.
• Playing It My Way is the autobiography of Sachin Tendulkar.
• Muhammad Ali is a boxer. His book's name is "His Life and Times".
• Suresh Raina's autobiography, titled "Believe – What Life and Cricket Taught Me"
• Virat Kohli : Driven: The Virat Kohli Story

Q46. Answer: (b) 1955

The correct answer is Option 2.

Key Points

• The Citizenship Act was first passed in India in the year 1955.
• The original Citizenship Act of 1955 laid down the framework for Indian citizenship and defined the various ways in which a person could acquire or lose citizenship in India.
• Since its enactment, the act has undergone several amendments to accommodate changes and evolving perspectives on citizenship.

Additional Information

• There are four main ways through which an individual can acquire Indian citizenship:
• By Birth: A person born in India on or after January 26, 1950, is considered an Indian citizen by birth, with a few exceptions.
• By Descent: Individuals born outside India on or after January 26, 1950, but have at least one Indian parent, are eligible for Indian citizenship by descent.
• By Registration: Certain categories of people, such as individuals of Indian origin residing outside India, can acquire Indian citizenship through registration by fulfilling specific criteria.
• By Naturalization: Foreigners who have resided in India for a specified period of time and meet other qualifications can apply for Indian citizenship through naturalization.

Q47. Answer: (b) Indian Independence Act

The correct answer is Option 2.

Key Points

• The Indian Independence Act of 1947 partitioned British India into two separate dominions, India and Pakistan, based on religious lines.
• The act facilitated the transfer of power from British colonial rule to the newly formed governments of India and Pakistan.
• It granted full legislative authority to India and Pakistan, establishing them as independent and sovereign nations.
• The partition resulted in widespread communal violence and riots between religious communities, leading to a significant loss of life and displacement of people.
• The act allowed princely states to choose between joining India, joining Pakistan, or remaining independent, leaving the decision to the rulers of these states.

Additional Information

• The Rowlatt Act, also known as the Anarchical and Revolutionary Crimes Act of 1919, was a legislative act passed by the British

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colonial government in India during the period of British rule.

• It was named after its sponsor, Sir Sidney Rowlatt, who was a British judge.

• The Government of India Act refers to several legislative acts passed by the British Parliament during the period of British rule in India.

• These acts were intended to regulate and govern the administration of British India.

• Pitt's India Act, officially known as the East India Company Act 1784, was an important piece of legislation passed by the British Parliament under the leadership of Prime Minister William Pitt the Younger.

• The act was designed to bring about significant reforms in the governance and administration of the British East India Company's territories in India.

Q48. Answer: (a) Ashley Barty

The correct answer is Option 1.

Key Points

• Australian tennis player Ashleigh Barty defeated American Danielle Collins to win the Australian Open women's title on 29 January 2022.

• Barty is the first Australian player to win the Australian Open singles championship since 1978.

• She won the French Open in 2019 and Wimbledon in 2021 and has been the no.1 ranked female player in the world for over 100 weeks.

Additional Information

• Spain's Rafael Nadal won the Australian Open Men's Singles final on 30 January 2022.

• With this victory, Rafael has become the first man to win 21 Grand Slam titles.

• He overtook Roger Federer and Novak Djokovic by winning this title.

• In tennis, Aslan Karatsev won the men’s singles title at the Sydney Tennis Classic final, to claim his third ATP Tour title.

• World number six Rafael Nadal won the men’s singles tennis title at the 2022 Melbourne Summer Set 1.

• French tennis player Gael Monfils has won the men’s singles event of the 2022 Adelaide International 1 to claim the 11th ATP title of his career.

• The Davis Cup 2021 was won by the Russian Tennis Federation with a 2-0 lead over Croatia in the Davis Cup final in Madrid.

• Alexander “Sascha” Zverev has won the fifth ATP title of the season (2021) and 18th overall at the Vienna Open 2021.

Q49. Answer: (c) Kathak

The correct answer is Option 3.

Key Points

• Birju Maharaj was a noted dancer of Kathak.

• Kathak is one of the major classical dance forms of India and is characterized by intricate footwork, graceful movements, storytelling, and expressive facial expressions.

• Birju Maharaj, whose full name is Pandit Birju Maharaj, is a highly acclaimed Kathak dancer, choreographer, and guru (teacher) who has made significant contributions to the art form.

• He comes from a long lineage of Kathak dancers and has achieved international recognition for his mastery and innovative approach to Kathak dance.

Additional Information

• Bharatanatyam is a classical Indian dance form that originated in the state of Tamil Nadu, characterized by intricate footwork, expressive gestures, rhythmic movements, and storytelling.

• Manipuri is a classical Indian dance form from the northeastern state of Manipur, known for its graceful movements, fluid body postures, use of intricate hand gestures, and vibrant costumes.

• Sattriya is a classical Indian dance form from the state of Assam, characterized by its devotional themes, rhythmic footwork, graceful movements, and rich cultural heritage.

Q50. Answer: (a) Amir Khusro

The correct answer is Option 1.

Key Points

• Amir Khusro was a prominent poet, musician, and scholar who lived in the 13th century.

