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

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

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ENGLISH LANGUAGE

Q1. Four words have been given, out of which three are alike in some manner and one is different. Select the odd word.

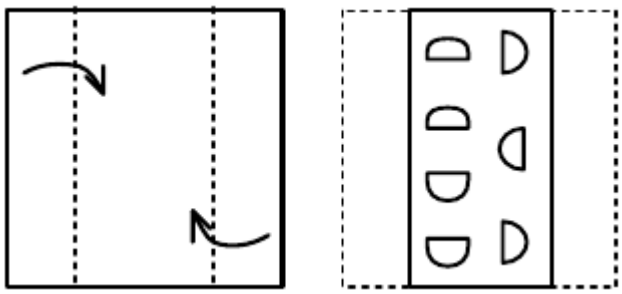
(a) Madhya Pradesh
(b) Himachal Pradesh
(c) Maharashtra
(d) Darjeeling

Q2. 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.

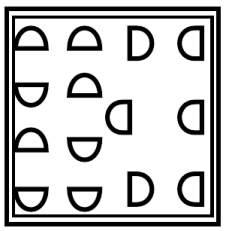
Car : Vehicle :: ?

(a) Table : Furniture
(b) Profession : Teacher
(c) Figure : Triangle
(d) Stationery : Pen

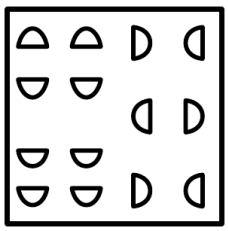
Q3. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



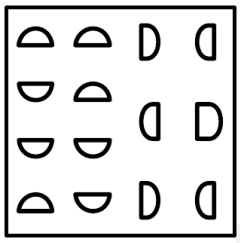
(a)



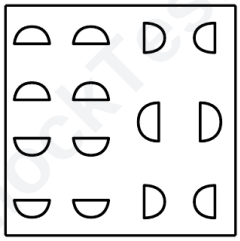
(b)



(c)



(d)



Q4. If T + U means T is the mother of U; T – U means T is husband of U, T ÷ U means T is son of U and T × U means T is sister of U.

Then M ÷ N + O - P shows what relation of N with P?

(a) Daughter
(b) mother-in-law
(c) father-in-law
(d) Sister

Q5. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statement I: All males are females.

Statement II: Some females are old.

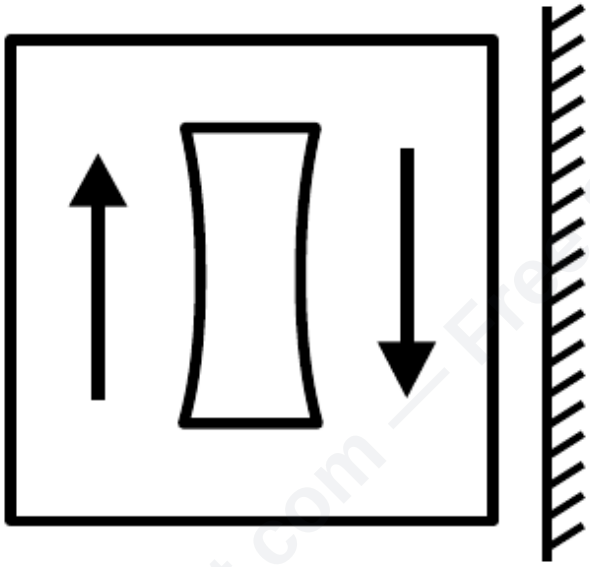
Conclusion I: All males are old.

Conclusion II: Some males are old.

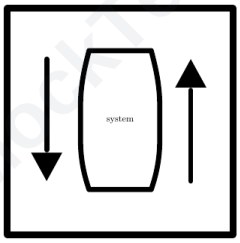
(a) Only II follows
(b) Neither I nor II follows
(c) Only I follows
(d) Both I and II follows

Q6. Select the correct mirror image of the given figure when the mirror is placed to its right side.

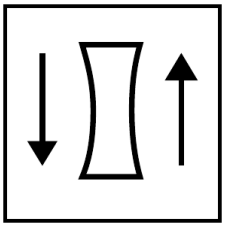
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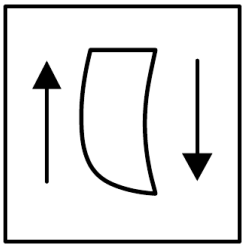
(a)



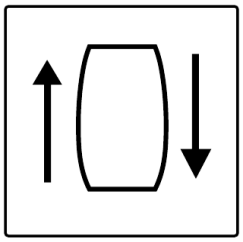
(b)



(c)



(d)



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Q7. Arrange the given words in the sequence in which they occur in the dictionary.

1. Flight
2. Fly
3. Fan
4. Finance
5. Fighter

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

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

Curd : Milk :: ?

(a) Pulp : Paper
(b) Furniture : Wood
(c) Ore : Metal
(d) Hairs : Black

Q9. Select the option that is related to the fourth 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.

432 : 111 :: ? : 320 :: 549 : 228

(a) 641
(b) 591
(c) 761
(d) 831

Q10. Select the option in which the numbers shares the same relationship in set as that shared by the numbers in the given set.(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g.13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(12, 28, 8)

(72, 48, 12)

(a) (63, 36, 17)
(b) (119, 29, 55)
(c) (97, 55, 24)
(d) (108, 58, 25)

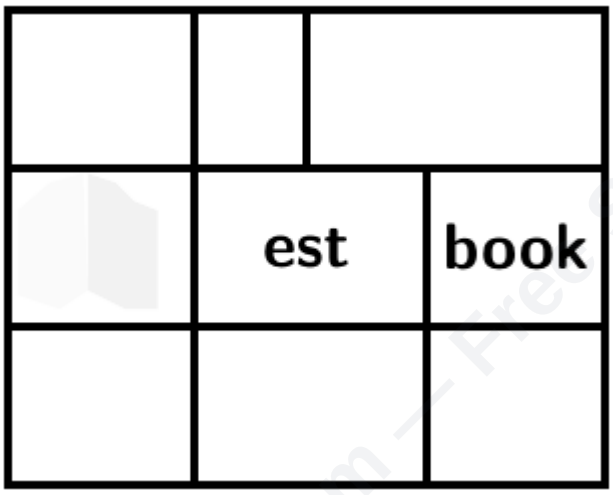
Q11. In the following question, select the missing number from the given series.

46, 93, 187, 375, ?

(a) 751
(b) 749
(c) 761
(d) 750

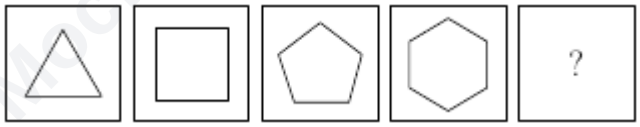
Q12. How many quadrilaterals are there in the given figure?

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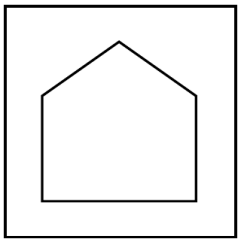


(a) 19
(b) 21
(c) 18
(d) 22

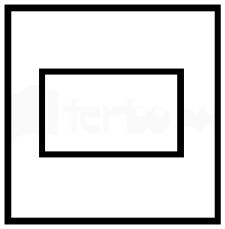
Q13. Select the figure that will come next in the following figure series.



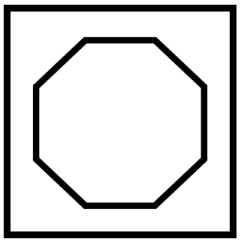
(a)



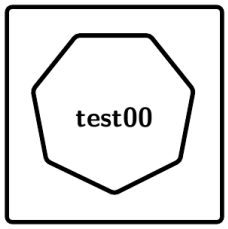
(b)



(c)



(d)



Q14. If 12 @ 2 = 145 and 15 @ 2 = 226, then 24 @ 2 = ?

(a) 577
(b) 676
(c) 575
(d) 576

Q15. In the following question, select the related letters from the given alternatives.

AGHL : CIJN :: DQMZ : ?

(a) ESOB
(b) XSOP
(c) FSOB
(d) FSBO

Q16. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

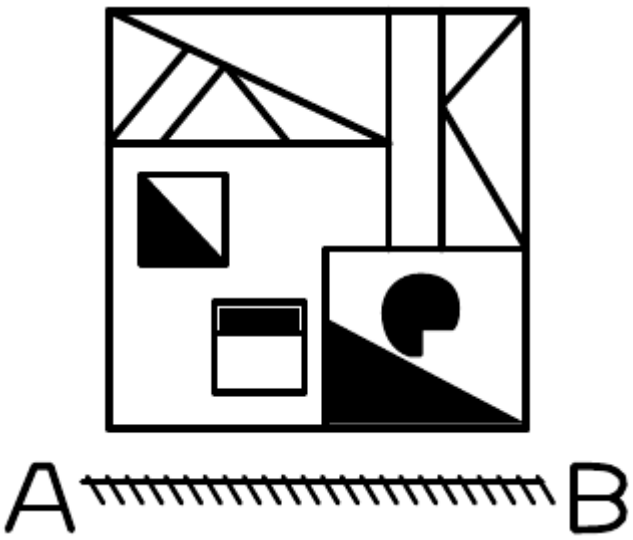
_ _yx_xxy_z

(a) xxzx
(b) xxxy
(c) xyzx
(d) xyxy

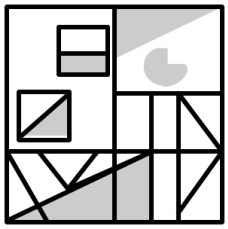
Q17. In a certain code language, 'LANDS' is written as '10' and ‘TRAM’ is written as ‘13’. How will 'TASTE' be written in that language?

(a) 17
(b) 12
(c) 13
(d) 15

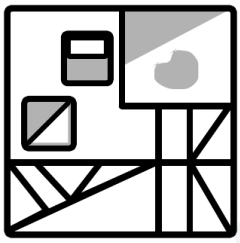
Q18. If a mirror is placed on the line AB, then out of the option figures which figure will be the right image of the question figure?



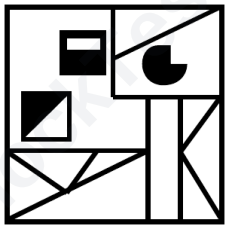
(a)



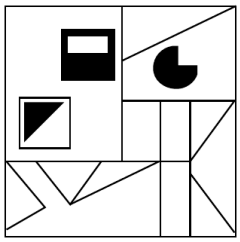
(b)



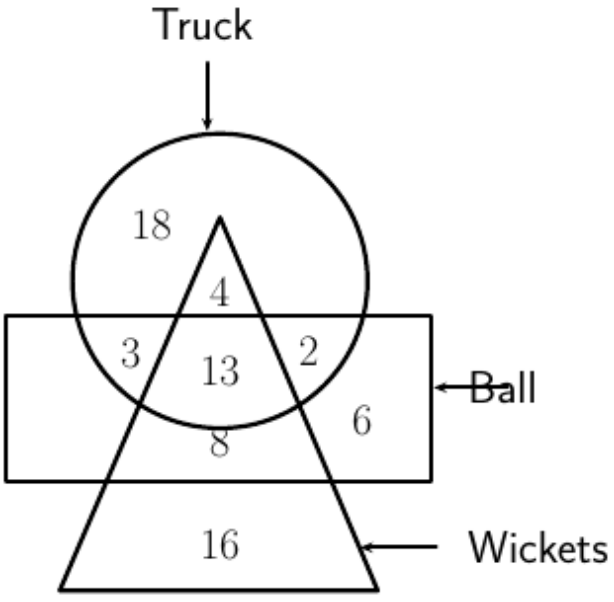
(c)



(d)



Q19. What is the total number of wickets?



(a) 41
(b) 21

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(c) 22
(d) 17

Q20. 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) 32859 – 98523
(b) 78434 – 43487
(c) 58299 – 99285
(d) 63942 – 24936

Q21. 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) 1003 – 1006009
(b) 1009 – 1018091
(c) 1007 – 1014049
(d) 1001 – 1002001

Q22. Out of the given letter clusters, three are similar in a certain manner. However, one letter cluster is NOT like the other three. Select the letter cluster which is different from the rest.

(a) CX
(b) AZ
(c) FU
(d) MP

Q23. After interchanging the given two numbers (Not digits) what will be the values of expression (I) and (II) respectively?

6 and 9

I. $9 \div 3 \times 4 - 6 + 5$

II. $9 + 3 \div 2 \times 4 - 6$

(a) 4 and 3
(b) 10 and 9
(c) 9 and 10
(d) 3 and 4

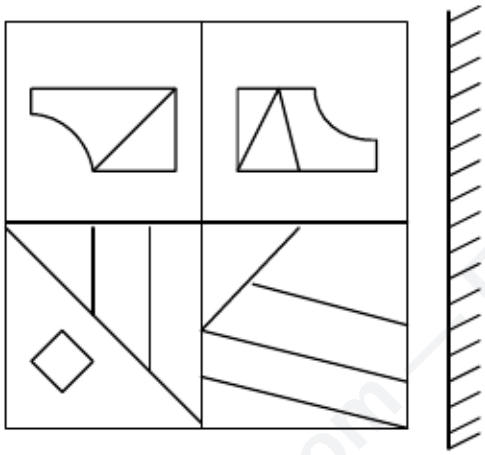
Q24. In a certain code language, 'LOVING' is coded as 'HOJWPM' and 'EAGLE' is coded as 'FMHBF'. What is the code for the word 'TRUTHFUL' in that language?