• He is often referred to as "Tuti-e-Hind" or "The parrot of India" due to his exceptional talent and mastery in various fields, including poetry, music, and language.

Additional Information

• Lata Mangeshkar was a renowned Indian playback singer known for her melodious voice and contributions to the Hindi film

industry.

• Pandit Ravi Shankar was a virtuoso sitar player and composer who popularized Indian classical music worldwide.

• Kalidas was a famous classical Sanskrit poet and playwright in ancient India.

Q51. Answer: (d) Rs. 400

Given:

Rajiv sells a pen at a profit of 5 percent.

He sells the pen for Rs. 36 more, then he earns a profit of 14 percent.

Concept Used:

Cost Price = Selling Price × 100/(100 + Profit%)

Calculation:

Let the CP of a pen = Rs. x

Profit = 5%

SP = Rs. 1.05x

According to question

1.05x + 36 = 1.14x

1.14x - 1.05x = 36

.09x = 36

x = Rs. 400

Therefore CP of a pen = Rs. 400

Therefore Option 4 is the correct answer.

Q52. Answer: (c) 1

Given

tan 10° tan 25° tan 45° tan 65° tan 80°

Concept used

Tan (90 - θ) = cotθ

Calculation

=> tan (90 - 10) × tan (90 - 65) × tan 45° × tan 65° × tan 80°

=> cot 80° × cot 65° × 1 × tan 65° × tan 80°

Therefore Ans = 1

Q53. Answer: (b) 3√2

Given:

x4 + 1/x4 = 16

Formula:

(a2 + b2) = (a + b)2 - 2ab

Calculation:

$(x^2 + 1/x^2)^2 = x4 + 1/x4 + 2 \times x^2 \times 1/x^2$

=> (x2 + 1/x2)2 = 16 + 2

=> (x2 + 1/x2)2 = 18

=> (x2 + 1/x2) = √18 = 3√2

Therefore The correct answer is option (2).

Q54. Answer: (d) 3 : 7

Calculation:

J1 = The value of average cost price of A, B, C and D = (300 + 250 + 150 + 200)/4

900/4 = 225

J2 = The total profit of all articles = 50 + 25 + 100 + 150 + 75 + 125 = 525

The value of (J1 : J2) = 225 : 525

3 : 7

Therefore Option 4 is the correct answer.

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Q55. Answer: (d) Rs. 5500

Given:

Piyush marks the price more than the cost price by = 30%

Discount = 20%

Selling price of the article = Rs. 5720

Formula:

SP = MP × [(100 – Discount%)/100]

Calculation:

MP of the article = 5720 × 100/80

Therefore Cost price of the article = 5720 × 100/80 × 100/130 = Rs. 5500

Therefore Option 4 is the correct answer.

Q56. Answer: (b) 50 cm

Shortcut Trick

Direct formula for the height (distance) of a trapezium:

Height = (2 × Area) ÷ (Sum of parallel sides)

Height = (2 × 875) ÷ (21 + 14)

Height = 1750 ÷ 35 = 50 cm

Therefore The correct answer is 50 cm.

Alternate Method

Given:

Parallel side 1 (a) = 21 cm

Parallel side 2 (b) = 14 cm

Area of trapezium = 875 cm^2

Formula Used:

Area of Trapezium = 1/2 × (Sum of parallel sides) × Height

Calculations:

=> 875 = 1/2 × (21 + 14) × h

=> 875 = 1/2 × 35 × h

=> 875 = 17.5 × h

=> h = 875 ÷ 17.5

=> h = 50 cm

Therefore The correct answer is 50 cm.

Additional Information

Properties of a Trapezium

A trapezium is a quadrilateral with at least one pair of parallel sides. The height is the perpendicular distance between these parallel lines.

Median of a Trapezium

The length of the median (the segment connecting the midpoints of the non-parallel sides) is the average of the two bases: Median = (a + b) ÷ 2.

Isosceles Trapezium

In an isosceles trapezium, the non-parallel sides are equal in length, and the base angles are equal.

Q57. Answer: (d) 7 : 4

Calculation:

We need to find the value of (J1 : J2), where:

J1 is the total number of male and female teachers in school P.

J2 is the difference between the total number of male and the total number of female teachers in all 5 schools.

J1 = Total number of male and female teachers in school P

J1 = Sum of Male + Sum of Female

J1 = 80 + 60 = 140

J1 = 140

J2 = Difference between the total number of male and the total number of female teachers in all the 5 schools

J2 = Sum of Male - Sum of Female
J2 =(60 + 80 + 70 + 50 + 30) - (80 + 70 + 20 + 10 + 30)
J2 = 290 - 210
J2 = 80
140 : 80.
7 : 4
Therefore, the value of (J1 : J2) is 7 : 4

Q58. Answer: (a) 7.64

Given:
(7 of 14÷ 4)/(5×4÷ 2)+(6÷12× 3)/(5÷25× 2)+15÷5×6/(5× 15÷6)?
Concept used:
Follow the BODMAS rule according to the table given below:
Calculation:
(7 of 14÷ 4)/(5×4÷ 2)+(6÷12× 3)/(5÷25× 2)+15÷5×6/(5× 15÷6)
24.5/10+1.5/0.4+18/12.5
2.45 + 3.75 + 1.44
7.64
Therefore Option 1 is the correct answer.