(a) KTEGSTQS
(b) SQTSGETK
(c) MVGIUVSU
(d) USVUIGVM

Q25. If a mirror is placed on the line AB, then out of the option figures which figure will be the right image of the question figure?

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A

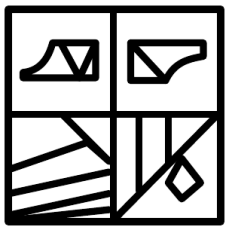


B

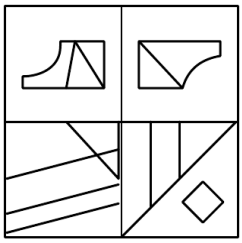
(a)



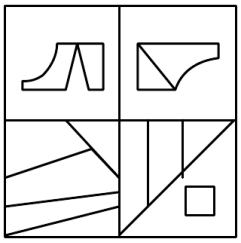
(b)



(c)



(d)



GENERAL INTELLIGENCE

Q26. A bank that has a paid-up capital of _____ and above qualifies for the schedule bank category as listed in the RBI Act 1934.

(a) Rs 1 lakh
(b) Rs 2 lakhs
(c) Rs 5 lakhs
(d) Rs 4 lakhs

Q27. Which of the following was the capital under the rule of Tipu Sultan?

(a) Nazarabad
(b) Mangalore
(c) Seringapatam
(d) Mysore

Q28. Which among the following is a fat-soluble vitamin?

(a) Vitamin C
(b) Vitamin B2
(c) Vitamin B4
(d) Vitamin D

Q29. The Article 371A deals with the special provision with respect to which of the following states?

(a) Assam
(b) Manipur
(c) Nagaland
(d) Sikkim

Q30. Which of the following is an input device?

(a) Speaker
(b) Keyboard
(c) Plotter
(d) Printer

Q31. In which layer of atmosphere does the meteorites burn up on entering from the space?

(a) Stratosphere
(b) Thermosphere
(c) Mesosphere
(d) Exosphere

Q32. Which among the following won the Oscars 2022 for the Best "Documentary (Feature)"?

(a) Flee
(b) Writing with Fire
(c) Attica
(d) Summer of Soul

Q33. Which among the following is the official sport of Maharashtra, as of 2022?

(a) Mallakhamb
(b) Kalaripayattu
(c) Sand sculptures
(d) Dahi-Handi

Q34. Who among the following authors wrote "The Living Mountain"?

(a) Amitav Ghosh
(b) Nitin Gokhale
(c) Anindya Dutta
(d) Kabir Bedi

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Q35. _____ dance is introverted and restrained compared to most other dances of India – the artist never establishes eye contact with the audience.

(a) Kathakali
(b) Manipuri
(c) Kuchipudi
(d) Bharatnatyam

Q36. _____ was the capital city of the Vijaynagar Empire.

(a) Magadha
(b) Kanchi
(c) Hampi
(d) Kalyani

Q37. Part V chapter II of the Indian constitution does not include which of the following provisions?

(a) Joint sitting of both house of Parliament in certain cases
(b) Power of President to promulgate Ordinances during recess of Parliament
(c) Language to be used in Parliament
(d) Restriction on discussion in Parliament

Q38. The northern part of which of the following is also known as Sahyadri?

(a) Satpura Range
(b) Vindhya Range
(c) Western Ghats
(d) Eastern Ghats

Q39. Who won the Men's Single title at French Open 2022?

(a) Rafael Nadal
(b) Stan Wawrinka
(c) Novak Djokovic
(d) Carlos Alcaraz

Q40. Which among the following pairs of rivers and tributaries is incorrect?

(a) Yamuna - Tons
(b) Chambal - Rapti
(c) Godavari - Manjira
(d) Indus - Jhelum

Q41. The Indian Navy signed a contract of White Shipping Information Exchange to exchange information about the ships with the navy of _____ in October 2022.

(a) New Zealand
(b) Brazil
(c) England
(d) France

Q42. Which of the following pairs of "course – feature" is correct for the Himalayan rivers?

I. Upper course – Meander
II. Lower course – Ox bow lake

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

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Q43. Which among the following banks launched the "Gram Seva Program" across six states in India in October 2022?

(a) Industrial Credit and Investment Corporation of India
(b) Reserve Bank of India
(c) State Bank of India
(d) Housing Development Finance Corporation

Q44. Hydra is an example of which of the following phylum of the animal kingdom?

(a) Platyhelminthes
(b) Nematoda
(c) Coelenterata
(d) Porifera

Q45. Which among the following is a flat bone?

(a) Ankle bones
(b) Pelvic bones
(c) Wrist bones
(d) Ribs

Q46. The Union Minister of Youth Affairs and Sports, Shri Anurag Singh Thakur, has inaugurated a Water Sports Center in _____ in October 2022.

(a) Andhra Pradesh
(b) Himachal Pradesh
(c) Rajasthan
(d) Haryana

Q47. Who among the following won the Singapore Open 2022 Super 500 Trophy?

(a) PV Sindhu
(b) Wang Zhi Yi
(c) Aya Ohori
(d) Saena Kawakami

Q48. A multilateral defence exercise named “Exercise Pitch Black 22” is hosted by _____.

(a) Japan
(b) India
(c) Australia
(d) South Korea

Q49. A ritual bath named as “Shahi Snan” is a major event of which of the following festival?

(a) Teej
(b) Holi
(c) Diwali
(d) Kumbh Mela

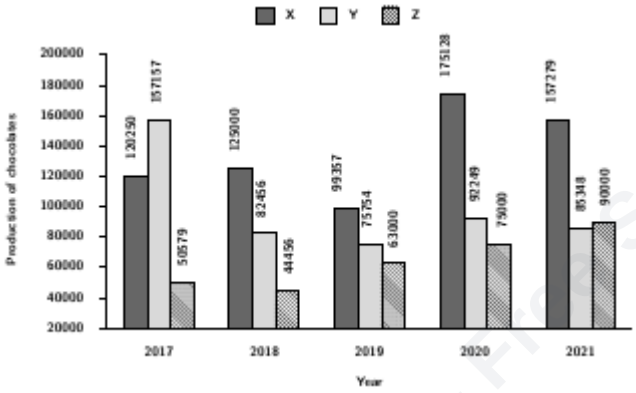
Q50. What is the full form of RPG?

(a) Report Program Generator
(b) Random Program Generator
(c) Report Process Generator
(d) Random Process Generator

QUANTITATIVE APTITUDE

Q51. A Chocolate company prepares three different kinds of chocolate - X, Y and Z. The production of X, Y and Z over a period of five years has been expressed in the bar graph. The total production of Z in 2017 and 2018 is what percentage of the total production of X in 2020 and 2021?

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(a) 32.82%
(b) 86.67%
(c) 28.59%
(d) 45.68%

Q52. If (a + b + c)/2 = 16 and 2ab + 2bc + 2ca = 120, then what is the value of $4a^2 + 4b^2 + 4c^2$?

(a) 2828
(b) 3368
(c) 3616
(d) 3056

Q53. A shopkeeper sells a book at a loss of 40 percent. Had he sold the book for Rs. 120 more, then he would have suffered a loss of 10 percent. To earn a profit of 10 percent, what should be the selling price of the book?

(a) Rs. 400
(b) Rs. 440
(c) Rs. 500
(d) Rs. 650

Q54. ΔPQR is a right angled triangle. angle Q = 90 degree, PQ = 12 cm, QR = 5 cm. What is the value of cosec P + sec R?

(a) 26/5
(b) 13/5
(c) 18/5
(d) 14/5

Q55. What is the expansion of $(2+ 1/p)^2$?

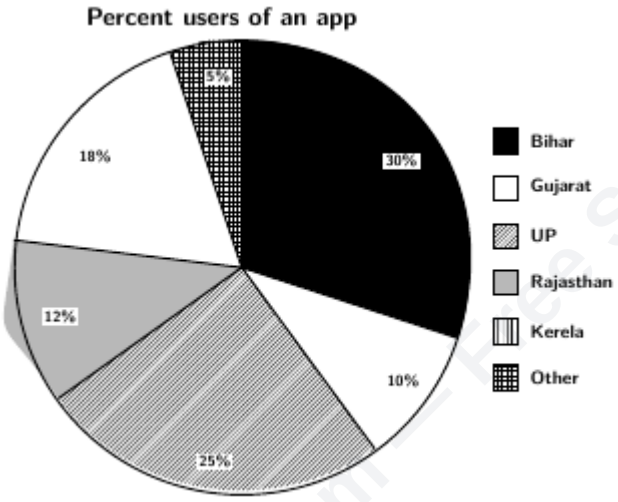
(a) $4+ 4/p + 1/(p^2)$
(b) $2+ 2/p + 1/(p^2)$
(c) $2+ 4/p + 1/(p^2)$
(d) $4+ 2/p + 1/(p^2)$

Q56. Radius of a circle is 10 cm. Distance of chord PQ from the centre is 8 cm. What is the length of chord PQ?

(a) 16 cm
(b) 15 cm
(c) 12 cm
(d) 14 cm

Q57. The following pie chart shows the percentage of users of an app state wise. What is the central angle for Rajasthan?

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(a) 53.2°
(b) 63.5°
(c) 43.2°
(d) 44.2°

Q58. If a - b = 8 and 4ab = 84, then what is the value of $3a^3 - 3b^3$?
(a) 1016
(b) 2032
(c) 1018
(d) 3048

Q59. A certain number of persons can complete a work in 90 days. If there be 10 persons less, it would have taken 10 days more for the work to be completed. Find the total number of persons in the beginning.
(a) 90
(b) 110
(c) 85
(d) 100

Q60. The ratio of two numbers is 3 : 8 and their sum is 88. What is the value of the smaller number?
(a) 11
(b) 36
(c) 64
(d) 24

Q61. A is a point outside of a circle with centre O. AP and AQ are two tangents of the circle. If $AP = a^2 + 14$ and AQ = 239, then what is the value of a ?
(a) 22
(b) 13
(c) 15
(d) 14

Q62. What is the sum of all three digits numbers which one divisible by 20?
(a) 21400
(b) 24300
(c) 25800
(d) 22500

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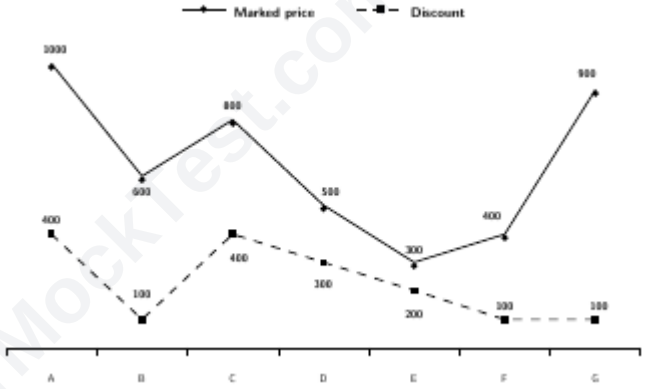
Q63. What is the volume of a cube whose side-length is 6 meter?

(a) 36 cubic meter
(b) 120 cubic meter
(c) 208 cubic meter
(d) 216 cubic meter

Q64. Marked price of a chair is Rs. 1600. After giving two successive discounts of 10 percent and x percent, the chair is sold for Rs. 1368. What is the value of x?

(a) 7
(b) 4
(c) 5
(d) 8

Q65. The line chart given below shows the marked price and value of discount of 7 articles A, B, C, D, E, F and G.



Selling price = Marked price - Discount

Which of the following sequence is correct about the selling price of article A, B, C, D, E, F and G?

(a) G > A > B > C > F > E > D
(b) A > G > B > C > F > D > E
(c) G > A > B > C > F > D > E
(d) A > G > B > C > F > E > D

Q66. If 1/4 of 4/5 + 9/2 of 17/3 - 3/10 = p, then what is the value of p?

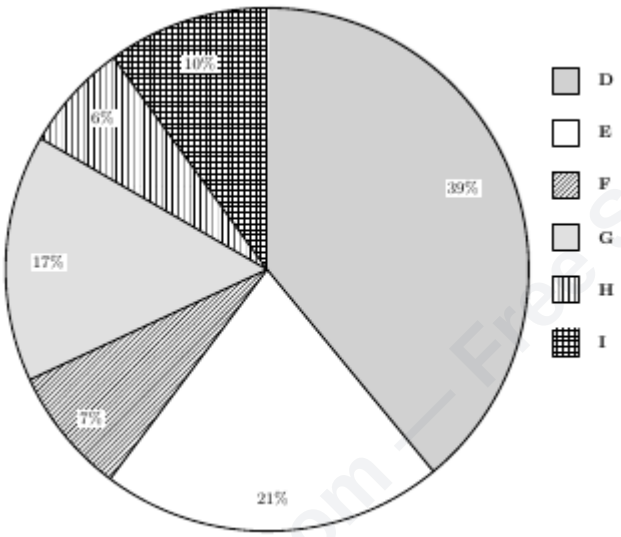
(a) 127/5
(b) 177/5
(c) 255/2
(d) 51/2

Q67. If sec θ + tan θ = 3, then what is the value of sec θ - tan θ ?

(a) 1/3
(b) 6
(c) 1/6
(d) 1/5

Q68. The pie chart given below shows the number of girls in six schools. The total number of girls in all these six schools are 9000, Number of girls in a particular school is shown as a percentage of total number of girls in all these six schools.

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The number of girls in school D is what percent of the number of girls in school I?

(a) 29 percent
(b) 39 percent
(c) 390 percent
(d) 290 percent

Q69. If the price of a product is first increased by 15% and then decreased by 20%, then what is the percent change in the price?

(a) 5% decrease
(b) 8% increase
(c) 5% increase
(d) 8% decrease

Q70. The ratio between the speeds of two cars is 5 : 7. If the first car runs 200 km in 4 hours, then what is the speed of second car?

(a) 65 kmph
(b) 60 kmph
(c) 50 kmph
(d) 70 kmph

Q71. The average weight of R, P and K is 40 kg. If the average weight of P and K is 45 kg and average weight of R and K is 35 kg, then what is the weight of K ?

(a) 40 kg
(b) 70 kg
(c) 90 kg
(d) 120 kg

Q72. If cos 3A = sin(A - 18°), where 3A is an acute angle, what is the value of A?

(a) 110°
(b) 108°
(c) 54°
(d) 27°

Q73. If the areas of two similar triangles are in the ratio 36 : 121, then what is the ratio of their corresponding sides?

(a) 6 : 11
(b) 11 : 5
(c) 6 : 5
(d) 5 : 12

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Q74. What is the length of circumference of a circle with centre O and diameter 9.8 mm ?

(a) 4.8π mm
(b) 9.8π mm
(c) 4.9π mm
(d) 8.8π mm

Q75. What will be the difference between the interest on a sum of Rs. 2,000 at 7% per annum for 3 years and that on a sum of Rs. 3,200 at 6% per annum for 2 years?

(a) Rs. 36
(b) Rs. 44
(c) Rs. 30
(d) Rs. 40

GENERAL AWARENESS

Q76. Select the most appropriate meaning of the given idiom.

Burn your bridges

(a) To have a fight
(b) To disclose a secret
(c) To be puzzled
(d) To eliminate the possibility of return or retreat

Q77. Choose the option that is the correct direct form of the sentence.

She said, since it was evening, she had to go for a run.

(a) She said, “It is evening I must ran.”
(b) She said, “It is evening I might go for a run.”
(c) She said, “It is evening I should go for a run.”
(d) She said, “It is evening I must go for a run.”

Q78. Select the most appropriate option to fill in the blank.

In the early autumn fierce fighting took place, the _____ Serbians bearing a prominent part.

(a) cowardly
(b) unabashed
(c) gallant
(d) bore

Q79. Choose the incorrectly spelt word.

(a) WASSE
(b) FITTER
(c) COURIER
(d) COURSE

Q80. The given sentence is in active voice. Change the voice of the sentence. Select the correct option from the sentences given in options.

Vasant has delivered the speech.

(a) Vasant delivers the speech on time.
(b) The speech was delivered by Vasant.
(c) The speech was timely delivered by Vasant.
(d) The speech has been delivered by Vasant.

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

Abduct

(a) Redeem
(b) Impress

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(c) Sociable
(d) Hijack

Q82. Some parts of one or more sentences have been jumbled up, and labelled A, B, C and D. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence. Their approach sensitized

A. of it. Similarly, behind them, in the halls,

B. flicked on when they came within ten feet

C. a switch somewhere and the nursery light

D. lights went on and off as they left them behind, with a soft automaticity

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

Q83. Select the most appropriate meaning of the given idiom.

Save your breath

(a) To make an effort that will be futile
(b) To hold one's anger
(c) To work hard
(d) To be resentful

Q84. Fill in the blank with an appropriate option.

Participants were _____ a meal of steak and French fries under dim light.

(a) served
(b) nerved
(c) cured
(d) calmed

Q85. Choose the word that can substitute the given group of words.

One who does not express oneself freely

(a) Skeptic
(b) Erudite
(c) Introvert
(d) Pessimist

Q86. Choose the word that means the same as the given word.

Faddish

(a) Unpopular
(b) Phony
(c) Barge
(d) Fashionable

Q87. Select the most appropriate 'one word' for the expression given below.

A person who can speak multiple languages.

(a) Minaret
(b) Polyglot
(c) Spire
(d) Intestate

Q88. Fill in the blank with an appropriate option.

_____ threats to elephants requires public and political will to take action.

(a) Dignifying
(b) Addressing

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(c) Perplexing
(d) Stagnating

Q89. Select the word that is closest in meaning (SYNONYM) to the word given below.

DEPRESSED

(a) DOLEFUL
(b) DYNAMIC
(c) STURDY
(d) NOISY

Q90. Some parts of a few sentences have been jumbled up, and labelled A, B, C and D. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence.

My years in my father's house

A. would have been unbearable had

B. the feel of his hand clutching mine, his

C. I not had my brother. I never forgot

D. refusal to abandon me. Perhaps he and I would have been close even otherwise.

(a) ACBD
(b) DBCA
(c) CBDA
(d) BCDA

Q91. Choose the word that can substitute the given group of words.

A person who has given up their beliefs

(a) Misanthrope
(b) Versatile
(c) Apostate
(d) Crusade

Q92. Parts of the following sentence are given as options. Identify the part that contains a grammatical error. If there is no error, select 'No error'.

Shyam, so good with weapons, fail to find the words / to tell him that everything he'd done / so far, all the compromises he'd made, had been for love.

(a) to tell him that everything he'd done
(b) Shyam, so good with weapons, fail to find the words
(c) so far, all the compromises he'd made, had been for love.
(d) No error

Q93. Parts of the following sentence are given as options. Identify the part that contains a grammatical error. If there is no error, select 'No error'.

That will truly / been a milestone to / celebrate.

(a) No error
(b) celebrate
(c) been a milestone to
(d) That will truly

Q94. Select the word that is closest in meaning (SYNONYM) to the word given below.

THRIFTY

(a) PRUDENT
(b) WASTEFUL
(c) GENEROUS
(d) EXTRAVAGANT

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Q95. Choose the correctly spelt word.

(a) TEMPORERY
(b) CAMOFLAGUE
(c) PSEUDONYM
(d) TABBOO

Directions

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

The man with the shotgun (1) ____ the guard to his knees. He handed up the shotgun to his partner and yanked the guard's wrists up behind his back and locked (2) __ together with a pair of handcuffs. He (3) __ him onto the floor with a kick between the shoulder blades. Then he took his shotgun back and (4) __ to the security gate at the end of the counter. He was short and heavy and moved with peculiar slowness. “Buzz him (5) ____,” his partner said.

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

(a) steered
(b) pushed
(c) motivated
(d) swayed

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

(a) them
(b) that
(c) these
(d) it

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

(a) toppled
(b) ascended
(c) placed
(d) straightened

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

(a) went over
(b) went under
(c) went along
(d) went besides

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

(a) to
(b) on
(c) with
(d) in

ANSWER KEY

1	d	2	a	3	d	4	b	5	b	6	b	7	a	8	b	9	a	10	d
11	a	12	d	13	d	14	a	15	c	16	a	17	c	18	d	19	a	20	a
21	b	22	d	23	a	24	c	25	c	26	c	27	c	28	d	29	c	30	b
31	c	32	d	33	d	34	a	35	b	36	c	37	b	38	c	39	a	40	b
41	a	42	d	43	c	44	c	45	d	46	b	47	a	48	c	49	d	50	a
51	c	52	c	53	b	54	a	55	a	56	c	57	c	58	d	59	d	60	d
61	c	62	b	63	d	64	c	65	c	66	a	67	a	68	c	69	d	70	d

71	a	72	d	73	a	74	b	75	a	76	d	77	d	78	c	79	a	80	d
81	a	82	b	83	a	84	a	85	c	86	d	87	b	88	b	89	a	90	a
91	c	92	b	93	c	94	a	95	c	96	b	97	a	98	a	99	a	100	d

SOLUTIONS

Q1. Answer: (d) Darjeeling

The logic followed here is:

Logic: These are the states of India.

=> Madhya Pradesh, Himachal Pradesh and Maharashtra are the states of India. Whereas Darjeeling is not a state of India.

Hence, the correct answer is "Darjeeling".

Q2. Answer: (a) Table : Furniture

The logic followed here is:

Logic: The left side word is a type of the right-side word.

Car: Vehicle

→ Car is a type of vehicle.

Let's check each option as per the logic,

1) Table: Furniture

→ Table is a type of Furniture. => Follow the logic.

2) Profession: Teacher

→ Profession is not a type of teacher. The order is incorrect.

3) Figure: Triangle

→ The order of the words is incorrect.

4) Stationery: Pen

→ The order of the words is incorrect.

Here, we can see that only Option 1 follow the correct logic and order of the words.

Hence, the correct answer is "Table: Furniture".

Q3. Answer: (d) [figure]

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

Hence, the correct answer is "Option 4".

Q4. Answer: (b) mother-in-law

Given :

T is				
Symbol	•	•	÷	×
Meaning	Mother	Husband	Son	Sister
to U				

Statement given : M ÷ N + O - P

So,

• M ÷ N → M is the son of N.

• N + O → N is the mother of O.

• O - P → O is the husband of P.

Thus, according to the final arrangement N is mother-in-law of P.

Hence, "Mother-in-law" is the correct answer.

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Q5. Answer: (b) Neither I nor II follows

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

Conclusions:

I. All males are old → Does not follow (As all males are females and some females are old. So, it is possible but not definitely true)

II. Some males are old → Does not follow (As all males are females and some females are old. So, it is possible but not definitely true)

Therefore Here, Neither I nor II follows.

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

Q6. Answer: (b) [figure]

The mirror image of the given figure is shown below:

Hence, the correct answer is "Option 2".

Q7. Answer: (a) 3, 5, 4, 1, 2

The correct order as per the dictionary is:

3) Fan

5) Fighter

4) Finance

1) Flight

2) Fly

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

Q8. Answer: (b) Furniture : Wood

The logic followed here is:

Logic: The left side word represents the product and the right-side word represents its source.

Curd: Milk

→ Milk is used to make curd.

Let's check each option as per the logic,

1) Pulp: Paper

→ Pulp is used to make paper, not the other way around.

2) Furniture: Wood

→ Furniture is made from Wood. This fits the logic.

3) Ore: Metal

→ Metal is made from Ore, not the other way around.

4) Hairs: Black

→ Black is not a source or raw material used to produce hair.

Here, we can see that only Option 2 follow the logic.

Hence, the correct answer is "Furniture: Wood".

Q9. Answer: (a) 641

Logic :

First number - Second number = 321

So,

• 432 : 111

=> 432 - 111 = 321

And,

• 549 : 228

=> 549 - 228 = 321

Similarly,

• ? : 320

=> ? - 321 = 320

=> ? = 320 + 321

=> ? = 641

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Hence, "641" is the correct answer.

Q10. Answer: (d) (108, 58, 25)

The logic followed here is:

Logic: Third Number = (Difference between first and second number) ÷ 2

(12, 28, 8):

→ 8 = (28 - 12) ÷ 2

→ 8 = 16 ÷ 2

(72, 48, 12):

→ 12 = (72 - 48) ÷ 2

→ 12 = 24 ÷ 2

Let's check each option as per the logic,

1) (63, 36, 17):

→ 17 = (63 - 36) ÷ 2

→ 17 ≠ 27 ÷ 2

2) (119, 29, 55):

→ 55 = (119 - 29) ÷ 2

→ 55 ≠ 90 ÷ 2

3) (97, 55, 24):

→ 24 = (97 - 55) ÷ 2

→ 24 ≠ 42 ÷ 2

4) (108, 58, 25):

→ 25 = (108 - 58) ÷ 2

→ 25 = 50 ÷ 2 => Follow the logic.

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

Hence, the correct answer is "(108, 58, 25)".

Q11. Answer: (a) 751

The logic followed here is :

Hence, "751" is the correct answer.

Q12. Answer: (d) 22

The Number of quadrilaterals in the given figure are shown below:

Thus, as marked above there are total 22 quadrilaterals.

Hence, "22" is the correct answer.

Q13. Answer: (d) [figure]

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

Logic: Number of lines are increasing subsequently.

Final series is :

Hence, ‘option - (4)’ is the correct answer.

Q14. Answer: (a) 577

Logic :

• @ = power

• (1st number) power to 2nd number + 1 = 3rd number

Given :

• 12 @ 2 = 145

$(12)^2 + 1 = 145$

144 + 1 = 145

145 = 145 (LHS = RHS)

And,

• 15 @ 2 = 226

$(15)^2 + 1 = 226$

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225 + 1 = 226

226 = 226 (LHS = RHS)

Similarly,

• 24 @ 2 = ?

$(24)^2 + 1 = ?$

576 + 1 = ?

577 = ?

Hence, "577" is the correct answer.

Q15. Answer: (c) FSOB

Logic : (2) is added to the position value according to English alphabetic series.

So,

• AGHL : CIJN

Similarly,

• DQMZ : ?