Q59. Answer: (a) Only II

Given:
The ratio of the present age of two girls is 3 : 4.
After two year the ratio will be 7 : 9.
Calculation:
Let the present age of two girls be 3x and 4x.
Acc to question,
(3x + 2)/(4x + 2) = 7/9
27x + 18 = 28x + 14
x = 4
Present ages of girls = 12 and 16
I. After 10 years their ages will be 22 and 26.
Ratio = 11 : 13
Statement is wrong
II. After 12 years their ages will be 24 and 28
Ratio = 6 : 7
Statement II is correct.
Therefore Option 1 is the correct answer.

Q60. Answer: (d) 45 degree

Given:
ABCD is a cyclic quadrilateral.
angle B is opposite to angle D.
angle B and angle D are x + 10 and 2x + 35 respectively.
Concept Used:
In a cyclic quadrilateral, the sum of a pair of opposite angles is 180 degrees.
Calculation:
Since angle B and angle D are opposite to each other, we have:
angle B + angle D = 180°
x + 10 + 2x + 35 = 180
Solving for x:
=> 3x + 45 = 180
=> 3x = 135

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=> x = 45

So, the value of x is 45°.

Therefore Option 4 is the correct answer.

Q61. Answer: (b) 11 : 3

Shortcut Trick

Let Q's expenditure be 100.

P's income = 400% of 100 = 400.

Q's income = 400 ÷ 2.5 = 160.

P's expenditure = 180% of 100 = 180.

P's savings = 400 − 180 = 220, and Q's savings = 160 − 100 = 60.

Therefore The correct answer is 11 : 3.

Alternate Method

Given:

=> P's income (I_p) = 2.5 × Q's income (I_q)

=> P's expenditure (E_p) = 1.8 × Q's expenditure (E_q)

=> P's income (I_p) = 4 × Q's expenditure (E_q)

P

Exp: 180

Sav: 220

Income: 400

Q

Exp: 100

Sav: 60

Income: 160

Calculations:

=> From the first and third conditions, we equate I_p:

=> 2.5 × I_q = 4 × E_q

=> I_q = 4 ÷ 2.5 × E_q = 1.6 × E_q

=> Savings = Income − Expenditure

=> P's Savings (S_p) = I_p − E_p = 4 × E_q − 1.8 × E_q = 2.2 × E_q

=> Q's Savings (S_q) = I_q − E_q = 1.6 × E_q − E_q = 0.6 × E_q

=> Ratio of S_p to S_q = 2.2 × E_q : 0.6 × E_q

=> Ratio = 22 : 6 = 11 : 3

Therefore The correct answer is 11 : 3.

Additional Information

Income, Expenditure & Savings

Income = Expenditure + Savings. Any increase in Income will be reflected as an increase in either Expenditure or Savings or both.

Base Value in Percentages

When comparing two quantities, always check the base of the percentage. For instance, '250% of Q's income' designates Q's income as the base (100%).

Simplifying Ratios

To find the ratio of two dependent quantities, express them in terms of a single common variable to easily eliminate it during division.

Q62. Answer: (d) 119/120

Given:

$\sin \theta = 5/13$

Concept Used:

$\cos \theta = \sqrt{(1 - \sin^2 \theta)}$

Calculation:

$\sin \theta = 5/13$

=> $\cos \theta = \sqrt{(1 - (5/13)^2)}$

=> cos θ = √(169 - 25)/169
=> cos θ = √(144/169)
=> cos θ = 12/13
Put the values in (cos² θ-sin² θ)/(2cos θ.sin θ)
=> ((12/13)² -(5/13)²)/(2× 12/13 × 5/13)
=> (119/169)/(120/169)
=> 119/120
Therefore Option 4 is the correct answer.

Q63. Answer: (d) 35 cm

Given:
The perimeter of an isosceles triangle = 91 cm.
One of the equal sides measures 28 cm.
Concept used:
An isosceles triangle two angles will also be the same in front of the equal sides.
Formula used:
P = (2a + b)
Where, p = perimeter
a = side and b = another side
Calculation:
Let the length of the equal sides be x
P = (2a + b)
=> 91 = 2 × 28 + b
=> (91 – 56) = b
=> 35 = b
Therefore The length of the non-equal side is 35 cm.
Therefore Option 4 is the correct answer.

Q64. Answer: (b) 39.8

Given:
There are five prime numbers between 30 and 50
Concept Used:
Average = (Sum of the observation)/Number of observation
Calculation:
Prime numbers between 30 and 50 are 31, 37, 41, 43, and 47
=> Average = (Sum of the observation)/Number of observation
=> Average = (31 + 37 + 41 + 43 + 47)/5
=> 199/5
=> 39.8
Therefore Average of all prime numbers b/w 30 and 50 is 39.8
Therefore Option 2 is the correct answer.

Q65. Answer: (b) 110 degree

Given:
In ΔXYZ, I is the incentre.
angle XYZ = 40
Concepts used:
Angle formed at incentre opposite to given side = 90° +(½ × angle opposite to given side)
Calculation:
In ΔXYZ, I is the incentre
angle XIZ = 90° + (½ × angle XYZ)
=> angle XIZ = 90° + (½ × 40)
=> angle XIZ = 90° + 20°

=> angle XIZ = 110°

Therefore Measure of angle XIZ is equal to 110°.

Therefore Option 2 is the correct answer.

Q66. Answer: (c) 27√2/8 cm

Given:

The three sides of the triangle are 9 cm, 6 cm, and 5 cm respectively.

Formula Used:

R = abc/4A

Calculation:

Let be assume a, b, and c is the sides of the triangle.

=> Area of triangle = √{s(s - a) (s - b) (s - c)}

=> s = (a + b + c)/2 = 20/2 = 10 cm

=> √{10 × (10 - 9) × (10 - 6) × (10 - 5)}

A = √(200)

A = 10√2

R = (abc) / (4A)

R = (9 × 6 × 5) / (4 × 10√2)

R = (270) / (40√2)

R = (27√2/8)

Therefore, the value of the circumradius of the triangle with sides 9 cm, 6 cm, and 5 cm is (27√2/8).

Q67. Answer: (c) 75 days

Shortcut Trick

Ratio of efficiency (Work/Time) of S to T = (1/2 ÷ 1/8) : 1 = 4 : 1.

Combined efficiency = 4 + 1 = 5 units/day.

Total work = Combined efficiency × Time = 5 × 60 = 300 units.

Time taken by S alone = Total work ÷ S's efficiency = 300 ÷ 4 = 75 days.

Therefore The correct answer is 75 days.

Alternate Method

Given:

Work done by S = 1/2 × Work done by T

Time taken by S = 1/8 × Time taken by T

Combined time for (S + T) = 60 days

Formula Used:

Efficiency = Work ÷ Time | Total Work = Efficiency × Time

Person	Days	Total Work	Efficiency
S	75 days	300 units	4
T	300 days	1	
S + T	60 days	5	

Calculations:

=> Let efficiency of T = 1 unit/day.

=> Efficiency of S = (Work of S ÷ Time of S) = (1/2 ÷ 1/8) × Efficiency of T

=> Efficiency of S = (1/2 × 8) × 1 = 4 units/day.

=> Total efficiency of (S + T) = 4 + 1 = 5 units/day.

=> Total Work = Combined efficiency × Total time = 5 × 60 = 300 units.

=> Days taken by S alone = Total Work ÷ Efficiency of S = 300 ÷ 4 = 75 days.

Therefore The correct answer is 75 days.

Additional Information

Efficiency and Time Relationship

Efficiency is inversely proportional to the time taken to complete a task. If efficiency ratio is a : b, then time ratio is b : a.

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Work and Days Formula

The fundamental relation is M1D1E1/W1 = M2D2E2/W2, where M is persons, D is days, E is efficiency, and W is work.

Combined Work Rate

If A takes 'x' days and B takes 'y' days, they together take (x × y) ÷ (x + y) days to complete the work.

Q68. Answer: (d) 1/2

Shortcut Trick

Given, sin α = 1/2 and sin β = 1/2.

Since 0° < α, β < 90°, we know that sin 30° = 1/2.

=> α = 30° and β = 30°

=> We need to find cos (α + β)

=> cos (30° + 30°) = cos 60° = 1/2

Therefore The correct answer is 1/2.

Alternate Method

Given:

sin α = 1/2, (0° < α < 90°)

sin β = 1/2, (0° < β < 90°)

Formula Used:

cos (α + β) = cos α × cos β − sin α × sin β

sin2 θ + cos2 θ = 1

Calculations:

=> cos2 α = 1 − sin2 α = 1 − (1/2)2

=> cos2 α = 1 − 1/4 = 3/4

=> cos α = √3/2 (Since α is in the first quadrant, cos α is positive)

=> Similarly, cos β = √3/2

=> cos (α + β) = cos α × cos β − sin α × sin β

=> cos (α + β) = (√3/2) × (√3/2) − (1/2) × (1/2)

=> cos (α + β) = 3/4 − 1/4 = 2/4

=> cos (α + β) = 1/2

Therefore The correct answer is 1/2.

Additional Information

Trigonometric Identities

Fundamental identities are: sin2 θ + cos2 θ = 1, 1 + tan2 θ = sec2 θ, and 1 + cot2 θ = cosec2 θ.

Compound Angle Formulas

Addition formulas: sin (α + β) = sin α × cos β + cos α × sin β, and cos (α + β) = cos α × cos β − sin α × sin β.

Trigonometric Quadrants

In the first quadrant (0° to 90°), all trigonometric functions are positive. In the second quadrant, only sin and cosec are positive.