Hence, "FSOB" is the correct answer.

Q16. Answer: (a) xxzx

Let's check each option,

1	**x**	**x**	**y**	**x**	**z**	**x**	**x**	**y**	**x**	**z**
2	x	x	y	x	x	x	x	y	y	z
3	x	y	y	x	z	x	x	y	x	z
4	x	y	y	x	x	x	x	y	y	z

Here, we can see that Option 1 follows a repetitive pattern of " xxyxz ".

Hence, the correct answer is "xxzx".

Q17. Answer: (c) 13

The logic followed here is :- Sum of the position value according to English alphabetic series is divided by the number of letters within the word.

So,

• 'LANDS' is written as '10'

And,

• ‘TRAM’ is written as ‘13’

Similarly,

• 'TASTE' is written as :

Hence, the correct answer is "13".

Q18. Answer: (d) [figure]

The mirror image of the given figure is shown below:

Hence, the correct answer is "Option 4".

Q19. Answer: (a) 41

The total number of wickets are = (16 + 8 + 13 + 4) = 41

Hence, the correct answer is " 41 ".

Q20. Answer: (a) 32859 – 98523

Logic : 1st number = 2nd number is the reverse of 1st number

So,

• Option - (1) : 32859 – 98523

32859 → Reverse order → 95823

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95823 ≠ 98523 (LHS ≠ RHS)
• Option - (2) : 78434 – 43487
78434 → Reverse order → 43487
43487 = 43487 (LHS = RHS)
• Option - (3) : 58299 – 99285
58299 → Reverse order → 99285
99285 = 99285 (LHS = RHS)
• Option - (4) : 63942 – 24936
63942 → Reverse order → 24936
24936 = 24936 (LHS = RHS)
Hence, "Option - (1)" is the correct answer.

Q21. Answer: (b) 1009 – 1018091

Logic : Square of 1st number = 2nd number
So,
• Option - (1) : 1003 – 1006009
$(1003)^2 = 1006009$
1006009 = 1006009 (LHS = RHS)
• Option - (2) : 1009 – 1018091
$(1009)^2 = 1018091$
1018081 ≠ 1018091 (LHS ≠ RHS)
• Option - (3) : 1007 – 1014049
$(1007)^2 = 1014049$
1014049 = 1014049 (LHS = RHS)
• Option - (4) : 1001 – 1002001
$(1001)^2 = 1002001$
1002001 = 1002001 (LHS = RHS)
Hence, "Option - (2)" is the correct answer.

Q22. Answer: (d) MP

The logic followed here is:
Logic: The two letters of the cluster are opposite to each other as per the positional value table.
Let's check each option as per the logic,
1) CX
→ C and X are opposite to each other.
2) AZ
→ A and Z are opposite to each other.
3) FU
→ F and U are opposite to each other.
4) MP
→ M and P are not opposite to each other.
Here, we can see that Option 4 doesn't follow the logic and is different from the others.
Hence, the correct answer is "MP".

Q23. Answer: (a) 4 and 3

After interchanging 6 and 9, the equations we get:
I. 6 ÷ 3 × 4 – 9 + 5
II. 6 + 3 ÷ 2 × 4 – 9
Now, let's find their values:
I. 6 ÷ 3 × 4 – 9 + 5
→ 2 × 4 – 9 + 5
→ 8 – 9 + 5
→ 13 – 9 = 4

II. 6 + 3 ÷ 2 × 4 – 9

→ 6 + 3/2 × 4 – 9

→ 6 + 6 – 9

→ 12 – 9 = 3

Hence, the correct answer is "4 and 3".

Q24. Answer: (c) MVGIUVSU

The logic followed here is :- (1) is added to the position value according to English alphabetic series diagonally.

So,

• 'LOVING' is coded as 'HOJWPM'

And,

• 'EAGLE' is coded as 'FMHBF'

Similarly,

• 'TRUTHFUL' is written as :

Hence, the correct answer is "MVGIUVSU".

Q25. Answer: (c) [figure]

The mirror image of the given figure is:

Hence, the correct answer is "Option 3".

Q26. Answer: (c) Rs 5 lakhs

The correct answer is Rs 5 lakhs.

Key Points

Scheduled banks are covered under the 2nd Schedule of the Reserve Bank of India Act, 1934. To qualify as a scheduled bank, the bank should conform to the following conditions:

• A bank that has a paid-up capital of Rs. 5 Lakh and above qualifies for the schedule bank category

• A bank requires to satisfy the central bank that its affairs are not carried out in a way that causes harm to the interest of the depositors

• A bank should be a corporation rather than a sole-proprietorship or partnership firm.

Additional Information

Banks are the institutional bodies that accept deposits and grant credit to the entities and play a major role in maintaining the economic stature of a country.

• In India, the Reserve Bank of India (RBI) is the apex banking institution that regulates the monetary policy in the country.

• The banking sector of India can be broadly divided into two major groups' i.e. scheduled banks and Non-Scheduled Banks.

• Banks that have been included in the second schedule of the RBI Act, 1934 are called the scheduled bank while non scheduled banks are not included in the second schedule of the RBI Act,1934.

Q27. Answer: (c) Seringapatam

The correct answer is Srirangapatnam.

• Tipu Sultan built this palace in 1784 and ruled Mysore from Srirangapatnam.

Key Points

• Tipu Sultan:

• In the Fourth Anglo-Mysore War, a combined force of British East India Company troops, supported by the Marathas and the Nizam of Hyderabad defeated Tipu. He was killed on 4 May 1799 while defending his stronghold of Seringapatam.

• Tipu Sultan also known as the Tiger of Mysore was the ruler of the Kingdom of Mysore, Karnataka.

• He introduced a number of administrative innovations during his rule, including a new coinage system and Mauludi Lunisolar calendar and a new land revenue system.

• He initiated the growth of the Mysore silk industry.

• He was also a patron of science and technology and is credited as the 'pioneer of rocket technology in India'. He expanded the iron-cased Mysorean rockets and commissioned the military manual Fathul Mujahidin.

• He deployed the rockets against the advances of British forces and their allies during the Anglo-Mysore Wars, including the Battle of Pollilur and the Siege of Srirangapatna.

• He won important victories against the British in the Second Anglo-Mysore War. He negotiated the 1784 Treaty of Mangalore with them after his father Hyder Ali died from cancer in December 1782 during the Second Anglo-Mysore War.

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• In the Third Anglo-Mysore War, he was forced into the Treaty of Seringapatam, losing a number of previously conquered territories, including Malabar and Mangalore.

• He sent emissaries to foreign states, including the Ottoman Empire, Afghanistan, and France, in an attempt to rally opposition to the British.

• Tipu was a great lover of democracy and a great diplomat who gave his support to the French soldiers at Seringapatam in setting up a Jacobin Club in 1797. Tipu himself became a member of the Jacobin Club and allowed himself to be called Citizen Tipu.

• He planted the Tree of Liberty at Seringapatam.

Additional Information

• Important treaties with the British:

• Four wars were fought with Mysore (1767-69, 1780-84, 1790-92 and 1799).

• 1767-69: Treaty of Madras

• 1780-84: Treaty of Mangalore

• 1790-92: Treaty of Seringapatam

• 1799: Subsidiary Alliance

Q28. Answer: (d) Vitamin D

The correct answer is Vitamin D.

Key Points

• Vitamin is an organic non-protein substance that is required by an organism for normal metabolic function but cannot be synthesized in sufficient quantity by that organism.

• These can be divided into two categories: fat-soluble and water-soluble.

Fat-Soluble vitamins

• Fat-soluble vitamins are soluble in fats.

• They are absorbed by fat globules that travel through the small intestines and into the general blood circulation within the body.

• Unlike water-soluble vitamins, fat-soluble vitamins are stored in the body when they are not in use.

• Vitamin A, D, and E K are fat-soluble.

Water-soluble vitamins

• Water-soluble vitamins dissolve in water, which means these vitamins and nutrients dissolve quickly in the body.

• Unlike fat-soluble vitamins, water-soluble vitamins are carried to the body's tissues, but the body cannot store them.

• Any excess amounts of water-soluble vitamins simply pass through the body

• Vitamin B and Vitamin C are water-soluble.

Additional Information

Vitamin	Deficiency	Symptoms
Vitamin A	Night blindness	Poor vision in low light, dry eyes
	Xerophthalmia	Dryness, ulcers, and clouding of the cornea
	Bitot's spots	Foamy patches on the white of the eye
	Keratomalacia	Softening of the cornea, leading to blindness
Vitamin B1	Beriberi	Fatigue, muscle weakness, peripheral neuropathy
	Wernicke-Korsakoff syndrome	Confusion, memory problems, ataxia (alcohol-related)
Vitamin B2	Ariboflavinosis	Cracked lips, inflamed tongue, eye and skin disorders
Vitamin B3	Pellagra	Dermatitis, diarrhea, dementia
Vitamin B6	Pyridoxine deficiency	Skin rashes, anemia, depression, confusion
	Peripheral neuropathy	Numbness, tingling, and pain in the extremities

Vitamin B12	Pernicious anemia	Fatigue, weakness, pale skin, neurological symptoms
	Megaloblastic anemia	Enlarged red blood cells, fatigue, shortness of breath
Vitamin C	Scurvy	Fatigue, swollen and bleeding gums, slow wound healing
		The weakened immune system, joint pain, anemia
Vitamin D	Rickets	Weak and brittle bones, delayed growth in children
	Osteomalacia	Softening of the bones, muscle weakness
	Vitamin D deficiency	Fatigue, muscle and bone pain, decreased immunity
Vitamin E	Vitamin E deficiency	Neuromuscular problems, muscle weakness
		Loss of coordination, impaired vision
Vitamin K	Vitamin K deficiency	Easy bruising, excessive bleeding, poor clotting

Q29. Answer: (c) Nagaland

The correct answer is Nagaland.

Key Points

• Article 371A

• It states that no act of Parliament would apply to the state of Nagaland in a matter relating to religion.

• Nagaland must pass a resolution for an act to be applicable to the state.

• The governor is given special responsibilities with respect to law and order in the state as well.

Additional Information

Article-No.	Subject Matter
371	Maharashtra and Gujarat
371A	Nagaland
371B	Assam
371C	Manipur
371D	Andhra Pradesh/ Telangana
371E	Andhra Pradesh
371F	Sikkim
371G	Mizoram
371H	Arunachal Pradesh
371I	Goa
371J	Karnataka

Q30. Answer: (b) Keyboard

The correct answer is Keyboard.

Key Points

• The keyboard is an input peripheral of the computer system. It takes the input from the user and sends it to the system.

• The keyboard is consisting of letters, numbers and special characters, and functional keys like shift, control, alt, tab, and so on. It has 106 keys.

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• The keyboard is recognized as a typing device.

Additional Information

• The word computer is derived from the word compute. In the year 1833, English mechanical engineer Charles Babbage designed the first analytical engine. He is known as the father of the computer.

• In the beginning, computers are used for calculating large numbers and can only store a small amount of data.

• The software and the hardware parts of the computers are running together to execute the operations smoothly.

• Software is a set of instructions or programs given to the computers' hardware to perform a task. For example, system software (OS), application software(MS Office, Browser), and programming software(compiler).

• The hardware parts of the computer are tangible parts of the computer which collect the input (e.g. keyboard, mouse, scanner etc.), and process (e.g. C.P.U). It and display it to the respective output devices(e.g. monitor, printer etc.). Sometimes it stores the processed data in the memory.

Q31. Answer: (c) Mesosphere

The correct answer is Mesosphere.

Key PointsMesosphere:

• It lies above the stratosphere, which extends up to a height of 80 km.

• In this layer, once again, the temperature starts decreasing with the increase in altitude and reaches up to minus 100°C at a height of 80 km.

• Meteorites burn up in this layer on entering from space.

• The upper limit of the mesosphere is known as mesopause.

Additional InformationStratosphere:

• It is the second major strata of air in the atmosphere.

• It is found above the tropopause and extends up to a height of 50 km.

• One important feature of the stratosphere is that it contains the ozone layer.

• This layer absorbs ultra-violet radiation and shields life on the earth from an intense, harmful form of energy.

• The air temperature in the stratosphere remains relatively constant up to an altitude of 15 miles (25 km).

• Then it increases gradually to up to stratopause.

Troposphere:

• It is the lowermost layer of the atmosphere.

• Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator.

• The thickness of the troposphere is greatest at the equator because heat is transported to great heights by strong convectional currents.

• This layer contains dust particles and water vapour.

• All changes in climate and weather take place in this layer.

• The temperature in this layer decreases at the rate of 1°C for every 165m of height.

• This is the most important layer for all biological activity.

Thermosphere

• It is located between 80 and 400 km above the mesopause.

• It contains electrically charged particles known as ions, and hence, it is also known as the ionosphere.

• Radio waves transmitted from the earth are reflected back to the earth by this layer.

• This layer helps in the transmission of radio waves.

• The temperature here starts increasing with height.

Exosphere:

• It is the uppermost layer of the atmosphere.

• This is the highest layer but very little is known about it.

• Whatever contents are there, these are extremely rarefied in this layer, and it gradually merges with outer space.

Q32. Answer: (d) Summer of Soul

Correct Answer Summer of Soul

Key Points:

• The Academy Awards, popularly known as the Oscars, are awards for artistic and technical merit in the film industry.