Q69. Answer: (d) 1

Shortcut Trick

Use the direct algebraic identity: $a^3 + b^3 + c^3 = (a + b + c)[(a + b + c)^2 − 3(ab + bc + ca)] + 3abc$

Substitute the given values: (a + b + c) = 1, (ab + bc + ca) = −1, and abc = −1

Value = $1 × [1^2 − 3(−1)] + 3(−1)$

Value = 1 × [1 + 3] − 3 = 4 − 3 = 1

Therefore The correct answer is 1.

Alternate Method

Given: a + b + c = 1, ab + bc + ca = −1, abc = −1

Formula Used: $a^3 + b^3 + c^3 − 3abc = (a + b + c)(a^2 + b^2 + c^2 − (ab + bc + ca))$

Finding the sum of squares:

=> $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

=> $(1)^2 = a^2 + b^2 + c^2 + 2(−1)$

=> $1 = a^2 + b^2 + c^2 − 2$

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=> $a^2 + b^2 + c^2 = 1 + 2 = 3$

Substituting into the sum of cubes formula:

=> $a^3 + b^3 + c^3 - 3(-1) = 1 \times [3 - (-1)]$

=> $a^3 + b^3 + c^3 + 3 = 1 \times (3 + 1)$

=> $a^3 + b^3 + c^3 + 3 = 4$

=> $a^3 + b^3 + c^3 = 4 - 3 = 1$

Therefore The correct answer is 1.

Additional Information

Algebraic Identity Variant

The expression $a^2 + b^2 + c^2 - ab - bc - ca$ can also be expressed as $\frac{1}{2}[(a - b)^2 + (b - c)^2 + (c - a)^2]$.

Conditional Cube Rule

If $a + b + c = 0$, then the identity simplifies to $a^3 + b^3 + c^3 = 3abc$.

Trinomial Square

The square of a trinomial is given by $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$.

Q70. Answer: (d) Rs. 10240

Shortcut Trick

A depreciation of 20% means the value becomes 80% or 4/5 of the previous year's value.

Value after 3 years = $20000 \times (4/5)^3$

=> $20000 \times (64/125)$

=> $160 \times 64 = 10240$

Therefore The correct answer is Rs. 10240.

Alternate Method

Given:

Initial Value (P) = Rs. 20000

Rate of Depreciation (R) = 20%

Time Period (n) = 3 years

Formula Used:

Value after n years = $P \times (1 - R/100)^n$

Calculations:

=> Final Value = $20000 \times (1 - 20/100)^3$

=> Final Value = $20000 \times (80/100)^3$

=> Final Value = $20000 \times (0.8)^3$

=> Final Value = 20000×0.512

=> Final Value = 10240

Therefore The correct answer is Rs. 10240.

Additional Information

Depreciation (Reducing Balance)

When value decreases by a fixed percentage on the current book value, use: $V = P(1 - r/100)^n$.

Appreciation (Growth)

When the value of an asset or population increases over time, use: $V = P(1 + r/100)^n$.

Straight Line Depreciation

If depreciation is a fixed amount calculated only on the initial cost: Total Depreciation = (Initial Value × Rate × Time) / 100.

Successive Percentage Change

For two successive changes of x% and y%, the net effective change is [x + y + (xy/100)]%.

Q71. Answer: (c) 3ab(a + b)

Calculation:

To find the value of $(a + b)^3 - a^3 - b^3$, we can expand the cube of a binomial using the formula for $(a - b)^3$:

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

Substituting this into the expression, we have:

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

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Expanding and simplifying, we get:

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

The terms a^3 and b^3 will cancel out, leaving:

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

Therefore, the value of $(a + b)^3 - a^3 - b^3$ is $3ab(a + b)$

Therefore Option 3 is the correct answer.

Q72. Answer: (d) 3 : 1

Calculation:

According to the question:

15% : 5%

3 : 1

Therefore Option 4 is the correct answer.

Q73. Answer: (b) 66.66%

Calculation:

According to the question:

(550 - 330)/330 × 100 = 66.66%

Therefore Option 2 is the correct answer.

Q74. Answer: (d) 37.625

Formula Used:

Mean = Sum of observation/No. of observation

Calculation:

Using the above formula-

=> Sum of observation = 36 × 8 = 288

=> Change in sum = 5 × 5 - 4 × 3 = 13

=> New mean = 301/8 = 37.625

Therefore The correct answer is 37.625.

Therefore Option 4 is the correct answer.

Q75. Answer: (b) 206250

Shortcut Trick

Total Distance = Speed × Time = 36.3 × (75 ÷ 60) = 45.375 km

Convert Distance to cm: 45.375 × 1,00,000 = 4,537,500 cm

Circumference of wheel (πd) = (22 ÷ 7) × 7 = 22 cm

Number of Revolutions = Total Distance ÷ Circumference = 4,537,500 ÷ 22 = 206250

Therefore The correct answer is 206250.