• They are regarded as the most famous and prestigious awards in the entertainment industry.

• Given annually by the Academy of Motion Picture Arts and Sciences (AMPAS), the awards are international recognition of

excellence in cinematic achievements, as assessed by the Academy's voting membership.

Full list of winners of the Oscars 2022:

• Best picture- CODA
• Best Cinematography- Dune
• Best Director- Jane Campion for The Power of the Dog
• Best actress - Jessica Chastain in The Eyes of Tammy Faye
• Best actor- Will Smith in King Richard
• Best supporting actress- Ariana DeBose in West Side Story
• Best supporting actor- Troy Kotsur in CODA
• Best animated feature film- Encanto
• Best documentary feature- Summer of Soul
• Best international feature film- Drive My Car from Japan
• Best original song- No Time To Die by Billie Eilish and Finneas O'Connell
• Best original music score- Dune
• Best original screenplay- Belfast
• Best adapted screenplay- CODA
• Best short documentary- The Queen of Basketball

Q33. Answer: (d) Dahi-Handi

The correct answer is Dahi-Handi

Key Points:

• Maharashtra State officially recognised Dahi Handi as an adventure sport.
• The participants, known as Govindas, will be recognised as athletes.
• Dahi Handi is an occasion connected to the Hindu festival of Krishna Janmashtami in Maharashtra.
• It involves earthen pots filled with yoghurt. In this game, "Govindas" dons colorful clothing and builds a human pyramid to shatter the hanging pot.

Additional Information:Kalaripayattu:

• Kalaripayattu is a martial art.
• It originated in Kerala from the 3rd century BC to the 2nd century AD.
• The place where this martial art is practised is called a 'Kalari'.
• It is considered to be among the oldest martial arts still in existence.

Mallakamb:

• A Traditional Indian sport, Mallakamb involves a gymnast performing feats with a vertical wooden pole or rope.
• The word, Mallakamb, also refers to the pole used in the sport.
• The word 'Mallakhamb' comes from coalescing two words- 'malla' meaning wrestler and ' khamb' meaning pole.
• The gymnast performs aerial yoga postures on a wooden pole, a cane, or simply a rope.
• Traditionally, a wooden pole is used to perform yoga postures, which are made of Sheesham or Indian Rosewood and smoothened by castor oil.
• Over the years, three types of mallakhamb variations have gained popularity in competitions.
• They are pole mallakhamb, hanging mallakhamb, and rope mallakhamb.
• Pole mallakhamb is essentially the traditional form of mallakhamb.
• Competitors perform on a wooden pole that is 2.6m in height and has a circumference of 55cm at the base.
• The pole gradually tapers to a circumference of 35cm at the top.
• Hanging mallakhamb, meanwhile, uses a shorter pole suspended with hooks or chains as the prop.
• The bottom of the pole in the hanging mallakhamb doesn't touch the ground.
• Rope mallakhamb is performed on a suspended rope that is 5.5m long and 2cm in diameter.

Q34. Answer: (a) Amitav Ghosh

The Correct Answer is Amitav Ghosh.

Key Points

• "The Living Mountain" is a new storybook written during the pandemic by Jnanpith winner and internationally renowned author Amitav Ghosh.
• It's a cautionary tale about how humans have systematically manipulated nature, leading to an environmental collapse in our

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time.

• The Living Mountain will be published as a special standalone edition by HarperCollins Publishers India in January 2022 under its prestigious Fourth Estate imprint.

• The book will also be released in Hindi, as well as as an ebook and an audiobook.

Important Points

• Amitav Ghosh is an Indian writer who won the 54th Jnanpith award for his work in English literature.

• Ghosh's works include The Circle of Reason (his 1986 debut novel), The Shadow Lines (1988), The Glass Palace (2000), The Hungry Tide (2004), and Sea of Poppies (2008), the first volume of The Ibis trilogy, set in the 1830s just before the Opium War and encapsulating the East's colonial history.

• On November 20, 2016, Ghosh was honored with a lifetime achievement award at Tata Literature Live, the Mumbai LitFest.

Q35. Answer: (b) Manipuri

Correct Answer Manipuri

Key Points

• Manipuri dance originates from the northeastern Indian state of Manipur.

• It is known for its subtlety and grace.

• Compared to other Indian classical dance forms, Manipuri dance is more introverted and restrained.

• Dancers typically maintain a downcast gaze and rarely make direct eye contact with the audience.

• This unique aesthetic adds to the dance's distinctive charm.

• The dance form is deeply intertwined with the spiritual traditions of the region.

• It often depicts episodes from the life of Lord Krishna.

Additional Information:

Dance	State	Noted Dancers
Bharatanatyam	Tamil Nadu	• Rukmini Devi Arundale - Mallika Sarabhai - Yamini Krishnamurthy - Ananda Shankar Jayant
Kuchipudi	Andhra Pradesh	• Raja Reddy - Yamini Krishnamurthy
Kathak	Uttar Pradesh	• Shambhu Maharaj - Sitara Devi - Pandit Birju Maharaj
Manipuri	Manipur	• Guru Bipin Singh, - Rajkumar Singhajit Singh, - Charu Sija Mathur
Kathakali	Kerala	• Kalamandalam Ramankutty Nair - Kalamandalam Gopi - Madavoor Vasudevan Nair
Odissi	Odisha	• Kelucharan Mohapatra, - Sonal Mansingh
Mohiniyattam	Kerala	• T. Chinnammu Amma, - Kalamandalam Sugandhi
Sattriya	Assam	• Indira PP Bora - Maniram Datta Mokta

Q36. Answer: (c) Hampi

The correct answer is Hampi.

Key Points:

• Hampi was the capital of the Vijayanagara kingdom.

• It served as the capital of the Vijayanagara Empire in the 14th century

• Hampi was a city located in northern Karnataka.

• Hampi is a famous pilgrimage centre of the Hindu and Jain religions.

• It is situated on the banks of the Tungabhadra River.

• Hampi-Vijayanagara was considered the world's second-largest medieval-era city after Beijing By 1500 CE.

• Group of Monuments at Hampi was added to UNESCO World Heritage Sites in 1986.

• The site has about 1,600 monuments.

Additional InformationMagadha:

• Rajagriha or modern-day Rajgir was the first capital of Magadha.

• Pataliputra was a city in ancient India, built by Magadha ruler Udayin in 490 BCE as a small fort near the Ganges river.

• Patliputra was the capital of major powers in ancient India, like the Nanda Empire, the Shishunaga Empire, the Maurya Empire, the Gupta Empire, and the Pala Empire.

• Patliputra renamed Patna by Sher Shah Suri.

• Patliputra became one of the largest cities in the world during the Maurya period.

• Magadha was counted as one of the sixteen Mahajanapadas, and the kingdom was in southern Bihar in ancient India.

Kanchi:

• The capital city of the Pallavas was Kanchipuram.

• The Pallavas emerged as a formidable power in the South around the 4th century AD and were at the height of their power in the seventh century AD.

• They were able to sustain their rule for about 500 years.

• They built great cities, centres of learning, temples, and sculptures and influenced a large part of Southeast Asia in culture.

Q37. Answer: (b) Power of President to promulgate Ordinances during recess of Parliament

The correct answer is Option 2.

Key Points

• Article 123 of the Indian Constitution grants the President the power to promulgate ordinances when both houses of Parliament are not in session.

• This power allows the President to issue temporary laws that have the same effect as an Act of Parliament.

• These ordinances must be approved by Parliament within a specified period of time or they will cease to operate.

• It's important to note that the President's power to promulgate ordinances is not absolute and can be subject to certain limitations and conditions as prescribed by the Constitution.

• The ordinances must meet the requirements of immediate necessity and urgency, and they cannot be issued on matters that fall outside the legislative competence of Parliament.

Additional Information

• The President of India, as the head of state and the constitutional head of the executive, has various powers and functions outlined in the Indian Constitution. Some of the key powers of the President include:

• Executive Powers

• Legislative Powers

• Diplomatic Powers

• Emergency Powers

• Judicial Powers

Q38. Answer: (c) Western Ghats

The correct answer is Option 3.

Key Points

• The northern part of the Western Ghats is also known as Sahyadri.

• The Western Ghats is a mountain range that runs parallel to the western coast of the Indian subcontinent, covering several states including Maharashtra, Karnataka, Kerala, Tamil Nadu, and Goa.

• The Sahyadri name is commonly used to refer to the northern part of the Western Ghats.

Additional Information

• Satpura Range: The Satpura Range is a mountain range located in central India.

• It extends across the states of Madhya Pradesh, Maharashtra, and Chhattisgarh.

• It is a separate mountain range with its own distinct geographical features.

• Vindhya Range: The Vindhya Range is a mountain range in central India, primarily located in the states of Madhya Pradesh and Uttar Pradesh.

• It runs parallel to the northern edge of the Deccan Plateau.

• It is a distinct mountain range separate from Sahyadri.

• Western Ghats: The Western Ghats is a mountain range that runs parallel to the western coast of the Indian subcontinent.

• It extends from the state of Gujarat in the north to Tamil Nadu in the south.

• The Western Ghats are also known as Sahyadri, particularly the northern part of the range.

• It is a UNESCO World Heritage Site and is known for its rich biodiversity and numerous hill stations.
• Eastern Ghats: The Eastern Ghats is a discontinuous range of mountains along the eastern coast of India.
• It stretches from West Bengal in the north to Tamil Nadu in the south.
• They have their own geographical characteristics and are known for their scenic beauty and important river systems.

Q39. Answer: (a) Rafael Nadal

The correct answer is Option 1.

Key Points

• Rafael Nadal is a professional Lawn Tennis player from Spain.
• Spaniard Rafael Nadal on 5 June 2022 won the 14th singles title of the French open beating Casper Ruud of Norway 6-3, 6-3, 6-0 in the final.
• With this victory, 36-year-old Nadal has become the oldest champion of the French Open.
• It is his 22nd Grand Slam title.
• In women's singles, World Number One Iga Swiatek of Poland won the 2022 title by beating Coco Gauf in Paris on 4 June 2022.

Additional Information

• The French Open, also known as Roland-Garros, is a major tennis tournament.
• It is held over two weeks at the Stade Roland Garros in Paris, France, beginning in late May each year.
• The tournament and venue are named after the French aviator Roland Garros.
• The French Open:
• Founded: 1891
• Location: Paris, France
• Surface: Clay – outdoors (1908–present); Sand – outdoors (1891–1907)
• Japan's Ena Shibahara and Wesley Koolhof of the Netherlands won the French Open mixed doubles title on 2 June 2022.

Q40. Answer: (b) Chambal - Rapti

The correct answer is Option 2.

Key Points

• The incorrect pair of rivers and tributaries from the options is: Chambal - Rapti
• Chambal River is not a tributary of the Rapti River.
• The Chambal River is a major river in central India, and it is not a tributary of the Rapti River.

Additional Information

• Yamuna - Tons:
• The Yamuna River is a major river in northern India and is one of the longest tributaries of the Ganges River.
• The Tons River is a tributary of the Yamuna River.
• It flows through the Indian states of Uttarakhand and Himachal Pradesh before joining the Yamuna River near Dehradun.
• Godavari - Manjira:
• The Godavari River is the second-longest river in India and flows through the states of Maharashtra, Telangana, Andhra Pradesh, and Odisha.
• The Manjira River is a major tributary of the Godavari River.
• It originates in the Balaghat Range in Maharashtra and flows through Telangana before joining the Godavari River near Medak.
• Indus - Jhelum:
• The Indus River is one of the longest rivers in Asia and flows through China, India, and Pakistan.
• The Jhelum River is a tributary of the Indus River.
• It originates in the Himalayas in Indian-administered Jammu and Kashmir and flows through Pakistan before joining the Indus River near the city of Trimmu.

Q41. Answer: (a) New Zealand

The correct answer is Option 1.

Key Points

• The signing of a contract between the Royal New Zealand Navy and the Indian Navy for the exchange of White Shipping Information Exchange (WSIE) indicates a step towards strengthening maritime cooperation and fostering openness in the maritime domain.
• The agreement was signed by Admiral R. Hari Kumar, Chief of Naval Staff of the Indian Navy, and Rear Admiral David Proctor, Chief of the New Zealand Navy.

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• The White Shipping Information Exchange is a mechanism that allows countries to share information about commercial shipping in their respective regions.

• This exchange of information helps in enhancing maritime situational awareness, promoting safety at sea, and preventing any potential security threats.

Q42. Answer: (d) Only II

The correct answer is Option 4.

Key Points

• In the Himalayan rivers, the lower course is indeed characterized by the formation of meanders.

• As the river reaches flatter terrain and the flow slows down, it begins to meander, forming bends and curves accentuated to such an extent that the inner ends of the loop come close enough to get disconnected from the main channel and exist as independent water bodies called as oxbow lakes.

• However, ox-bow lakes are not typically formed in the upper course of Himalayan rivers.

Additional Information

• The Himalayan region is home to several major rivers that are crucial water sources for millions of people in South Asia.

• These rivers originate from the glaciers and snowfields of the Himalayas and play a vital role in the ecological and economic systems of the region.

Q43. Answer: (c) State Bank of India

The correct answer is 'State Bank of India'.

Key Points

• On the occasion of Gandhi Jayanti, the State Bank of India announced that it will adopt 30 remote villages across India under the 4th phase of the ‘SBI Gram Seva’ program on October 2.

• Under the flagship scheme of the SBI Foundation, the bank will adopt remote villages across Aspirational Districts in Haryana, Gujarat, Maharashtra, Punjab, Tamil Nadu, and West Bengal.

• Launched under the Corporate Social Responsibility of the bank, the program emphasises a comprehensive development of villages by active intervention in areas like education, healthcare, livelihoods, and infrastructure.

• As of now, the program has adopted 100 villages across 16 States in 3 phases.

• With this launch, the program’s outreach will expand to a total of 130 villages, of which 75 villages are from Aspirational Districts notified by the NITI Aayog, Government of India.

• 16 out of the total 17 SBI Circles of the country come under the ambit of the scheme.

• The CSR arm of the bank, SBI Foundation is actively working on areas like rural development, healthcare, education, sustainability and environment, livelihood and skill development, etc.

• Many of its programs focus on youth empowerment and the promotion of sports activities in the country.

Additional Information

• SBI is the 49th largest bank in the world by total assets and ranked 221st in the Fortune Global 500 list of the world's biggest corporations of 2020, being the only Indian bank on the list.

• State Bank of India ranked 236th in the Fortune Global 500 of the world's biggest corporations of 2022 list.

• The bank descends from the Bank of Calcutta, founded in 1806 via the Imperial Bank of India, making it the oldest commercial bank in the Indian subcontinent.

Q44. Answer: (c) Coelenterata

The correct answer is Coelenterata.

Key Points

• Hydra is an example of the phylum Coelenterata.

• Coelenterates are a group of animals that have radial symmetry, a gastrovascular cavity, and stinging cells called nematocysts.

• Hydras are small, freshwater animals that have cylindrical body with tentacles around their mouth.

• They feed on small animals that they capture with their tentacles.

• Hydras reproduce both sexually and asexually.

• Hydras have radial symmetry, which means that they have the same number of parts arranged around a central axis from any point.

• Hydras have a gastrovascular cavity, which is a single cavity that serves both for digestion and for circulation.

• Hydras have stinging cells called nematocysts, which they use to capture prey.

• Hydras are small, freshwater animals.

• Hydras reproduce both sexually and asexually.

Important Points

Phylum	Important information
Platyhelminthes	Flatworms, such as planarians, have bilateral symmetry and a flat body. They are mostly hermaphrodites.
Nematoda	Roundworms, such as Ascaris, have cylindrical bodies and a complete digestive system. They are mostly parasitic.
Porifera	Sponges are sessile animals that have a porous body. They filter food from the water.

Q45. Answer: (d) Ribs

The correct answer is Ribs.

Key Points

• Flat bones are bones whose principal function is either extensive protection or the provision of broad surfaces for muscular attachment.

• These bones are expanded into broad, flat plates, as in the cranium (skull), the ilium (pelvis), sternum and the rib cage.

• The ribs are a series of curved bones that attach to the spine in the back and to the sternum (breastbone) in the front.

• They form a cage around the lungs and heart, protecting them from injury.

• The other options are not flat bones.

• The ankle bones are called tarsals.

• They are small bones that form the ankle joint.

• The wrist bones are called carpals.

• They are small bones that form the wrist joint.

• The pelvic bones are called coxal bones.

• They are large bones that form the pelvis.

Important Points

Bone	Joint	Function
Skull	Sutures	Holds the bones of the skull together
Ribs	Sternum	Protects the lungs and heart
Pelvic bones	Hip joint	Supports the weight of the body
Femur	Knee joint	Allows the leg to bend
Tibia	Ankle joint	Allows the foot to move
Fibula	Ankle joint	Provides stability to the ankle joint
Tarsals	Ankle joint	Allows the foot to move
Metatarsals	Toe joints	Allows the toes to move
Phalanges	Toe joints	Allows the toes to grasp objects

Q46. Answer: (b) Himachal Pradesh

The correct answer is Himachal Pradesh

Key Points:

• Union Minister of Youth Affairs and Sports Shri Anurag Singh Thakur inaugurated a Water Sports Center in Bilaspur, Himachal Pradesh, on October 9.

• The Water Sports Centre, the very first of its kind in Himachal Pradesh, has been jointly initiated by the Sports Authority of India (SAI) and National Thermal Power Corporation (NTPC).

• The Memorandum of Understanding (MoU) was also exchanged between SAI and NTPC during the event.

• In just one month’s time, the water sports arrangements have been done.

• 40 players will be chosen who will take part in Rowing, Kayaking, and Canoeing.

• There are state-of-the-art equipment and boys and girls will get hostel and training facilities.

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• The centre will be dedicated to training athletes in water sports like Rowing, Canoeing, and Kayaking.

Additional Information:

• The Sports Authority of India (SAI) is the apex national sports body of India, established in 1982 by the Ministry of Youth Affairs and Sports of the Government of India for the development of sports in India.

• Two "SAI Sports Academic" institutions are Netaji Subhas National Institute of Sports (at Patiala in Punjab) and Lakshmibai National College of Physical Education (at Thiruvananthapuram in Kerala), conducting research and running certificate to PhD level courses in physical education and sports medicine.

Q47. Answer: (a) PV Sindhu

The correct answer is P.V. Sindhu.

Key Points:

• Indian shuttler PV Sindhu clinched her maiden Women's Single title in the Singapore Open Badminton tournament on 17 July 2022.

• She defeated Wang Zhi Yi of China in the final of the Singapore Open.

Important PointsSindhu won three titles in 2022 -

• The Swiss Open.

• Syed Modi India International.

• Singapore Open.

Additional Information:P. V. Sindhu- Pusarla Venkata Sindhu

• She is the first Indian woman to win an Olympic silver medal.

• She broke into the top 20 of the BWF World Ranking in September 2012, at the age of 17.

• She is an India Badminton player from Hyderabad, Telangana.

Q48. Answer: (c) Australia

The correct answer is Australia.

Key Points

• An Indian Air Force (IAF) contingent on 19 August reached Australia to participate in Exercise 'Pitch Black 2022.'

• This exercise is scheduled to be held from 19 Aug to 08 Sep 2022 in Australia's Darwin.

• It is a biennial, multi-national exercise hosted by the Royal Australian Air Force.

• The IAF contingent, led by Group Captain YPS Negi, comprises over 100 air warriors in this exercise.

Additional InformationA contingent of the Indian Air Force (IAF) left for Malaysia on 12 August 2022 to participate in a bilateral exercise named 'Udarashakti'.

• The Indian Air Force is the air arm of the Indian Armed Forces.

• Its personnel and aircraft assets rank third amongst the air forces of the world.

• Its primary mission is to secure Indian airspace and to conduct aerial warfare during armed conflict.

• Indian Air Force (IAF):

• Founded: 8 October 1932 (as Royal Indian Air Force)

• Headquarters: New Delhi

• Chief of the Air Staff: Vivek Ram Chaudhari

• Motto: Touch the sky with Glory

Q49. Answer: (d) Kumbh Mela

The correct answer is Kumbh Mela

Key Points:

• Kumbh Mela is a major festival and pilgrimage in Hinduism.

• The festival Kumbh is celebrated in a cycle of approximately 12 years at four river-bank pilgrimage sites.

• The sites are

• Prayagraj (Ganges-Yamuna Sarasvati rivers confluence)

• Nashik (Godavari)

• Haridwar (Ganges)

• Ujjain (Shipra)

• Approximately 30and 50 million people attended Maha Kumbh Mela in 2013 and the Allahabad Ardh Kumbh Mela in 2019.

• On Amavasya, the most cherished day for bathing the pilgrims welcome and wait for the thirteen sadhu akharas to bathe first.

• This Programme is called shahi snan or raj yogi snan.

Additional InformationHoli:

• Holi is a popular ancient Indian festival, also known as the "Festival of Love", the "Festival of Colours" and the "Festival of Spring".

• The festival celebrates the eternal and divine love of Radha Krishna.

• It is celebrated every year on the day after the full moon in the Hindu month of Phalgun which is early March.

• Holi Celebrations in the different states of India

• Rang Panchami – Maharashtra.

• In Maharashtra, Holi is also known as Shigma or Rang Panchami (colour on the fifth)

• Holla Mohalla- Punjab

• Shigmo- Goa

• Royal Holi- Udaipur

• Kumaoni Holi - Uttarakhand

• Manjal Kuli- Kerala

Q50. Answer: (a) Report Program Generator

Correct Answer Report Program Generator

Key PointsRPG is a high-level programming language:

• Originally developed by IBM in the late 1950s, RPG (Report Program Generator) was designed specifically for business applications and report writing.

RPG has evolved significantly over the years:

• Starting with procedural and simple languages (RPG I and RPG II), it has incorporated more structure and features with RPG III, and has modernized further with RPG IV, also known as RPGLE or ILE RPG.

RPG IV supports modern programming concepts:

• This includes free-format code, subprocedures, and other advanced features, making it more comparable to contemporary programming languages.

RPG is predominantly used in IBM's iSeries systems:

• These systems were previously known as AS/400 systems. RPG remains integral to these systems' operation and the businesses that rely on them.

RPG is considered a legacy language, but is still in use:

• While new business software development often uses languages like Java, Python, C#, JavaScript, etc., a significant amount of software written in RPG is still operational, particularly in industries that have invested heavily in IBM's iSeries systems.

Q51. Answer: (c) 28.59%

Calculation:

The total production of Z in 2017 and 2018 = 50579 + 44456 = 95035

The total production of X in 2020 and 2021 = 175128 + 157279 = 332407

Percentage = 95035/332407 × 100 = 28.59%

Therefore Option 3 is the correct answer.

Q52. Answer: (c) 3616

Shortcut Trick

First, find the sum of variables (a + b + c) = 16 × 2 = 32.

Use the algebraic identity: $a^2 + b^2 + c^2 = (a + b + c)^2 - 2(ab + bc + ca)$.

Substitute values: $32^2 - 120 = 1024 - 120 = 904$.

Required value = $4 \times (a^2 + b^2 + c^2) = 4 \times 904 = 3616$.

Therefore The correct answer is 3616.

Alternate Method

Given: (a + b + c) / 2 = 16 and (2ab + 2bc + 2ca) = 120

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

=> a + b + c = 16 × 2 = 32

=> $(32)^2 = a^2 + b^2 + c^2 + 120$

=> $1024 = a^2 + b^2 + c^2 + 120$

=> $a^2 + b^2 + c^2 = 1024 - 120$

=> $a^2 + b^2 + c^2 = 904$

=> Required value = $4a^2 + 4b^2 + 4c^2$

=> $4(a^2 + b^2 + c^2) = 4 \times 904$

=> $4(a^2 + b^2 + c^2) = 3616$

Therefore The correct answer is 3616.

Additional Information

Standard Algebraic Identity

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

Sum of Pairwise Products

The term 2(ab + bc + ca) represents twice the sum of products of the variables taken two at a time.

Cubic Identity

Related identity: $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$.

Q53. Answer: (b) Rs. 440

Shortcut Trick

The difference between a 40% loss and a 10% loss is 40% − 10% = 30%.

Given that this 30% difference is equivalent to Rs. 120.

To earn a 10% profit, the required Selling Price is 110% of the cost price.

Required SP = (120 ÷ 30) × 110 = 4 × 110 = Rs. 440.

Therefore The correct answer is Rs. 440.

Alternate Method

Given:

Initial Loss = 40%

New Loss = 10%

Increase in Price = Rs. 120

Target Profit = 10%

Formula Used:

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

Calculations:

=> Let the Cost Price (CP) be 100x.

=> Case 1: 40% loss → SP1 = 100x − 40x = 60x.

=> Case 2: 10% loss → SP2 = 100x − 10x = 90x.

=> Difference in SP = 90x − 60x = 30x.

=> Given: 30x = 120 => x = 4.

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

=> Required SP for 10% Profit = 110% of CP.

=> Required SP = 1.10 × 400 = Rs. 440.

Therefore The correct answer is Rs. 440.

Additional Information

Profit and Loss Percentage

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

Direct CP Calculation

When the difference between two selling prices (one at loss L1% and another at loss L2%) is given, CP = (Difference in SP × 100) ÷ (L1 − L2).

Successive Changes

If a price is increased by a% and then decreased by b%, the net change is [a − b − (ab ÷ 100)]%.

Q54. Answer: (a) 26/5

Given:

angle Q = 90 degree

PQ = 12 cm

QR = 5 cm

Concept:

Pythagorean theorem and Trigonometric identities for right-angled triangle

Calculation:

=> $PR^2 = PQ^2 + QR^2$

=> PR2 = 122 + 52

=> PR2 = 144 + 25 = 169

=> PR = √169 = 13 cm

Now,

For the angle P, the perpendicular is QR and the base is PQ.

and, For the angle R, the perpendicular is PQ and the base is QR.

So,

cosec P = h/p = PR/QR = 13/5

sec R = h/b = PR/QR = 13/5

Thus, cosec P + sec R = 13/5 + 13/5 = 26/5

Therefore The correct answer is option (1).