Alternate Method

Given:

Diameter of the wheel (d) = 7 cm

Speed of the cyclist = 36.3 km/hr

Time taken = 75 minutes

Formula Used:

Distance = Speed × Time

Circumference = π × Diameter

Number of Revolutions (n) = Total Distance ÷ Circumference

Calculations:

=> Time in hours = 75 ÷ 60 = 1.25 hours

=> Distance covered = 36.3 × 1.25 = 45.375 km

=> Distance in cm = 45.375 × 1000 × 100 = 4,537,500 cm

=> Circumference of the wheel = (22 ÷ 7) × 7 = 22 cm

=> Number of Revolutions = 4,537,500 ÷ 22

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=> Number of Revolutions = 206250

Therefore The correct answer is 206250.

Additional Information

Distance covered in one revolution

The distance covered by a circular wheel in one complete revolution is equal to its circumference (2πr or πd).

Unit Conversion

1 kilometer = 1,000 meters and 1 meter = 100 centimeters; thus, 1 km = 1,00,000 cm.

Speed-Time Relation

To find Distance, ensure Speed and Time are in compatible units (e.g., km/hr and hours, or m/s and seconds).

Q76. Answer: (a) tools for finding and eat food,

The correct answer is 'Option 1'.

Key Points

• The part of the sentence with an error is: 'tools for finding and eat food'

• The correct phrase should be 'tools for finding and eating food'.

• The error is due to incorrect verb tense agreement.

• When listing actions (like "finding" and "eating"), all verbs should be in the same tense and form. In this case, they should both be gerunds (verb + ing) to maintain parallel structure.

The corrected sentence would read: "Our hands have been crucial tools for finding and eating food, and helping us navigate the world."

Q77. Answer: (a) No improvement

The correct answer is 'Option 1'.

Key Points

• The phrase "playing 'patriotic tunes'" is grammatically correct and makes sense within the context of the sentence.

• "Patriotic tunes" is a common phrase used to describe music that is related to or supports love for one's country.

Therefore, the given sentence is correct.

Q78. Answer: (c) The letter was lost by the manager.

The correct answer is 'Option 3'.

Key Points

• The correct passive form of the given sentence is: The letter was lost by the manager.

• The structure of a passive sentence is: subject + auxiliary verb (be) + past participle + (by + agent).

• In this case, "The letter" is the subject, "was" is the auxiliary verb (the past tense of 'be'), "lost" is the past participle of "lose", and "by the manager" is the agent.

Therefore, the correct answer is: 'The letter was lost by the manager.'

Additional InformationOption 1, "The letter was loss by the manager," is incorrect because "loss" is a noun, not a verb.

Option 2, "The letter was loose by the manager," is incorrect because "loose" is an adjective, not the past participle of a verb.

Option 4, "The letter was lose by the manager," is incorrect because "lose" is the base form of the verb, not the past participle.

Q79. Answer: (b) PSRQ

The correct answer is 'Option 2'.

Key Points

• P. The earliest years of a child’s life are critical.

• This sentence introduces the main topic of the paragraph: the importance of the earliest years in a child's life.

• S. These years determine a child’s survival and thriving in life, and lay the foundations for her/his learning and holistic development.

• This sentence extends the idea introduced in sentence P, explaining what makes these years so crucial.

• R. It is during the early years that children develop the cognitive, physical, social and emotional skills that they need to succeed in life.

• This sentence provides specific details about the importance of these years, expanding on what was mentioned in sentence S.

• Q. This is why an establishment has been created for the protection of children in these crucial years, known as ECCE.

• This sentence concludes the paragraph by giving a reason for the creation of an establishment (ECCE) based on the importance of these early years that was detailed in sentences P, S, and R.

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Therefore, the correct answer is: 'PSRQ'.

Q80. Answer: (c) perhaps aged young as

The correct answer is 'Option 3'.

Key Points

• The segment in the sentence which contains a grammatical error is: 'perhaps aged young as'

• The correct phrase should be "perhaps as young as" instead of "perhaps aged young as".

• This is a common phrase used to estimate someone's age.

Therefore, the corrected sentence would be: "A witness had seen a youth, perhaps as young as ten or eleven, acting suspiciously."

Q81. Answer: (b) finally finished

The correct answer is 'Option 2' i.e. 'Finally finished'.

Key Points

• The correct improvement for the underlined part of the sentence, "finally finish," is: finally finished

• The context of the sentence indicates that the speaker has completed their taxes.

• Therefore, the past tense verb "finished" should be used instead of the present tense verb "finish."

Therefore, the correct sentence is: 'I won't bore you with the details, but I finally finished my taxes.'

Q82. Answer: (b) Refined

The solution is in Hindi. Read it online.

Q83. Answer: (d) Sacrilege

The solution is in Hindi. Read it online.

Q84. Answer: (a) small leaks, especially

The correct answer is 'Option 1'.

Key Points

• The correct option to improve the bracketed part of the sentence, "meagre leaks, special," is: 'small leaks, especially'

• The term "meagre leaks" is not commonly used and can be confusing. "Small leaks" is a more appropriate term to use in this context.

• Also, the adverb "especially" is the correct word to use here because it emphasizes that particular attention should be given to the "pipework connections."

Therefore, the correct sentence is: 'Check all radiators for small leaks, especially round pipework connections.'