Q55. Answer: (a) 4+ 4/p + 1/(p^2)

Calculation:

$(2+ 1/p)^2$

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

$(2+ 1/p)^2 = 4 + 1/p^2 + 4/p$

Therefore Option 1 is the correct answer.

Q56. Answer: (c) 12 cm

Given:

Radius (r) = 10 cm

Perpendicular distance from center to chord (d) = 8 cm

Concept:

Length of the chord = $2 \times \sqrt{(r^2 - d^2)}$ for a circle

Solution:

=> Length of chord PQ = $2 \times \sqrt{(10^2 - 8^2)} = 2\sqrt{36} = 12$ cm

Therefore, the length of chord PQ is 12 cm.

Q57. Answer: (c) 43.2°

Calculation:

According to the question:

100% = 360°

1% = 3.6°

12% = 43.2°

Therefore Option 3 is the correct answer.

Q58. Answer: (d) 3048

Given:

a - b = 8

4ab = 84

Concept:

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

Solution:

=> $3a^3 - 3b^3 = 3(a^3 - b^3)$

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

=> ab = 84/4 = 21 from given 4ab = 84

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

=> $8^2 = a2 + b2 - 2 \times 21$

=> 64 = a2 + b2 - 42

=> a2 + b2 = 64 + 42

=> a2 + b2 = 106

=> 3(a - b)(a² + ab + b²) = 3 × 8 × (106 + 21) = 3048

Therefore, the value of $3a^3 - 3b^3$ is 3048.

Q59. Answer: (d) 100

Shortcut Trick

Ratio of Time (Original : New) = 90 : 100 = 9 : 10.

Since work is constant, Number of Persons is inversely proportional to time.

Ratio of Persons (Original : New) = 10 : 9.

Difference in ratio units = 10 − 9 = 1 unit → 10 persons (given).

Initial number of persons = 10 units = 10 × 10 = 100 persons.

Therefore The correct answer is 100.

Alternate Method

Given:

Initial Days (D1) = 90

Let the initial number of persons (M1) = x

New number of persons (M2) = x − 10

New Days (D2) = 90 + 10 = 100

Formula Used:

Total Work = M1 × D1 = M2 × D2

Calculations:

=> x × 90 = (x − 10) × 100

=> 90x = 100x − 1000

=> 100x − 90x = 1000

=> 10x = 1000

=> x = 1000 ÷ 10

=> x = 100

Therefore The correct answer is 100.

Additional Information

Work-Manpower Relation

The total work is the product of the number of persons and the time taken (Days/Hours). If work is constant, M1D1 = M2D2.

Inverse Proportion

For the same task, increasing the number of workers reduces the time required, and vice versa. Ratio of workers = Inverse ratio of time.

General Chain Rule Formula

For varying work conditions: (M1 × D1 × H1) ÷ W1 = (M2 × D2 × H2) ÷ W2, where H is hours and W is units of work.

Q60. Answer: (d) 24

Given:

Ratio of two numbers = 3:8

Sum of the numbers = 88

Concept:

The sum of numbers in the ratio

Solution:

=> Let the two numbers be 3x and 8x

=> 3x + 8x = 88

=> x = 8

Therefore, the smaller number is 3x = 3 × 8 = 24.

Q61. Answer: (c) 15

Given:

Length of AP = a² + 14

Length of AQ = 239

Concept:

Tangents drawn from an external point to a circle are equal

Solution:

=> AP = AQ

=> $a^2 + 14 = 239$

=> $a^2 = 225$

=> a = 15

Therefore, the value of a is 15.

Q62. Answer: (b) 24300

Given:

Digit numbers = 3

Divisibility condition = divisible by 20

Concept:

Sum of arithmetic series

Solution:

=> The first three-digit number divisible by 20 is 100 and the last is 980

=> This forms an arithmetic series with first term (a) = 100, common difference (d) = 20 and last term (l) = 980

=> The sum of an arithmetic series = n/2 × (a + l), where n is the number of terms

=> Using n = (l - a)/d + 1, we get n = 45

=> Sum = 45/2 × (100 + 980) = 24300

Therefore, the sum of all three digits numbers divisible by 20 is 24300.

Q63. Answer: (d) 216 cubic meter

Given:

Side length of cube = 6 meters

Concept:

Volume of a cube = $side^3$

Solution:

=> Volume = $6^3 = 216$ cubic meters

Therefore, the volume of the cube is 216 cubic meters.

Q64. Answer: (c) 5

Shortcut Trick

Price after 10% discount on Rs. 1600 = 1600 × 0.9 = Rs. 1440

Value of second discount (x%) = 1440 − 1368 = Rs. 72

Second discount percentage = (72 ÷ 1440) × 100 = 5%

Therefore The correct answer is 5%.

Alternate Method

Given:

Marked Price (MP) = Rs. 1600

Successive discounts = 10% and x%

Selling Price (SP) = Rs. 1368

Formula Used:

SP = MP × (1 − D1/100) × (1 − D2/100)

Calculation:

=> Price after 1^(st) discount of 10% = 1600 − (10% of 1600)

=> Price after 1^(st) discount = 1600 − 160 = Rs. 1440

=> Selling price after 2^(nd) discount = Rs. 1368

=> Amount of 2^(nd) discount = 1440 − 1368 = Rs. 72

=> Discount percentage (x) = (Discount Amount ÷ Price before discount) × 100

=> x = (72 ÷ 1440) × 100

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=> x = 5

Therefore The correct answer is 5%.

Additional Information

Successive Discounts

When two discounts d1% and d2% are given one after another, the effective discount is (d1 + d2 − d1×d2/100)%.

Marked Price & Selling Price

Selling Price is calculated on the Marked Price after deducting the discount: SP = MP × (1 − Discount/100).

Q65. Answer: (c) G > A > B > C > F > D > E

Calculation:

Selling Price of A = 1000 - 400 = 600

Selling Price of B = 600 - 100 = 500

Selling Price of C = 800 - 400 = 400

Selling Price of D = 500 - 300 = 200

Selling Price of E = 300 - 200 = 100

Selling Price of F = 400 - 100 = 300

Selling Price of G = 900 - 100 = 800

Sequence is = G > A > B > C > F > D > E

Q66. Answer: (a) 127/5

Given:

1/4 of 4/5 + 9/2 of 17/3 - 3/10 = p

Concept used:

Calculation:

1/4 of 4/5+9/2 of 17/3-3/10=p

1/4 × 4/5+9/2 × 17/3-3/10=p

1/5 +51/2-3/10=p

(2+255-3)/10=p

p = 254/10 = 127/5

Therefore Option 1 is the correct answer.

Q67. Answer: (a) 1/3

Shortcut Trick

The trigonometric identity is $\sec^2\theta - \tan^2\theta = 1$.

This can be factored as $(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$.

This implies that $(\sec\theta + \tan\theta)$ and $(\sec\theta - \tan\theta)$ are reciprocals of each other.

Given $\sec\theta + \tan\theta = 3$, then $\sec\theta - \tan\theta = 1/3$.

Therefore The correct answer is 1/3.

Alternate Method

Given: $\sec\theta + \tan\theta = 3$

Formula Used: $\sec^2\theta - \tan^2\theta = 1$

=> We know that $\sec^2\theta - \tan^2\theta = 1$

=> Using $a^2 - b^2 = (a + b)(a - b)$

=> $(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$

=> Substitute the given value: $3 \times (\sec\theta - \tan\theta) = 1$

=> $\sec\theta - \tan\theta = 1/3$

Therefore The correct answer is 1/3.

Additional Information

Standard Trigonometric Identities

There are three fundamental identities: $\sin^2\theta + \cos^2\theta = 1$, $\sec^2\theta - \tan^2\theta = 1$, and $\text{cosec}^2\theta - \cot^2\theta = 1$.

Cosecant and Cotangent Relationship

Similar to secant and tangent, if $\text{cosec}\,\theta + \cot\theta = x$, then $\text{cosec}\,\theta - \cot\theta = 1/x$.

Determining Individual Values

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By adding or subtracting these equations, we can find sec θ = (x + 1/x) / 2 and tan θ = (x − 1/x) / 2.

Q68. Answer: (c) 390 percent

Calcualtion:

% of girls in school D = 39%

% of girls in school I = 10%

According to the question:

39/10 × 100 = 390%

Therefore Option 3 is the correct answer.

Q69. Answer: (d) 8% decrease

Given Data:

Initial increase: 15%

Later decrease: 20%

Concept:

Calculation of successive percentage changes.

Calculation:

Let the initial price be 100.

After increase of 15%, price becomes 115.

After decrease of 20%, price becomes 0.8 × 115 = 92.

Therefore, the percent change in the price is a decrease of 8%.

Q70. Answer: (d) 70 kmph

Given Data:

Speed ratio of two cars: 5 : 7

Distance covered by the first car: 200 km

Time taken by the first car: 4 hours

Concept:

Ratio of speeds and calculation of speed.

Calculation:

=> The speed of the first car = 200 km / 4 hours = 50 km/h.

=> If speed ratio is 5 : 7, then the speed of second car is 7/5 × speed of first car.

=> Speed of second car = 7/5 × 50 km/h = 70 km/h.

Therefore, the speed of the second car is 70 km/h.

Q71. Answer: (a) 40 kg

Calculation:

Average weight of P, K and R = 40 kg

Total weight of all together = P + K + R = 40 × 3 = 120 ----(i)

Average weight of P and K be 45 and K and R be 35 kg

P + K = 45 × 2 = 90 ----(ii)

K+ R = 35 × 2 = 70 ----(iii)

On solving eq. (i) and (ii)

Weight of R = 30

Then from eq. (iii)

=> K + 30 = 70

=> K = 40

Therefore Weight of K is 40 kg

Therefore Option 1 is the correct answer.

Q72. Answer: (d) 27°

Shortcut Trick

For any trigonometric complementary functions, if cos X = sin Y, then the sum of the angles is X + Y = 90°.

Applying this to the given equation: 3A + (A − 18°) = 90°

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=> 4A − 18° = 90°
=> 4A = 108°
=> A = 27°
Therefore The correct answer is 27°.
Alternate Method
Given: cos 3A = sin(A − 18°), where 3A is an acute angle.
Formula Used: cos θ = sin(90° − θ)
=> cos 3A = sin(90° − 3A)
=> sin(90° − 3A) = sin(A − 18°)
On comparing both sides:
=> 90° − 3A = A − 18°
=> 90° + 18° = A + 3A
=> 108° = 4A
=> A = 108° ÷ 4
=> A = 27°
Therefore The correct answer is 27°.
Additional Information
Trigonometric Complementary Angles
Standard complementary relations are: sin θ = cos(90° − θ), tan θ = cot(90° − θ), and sec θ = cosec(90° − θ).
Acute Angle Definition
An acute angle is any angle that measures greater than 0° and less than 90°. In this problem, 3A = 3 × 27° = 81°, which is acute.
Quadrants and Signs
In the first quadrant (0° to 90°), all trigonometric ratios (sin, cos, tan, etc.) are positive.

Q73. Answer: (a) 6 : 11

Calculation:
When two triangles are similar, their respective sides are in same ratio.
Also, (ratio of areas of triangles) = (Ratio of respective sides)2
Given, the ratio of areas of two similar triangles is 36 : 121
Therefore (Ratio of respective sides)2= 36 : 121
Taking square root, we get
=> (Ratio of respective sides)= 6 : 11
Therefore Option 1 is the correct answer.

Q74. Answer: (b) 9.8π mm

Given:
Diameter of circle = 9.8 mm
Concept:
Circumference = 2 × (22/7) × r [Because r = radius of circle]
Calculation:
Let, radius of circle = r mm
According to the questions,
=> 2 × r = 9.8
=> r = 4.9
Therefore Circumference = 2 × (22/7) × 4.9 = 9.8 mm
Therefore Option 2 is the correct answer.

Q75. Answer: (a) Rs. 36

Shortcut Trick
Net Simple Interest percentage for Case 1 = 7% × 3 = 21%
Interest 1 (SI1) = 21% of Rs. 2,000 = Rs. 420
Net Simple Interest percentage for Case 2 = 6% × 2 = 12%
Interest 2 (SI2) = 12% of Rs. 3,200 = Rs. 384

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Required Difference = 420 − 384 = Rs. 36

Therefore The correct answer is Rs. 36.

Alternate Method

Given:

Principal1 (P1) = Rs. 2,000, Rate1 (R1) = 7%, Time1 (T1) = 3 years

Principal2 (P2) = Rs. 3,200, Rate2 (R2) = 6%, Time2 (T2) = 2 years

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

Calculations:

=> SI1 = (2000 × 7 × 3) ÷ 100

=> SI1 = 20 × 21 = Rs. 420

=> SI2 = (3200 × 6 × 2) ÷ 100

=> SI2 = 32 × 12 = Rs. 384

=> Difference = SI1 − SI2

=> Difference = 420 − 384 = Rs. 36

Therefore The correct answer is Rs. 36.

Additional Information

Simple Interest (SI)

The interest calculated only on the initial principal amount for the entire duration. Formula: SI = (P × R × T)/100.

Total Amount (A)

The total sum of money returned after the time period, which includes the principal and the interest. A = P + SI.

Effective Rate of Interest

For Simple Interest, the effective rate for the entire period is simply the product of the annual rate and time (R × T)%.