Additional Information

• "Modest leaks" (option 3) could also be understood, but it's less clear and precise than "small leaks."

• The word "specially" (options 3 and 4) is not incorrect per se, but "especially" is the more appropriate choice in this context because it is used to indicate something as a special case.

• "Cramped leaks" (option 4) does not make sense in this context as "cramped" refers to a lack of space and can't describe a leak.

Q85. Answer: (c) eagle eyes

The correct answer is 'Option 3' i.e. 'Eagle eyes'.

Key Points

• The correct phrase to fill in the blank is: 'eagle eyes'

• The term "eagle eyes" is often used metaphorically to describe someone's sharp vision or attentive observation, as eagles are known for their keen eyesight.

Therefore, the correct answer is: "David always kept his eagle eyes open for anything that might put them at risk."

Additional Information

• Here's the explanation for the other options:

• "Black eye" is a term often used to describe a bruise around the eye typically caused by an injury to the face rather than the eye itself. This phrase would not make sense in this context.

• "Starry eyes" is a term used to describe a state of dreamy or idealistic admiration, often for someone or something. It doesn't fit in this context as it doesn't convey vigilance or alertness.

• "Sheep eyes" is not a common idiomatic expression in English and doesn't carry a meaning that fits the context of the sentence.

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Q86. Answer: (a) Assimilate

The solution is in Hindi. Read it online.

Q87. Answer: (b) Ingenous

The solution is in Hindi. Read it online.

Q88. Answer: (b) SENSE

The solution is in Hindi. Read it online.

Q89. Answer: (a) QPRS

The correct answer is 'Option 1'.

Key Points

• Here's why this makes sense:

• Q: "argued that 1919 was the year when Einstein's name".

• This segment works best after the opening phrase "It could be", as it gives context about the year when Einstein's fame started to rise significantly.

• P: "became a byword for superhuman intellectual ability".

• This segment logically follows Q, as it explains how Einstein's name came to be associated with superhuman intellectual ability.

• R: "making possible the small industry of".

• This segment follows P and links the reputation of Einstein's name to its commercial impact.

• S: "Einstein-themed merchandise that still exists today".

• This final segment brings the sentence to a close, detailing the specific commercial manifestation of Einstein's reputation - themed merchandise.

Therefore, the correct answer is: 'QPRS'.

Q90. Answer: (d) Full of talk, but low on action

The solution is in Hindi. Read it online.

Q91. Answer: (c) Work

The solution is in Hindi. Read it online.

Q92. Answer: (d) Appeal to the highest possible authority

The solution is in Hindi. Read it online.

Q93. Answer: (b) Cynosure

The solution is in Hindi. Read it online.

Q94. Answer: (d) Rahul asked me if we were going to New York next year.

The correct answer is 'Rahul asked me if we were going to New York next year.'

Key Points

• When converting a direct question into indirect speech, you generally use a conjunction like "if" or "whether" to connect the main clause with the question clause.

• The tense of the verb in the question clause often moves back in time (backshifts).

• In this case, the present tense "are" backshifts to "were".

• So, "Are we going to New York next year?" becomes "if we were going to New York next year."

Therefore, the correct answer is: 'Rahul asked me if we were going to New York next year.'

Q95. Answer: (d) harange

The solution is in Hindi. Read it online.

Q96. Answer: (c) from

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

Key Points

• The most appropriate option to fill in the blank No. 1 is: 'from'

• The reason "from" is the correct answer is due to the way it is used in the sentence.

• In this context, "data from the Pioneer spacecraft of NASA" suggests that the Pioneer spacecraft is the source of the data.

• "From" is often used to indicate the source or origin of something.

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Therefore, the correct sentence is: Data from the Pioneer spacecraft of NASA apparently prove the theory that the high surface temperature of Venus is 2. _____ to an atmospheric greenhouse effect caused mainly by a blanket of carbon dioxide. Such a greenhouse 3. ___ is created when energy in the form of sunlight easily passes through a planet's atmosphere, warms its 4. ___ and is converted to heat radiation that is then held in by the atmosphere from top to bottom. Venus has a relatively thin atmosphere like the Earth's, but Venus' atmosphere consists of more than ninety percent carbon dioxide, compared to less than four percent in that of the 5. _____.

Additional Information

• Here are explanations for the rest of the words:

• "On" - This preposition is typically used to express a state of being in contact with or supported by something. In this context, "data on the Pioneer spacecraft" would suggest data about the spacecraft, which is not what the sentence intends.

• "Across" - This preposition indicates movement or location from one side to another, which doesn't fit in this context.

• "Through" - This preposition indicates movement in one side and out of the other side, which doesn't fit in this context.

Q97. Answer: (a) due

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

Key Points

• The most appropriate option to fill in the blank No. 2 is: 'Due'

• Here, the word "due" is used to attribute the high surface temperature of Venus to the atmospheric greenhouse effect.