Difference between SI and CI

For a 2-year period, the difference between Compound Interest and Simple Interest is given by: $D = P(R/100)^2$.

Q76. Answer: (d) To eliminate the possibility of return or retreat

The correct answer is 'Option 4'.

Key Points

• The idiom "Burn your bridges" comes from the historical military tactic of burning bridges once an army had crossed them in order to prevent their use by enemies and to make retreat impossible for their own soldiers.

• Thus, in common usage, the idiom refers to: 'To eliminate the possibility of return or retreat'

Therefore, the correct answer is: 'To eliminate the possibility of return or retreat'.

Q77. Answer: (d) She said, “It is evening I must go for a run.”

The correct answer is 'Option 4'.

Key Points

• The phrase "she had to go for a run" indicates obligation.

• It is usually conveyed by the modal verb "must" in direct speech.

• So, in direct speech, it changes to "I must go for a run."

Therefore, the correct sentence is: "She said, “It is evening I must go for a run.”

Additional Information

• Option 1 is incorrect because the past simple "ran" is not used with "must" - we use the base form of the verb, which is "run."

• Option 2 uses "might," which indicates possibility rather than obligation. Therefore, it is not a suitable choice here.

• Option 3 uses "should," which indicates advice or suggestion. Although "should" might sometimes be used to indicate a kind of obligation, in this context "must" is a better fit because it more accurately reflects the speaker's sense of duty or obligation to go for a run.

Q78. Answer: (c) gallant

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

Key Points

• In this context, the adjective "gallant" describes the Serbians as brave, courageous, or noble, which is a fitting description if they were participating in fierce fighting. This is why this option is the best choice to fill in the blank.

Therefore, the correct sentence is: 'In the early autumn fierce fighting took place, the gallant Serbians bearing a prominent part.'

Additional Information

• Let's explain the other options:

• "Cowardly" means lacking courage. It would not make sense to use this word to describe someone who is participating in fierce fighting, as it would imply they are afraid or running away.

• "Unabashed" means not embarrassed or ashamed, often about something that people might find shocking. This term doesn't fit in the context of the sentence.

• "Bore" is a verb meaning to make a hole in something, or it can be a noun referring to a person who is dull and uninteresting. Neither of these meanings fits in this context.

Q79. Answer: (a) WASSE

The solution is in Hindi. Read it online.

Q80. Answer: (d) The speech has been delivered by Vasant.

The correct answer is 'Option 4'.

Key Points

• In the active voice, the subject of the sentence (Vasant) performs the action (delivered the speech).

• In the passive voice, the object of the active voice sentence becomes the subject of the passive voice sentence.

• The action (has delivered the speech) is done by the subject, which is now "the speech".

• The original subject (Vasant) becomes part of a prepositional phrase (by Vasant) showing who performed the action.

Therefore, the correct answer is: 'The speech has been delivered by Vasant.'

Q81. Answer: (a) Redeem

The solution is in Hindi. Read it online.

Q82. Answer: (b) CBAD

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

Key Points

• The correct sequence to form a meaningful and grammatically correct sentence is CBAD.

• Here's how it works:

• C. a switch somewhere and the nursery light - This part introduces the main subject of the sentence - a switch and a nursery light.

• B. flicked on when they came within ten feet - This part explains what happened to the nursery light when someone came within ten feet - it flicked on.

• A. of it. Similarly, behind them, in the halls, - This part adds further information and introduces a similar scenario in the halls behind them.

• D. lights went on and off as they left them behind, with a soft automaticity - This part concludes the sentence by explaining what happened to the lights in the halls - they went on and off with a soft automaticity as people left them behind.

Therefore, the correct sentence is: "Their approach sensitized a switch somewhere and the nursery light flicked on when they came within ten feet of it. Similarly, behind them, in the halls, lights went on and off as they left them behind, with a soft automaticity."

Q83. Answer: (a) To make an effort that will be futile

The solution is in Hindi. Read it online.

Q84. Answer: (a) served

The solution is in Hindi. Read it online.

Q85. Answer: (c) Introvert

The solution is in Hindi. Read it online.

Q86. Answer: (d) Fashionable

The solution is in Hindi. Read it online.

Q87. Answer: (b) Polyglot

The solution is in Hindi. Read it online.

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Q88. Answer: (b) Addressing

The correct answer is 'Option 2' i.e. "Addressing".

Key Points

• In this context, "Addressing" means dealing with or taking necessary measures to resolve.

• Therefore, "Addressing threats to elephants requires public and political will to take action" implies that in order to tackle or confront the threats facing elephants, there needs to be a desire or determination from the public and political entities.

Therefore, the correct sentence is: 'Addressing threats to elephants requires public and political will to take action.'

Additional Information

• Here are the explanations for all the options:

• "Dignifying" - This means to make something seem worthy and impressive. However, it doesn't fit in the context of the sentence as threats are not something you dignify.

• "Perplexing" - This means causing to be puzzled or bewildered. In this context, it doesn't make sense to say perplexing threats.

• "Stagnating" - This means ceasing to flow or move; becoming stagnant. Threats to elephants are not stagnant, they are dynamic issues that require active solutions.

Q89. Answer: (a) DOLEFUL

The solution is in Hindi. Read it online.

Q90. Answer: (a) ACBD

The correct answer is 'Option 1'.

Key Points

• The correct sequence of these sentences is ACBD. Here's why:

• "My years in my father's house" is the main clause, which can stand by itself as a complete sentence.

• "A. would have been unbearable had" is the start of the next part of the sentence.

• It provides a continuation to the main clause, implying that something made the years bearable.

• "C. I not had my brother." This sentence fits well with the previous part (A) as it provides the answer to what made the years bearable - having a brother.

• It forms a complete and meaningful sentence when put after A, "My years in my father's house would have been unbearable had I not had my brother."

• "I never forgot" is the continuation of the first part of the sentence, focusing on the protagonist's memories related to his brother.

• "B. the feel of his hand clutching mine, his" This sentence logically follows the previous part (C) as it provides more specific memories of his brother.

• "D. refusal to abandon me. Perhaps he and I would have been close even otherwise."

• This sentence fits well at the end as it rounds off the sentiment of the previous parts and completes the overall thought.

Therefore, the complete sentence is: "My years in my father's house would have been unbearable had I not had my brother. I never forgot the feel of his hand clutching mine, his refusal to abandon me. Perhaps he and I would have been close even otherwise." Hence, the correct sequence is ACBD.

Q91. Answer: (c) Apostate

The solution is in Hindi. Read it online.

Q92. Answer: (b) Shyam, so good with weapons, fail to find the words

The correct answer is 'Option 2'.

Key Points

• The part of the sentence that contains a grammatical error is: "Shyam, so good with weapons, fail to find the words".

• The error here is with the subject-verb agreement.

• The subject 'Shyam' is singular, and so the verb should also be singular to match.

• The verb 'fail' is in the plural form, so it should be replaced with 'fails' to correct the error.

Therefore, the correct sentence is: "Shyam, so good with weapons, fails to find the words to tell him that everything he'd done so far, all the compromises he'd made, had been for love."

Q93. Answer: (c) been a milestone to

The correct answer is 'been a milestone to'.

Key Points

• The part of the sentence that contains a grammatical error is: "been a milestone to".

• This error is related to tense consistency.

• Tenses should not be mixed within a sentence unless there is a shift in the time frame within the context of the sentence.

• In this case, the correct tense should be future, so 'been' should be replaced with 'be'.

• 'Been' is a past participle and doesn't fit here as the rest of the sentence is in future tense indicated by 'will'.

So the correct sentence should be: "That will truly be a milestone to celebrate."

Q94. Answer: (a) PRUDENT

The solution is in Hindi. Read it online.

Q95. Answer: (c) PSEUDONYM

The solution is in Hindi. Read it online.

Q96. Answer: (b) pushed

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

Key Points

• The most appropriate option to fill in the blank No. 1 is "pushed".

• The phrase "the man with the shotgun pushed the guard to his knees" suggests that the man with the shotgun used physical force to make the guard kneel.

• This interpretation fits well in the context of the sentence, which describes a forceful and potentially violent situation.

Therefore, the correct sentence is: 'The man with the shotgun pushed the guard to his knees. He handed up the shotgun to his partner and yanked the guard's wrists up behind his back and locked (2) ____ together with a pair of handcuffs. He (3) __ him onto the floor with a kick between the shoulder blades. Then he took his shotgun back and (4) __ to the security gate at the end of the counter. He was short and heavy and moved with peculiar slowness. “Buzz him (5) ____,” his partner said.'

Additional Information

• Let's see why the other options are less suitable:

• "Steered" usually refers to guiding or controlling the course of a vehicle, not a person. It is less forceful and more about direction.

• "Motivated" suggests inspiring or encouraging someone to do something, which doesn't make sense in this context where a forceful action is required.

• "Swayed" implies influencing someone gently or with charm, which does not fit the aggressive context of the sentence.

Q97. Answer: (a) them

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

Key Points

• The most appropriate option to fill in the blank No. 2 is "them".

• In the context of the sentence, "them" refers to the guard's wrists that have been yanked up behind his back.

• The plural pronoun "them" agrees with the plural noun "wrists."

• Therefore, the part of the sentence with the blank would read, "and locked them together with a pair of handcuffs."

Therefore, the correct sentence is: 'The man with the shotgun pushed the guard to his knees. He handed up the shotgun to his partner and yanked the guard's wrists up behind his back and locked them together with a pair of handcuffs. He (3) ____ him onto the floor with a kick between the shoulder blades. Then he took his shotgun back and (4) __ to the security gate at the end of the counter. He was short and heavy and moved with peculiar slowness. “Buzz him (5) ____,” his partner said.'

Additional Information

• Let's see why the other options are less suitable:

• "That" is a singular demonstrative pronoun, so it doesn't match the plural noun "wrists."

• "These" is a plural demonstrative pronoun, but it is typically used when the speaker is referring to something near them, not suitable here.

• "It" is a singular pronoun, which again does not agree in number with the plural "wrists."

Q98. Answer: (a) toppled

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

Key Points

• The most appropriate option to fill in the blank No. 3 is "toppled".

• In the context of the sentence, the man with the shotgun is being aggressive towards the guard, hence "toppled" makes sense because it suggests he forcefully knocked or pushed the guard onto the floor, especially given that this action followed a kick between the shoulder blades.

Therefore, the correct sentence is: 'The man with the shotgun pushed the guard to his knees. He handed up the shotgun to his

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partner and yanked the guard's wrists up behind his back and locked them together with a pair of handcuffs. He toppled him onto the floor with a kick between the shoulder blades. Then he took his shotgun back and (4) ____ to the security gate at the end of the counter. He was short and heavy and moved with peculiar slowness. “Buzz him (5) ____,” his partner said.'

Additional Information

• Here's why the other options are less suitable:

• "Ascended" means to rise or go up, which doesn't fit the context because the guard is being brought down, not lifted up.

• "Placed" is too gentle a word to describe the aggressive actions taking place.

• "Straightened" would imply the guard was being put upright or in a correct position, which again contradicts the aggressive context.

Q99. Answer: (a) went over

The correct answer is 'Option 1' i.e. 'Went over'.

Key Points

• The most appropriate option to fill in the blank No. 4 is "went over".

• In the given context, the man with the shotgun is moving towards the security gate at the end of the counter.

• The phrase "went over" is used to mean 'moved towards' or 'proceeded to' in this case.

Therefore, the correct sentence is: 'The man with the shotgun pushed the guard to his knees. He handed up the shotgun to his partner and yanked the guard's wrists up behind his back and locked them together with a pair of handcuffs. He toppled him onto the floor with a kick between the shoulder blades. Then he took his shotgun back and went over to the security gate at the end of the counter. He was short and heavy and moved with peculiar slowness. “Buzz him (5) _____,” his partner said.'

Additional Information

• Here's why the other options are less suitable:

• "Went under" usually means to go beneath something or to fail, neither of which fits the context.

• "Went along" would imply the man is going with someone or agreeing with them, which doesn't make sense here.

• "Went besides" is not grammatically correct; the proper phrase is "went beside" which means to go next to something or someone, but this does not fit the context as well as "went over".

Q100. Answer: (d) in

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

Key Points

• The most appropriate option to fill in the blank No. 5 is "in".

• In this context, "Buzz him in" means to use an intercom or other electronic device to allow the person (in this case, the man with the shotgun) access to a restricted area.

• "Buzz" refers to the sound that these devices often make, and "in" indicates the granting of access or entry.

Therefore, the correct sentence is: 'The man with the shotgun pushed the guard to his knees. He handed up the shotgun to his partner and yanked the guard's wrists up behind his back and locked them together with a pair of handcuffs. He toppled him onto the floor with a kick between the shoulder blades. Then he took his shotgun back and went over to the security gate at the end of the counter. He was short and heavy and moved with peculiar slowness. “Buzz him in,” his partner said.'

Additional Information

• Here's why the other options don't fit as well:

• "Buzz him to" isn't a common or correct phrase. It would imply the man is being "buzzed" to a specific location, which doesn't make sense in this scenario.

• "Buzz him on" could suggest the man is being encouraged or cheered on, which also doesn't fit the context.

• "Buzz him with" would imply the man is being "buzzed" using a specific tool or method, but the sentence doesn't provide any additional information that would justify the use of "with".

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