Therefore, the correct sentence is: Data from the Pioneer spacecraft of NASA apparently prove the theory that the high surface temperature of Venus is due to an atmospheric greenhouse effect caused mainly by a blanket of carbon dioxide. Such a greenhouse 3. _____ is created when energy in the form of sunlight easily passes through a planet's atmosphere, warms its 4. ___ and is converted to heat radiation that is then held in by the atmosphere from top to bottom. Venus has a relatively thin atmosphere like the Earth's, but Venus' atmosphere consists of more than ninety percent carbon dioxide, compared to less than four percent in that of the 5. _____.

Additional Information

• Here are explanations for the rest of the words:

• "Understood" - This term generally implies that something is comprehended or grasped. In this context, it doesn't fit grammatically or logically.

• "Because" - This conjunction is used to introduce a word or phrase that stands for a clause expressing an explanation or reason. However, it doesn't fit in this context because it would render the sentence grammatically incorrect.

• "Cause" - As a noun, cause refers to a person or thing that gives rise to an action or condition. As a verb, it means to make something happen. However, it's not grammatically correct in this context.

Q98. Answer: (d) effect

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

Key Points

• The most appropriate option to fill in the blank No. 3 is: 'Effect'

• The reason "effect" is the correct answer is because of its use in this context.

• The term "greenhouse effect" is a widely accepted term in environmental science that refers to the process by which radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be without the atmosphere.

Therefore, the correct answer is: Data from the Pioneer spacecraft of NASA apparently prove the theory that the high surface temperature of Venus is due to an atmospheric greenhouse effect caused mainly by a blanket of carbon dioxide. Such a greenhouse effect is created when energy in the form of sunlight easily passes through a planet's atmosphere, warms its 4. _____ and is converted to heat radiation that is then held in by the atmosphere from top to bottom. Venus has a relatively thin atmosphere like the Earth's, but Venus' atmosphere consists of more than ninety percent carbon dioxide, compared to less than four percent in that of the 5. _____.

Additional Information

• Here are explanations for the rest of the words:

• "Affect" - This is usually a verb, and it means to have an effect on; to make a difference to. In this context, it's not appropriate because we need a noun to follow "greenhouse."

• "Displacement" - This is a noun, and it typically refers to the moving of something from its place or position. It doesn't fit in this context.

• "Contour" - This is a noun, and it refers to an outline representing or bounding the shape or form of something. It doesn't fit in this context.

Q99. Answer: (a) surface

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

Key Points

• The most appropriate option to fill in the blank No. 4 is: 'Surface'

• In this context, "surface" is the most logical choice because it is the surface of a planet that gets warmed by sunlight that has passed through the atmosphere.

Therefore, the correct sentence is: Data from the Pioneer spacecraft of NASA apparently prove the theory that the high surface temperature of Venus is due to an atmospheric greenhouse effect caused mainly by a blanket of carbon dioxide. Such a greenhouse effect is created when energy in the form of sunlight easily passes through a planet's atmosphere, warms its surface and is converted to heat radiation that is then held in by the atmosphere from top to bottom. Venus has a relatively thin atmosphere like the Earth's, but Venus' atmosphere consists of more than ninety percent carbon dioxide, compared to less than four percent in that of the 5. _____.

Additional Information

• Here are explanations for the rest of the words:

• "Walls" - This term generally refers to the sides of a building or room. It's not applicable in this context, as we're talking about a planet, not a man-made structure.

• "Atmosphere" - While it's true that the atmosphere plays a significant role in the greenhouse effect, in this context it's not the part that gets warmed directly by the sunlight. The sunlight first warms the surface of the planet.

• "Core" - The core refers to the innermost part of something, especially a planet. The sun's light and heat don't reach the core of a planet directly, they warm the surface first.

Q100. Answer: (c) Earth

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

Key Points

• The most appropriate option to fill in the blank No. 5 is: 'Earth'

• In the given context, the sentence is comparing Venus' atmosphere, which consists of more than ninety percent carbon dioxide, to that of another planet.

• The term "relatively thin atmosphere like the Earth's" provides a clear hint that Earth is the planet being compared to Venus.

• So the logical and appropriate completion to this sentence is "Earth".

Therefore, the correct answer is: Data from the Pioneer spacecraft of NASA apparently prove the theory that the high surface temperature of Venus is due to an atmospheric greenhouse effect caused mainly by a blanket of carbon dioxide. Such a greenhouse effect is created when energy in the form of sunlight easily passes through a planet's atmosphere, warms its surface and is converted to heat radiation that is then held in by the atmosphere from top to bottom. Venus has a relatively thin atmosphere like the Earth's, but Venus' atmosphere consists of more than ninety percent carbon dioxide, compared to less than four percent in that of the earth.

Additional Information

• Here's a brief explanation of the rest of the options:

• Pluto: Although Pluto is a celestial body in our solar system, it has been reclassified as a "dwarf planet" and not a main planet. Furthermore, its atmosphere is not typically compared to Venus in the context of greenhouse effect discussions.

• Mars: Mars does have an atmosphere and it's often a point of study in discussions about planetary atmospheres, but in this context, the comparison is specifically leading towards Earth.

• Mercury: Mercury is the planet closest to the sun and it has a very thin atmosphere that's not usually involved in discussions about the greenhouse effect.

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