SSC CHSL Tier-1 2022: Official Paper (Held On: 10 March, 2023 Shift 2) (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. If 64 # 58 # 32 = -26 and 104 # 17 # 89 = -2, then 56 # 7 # 24 = ?

(a) 21
(b) 25
(c) -2
(d) -13

Q2. In a certain code language, 'DO' is written as '60' and 'PIE' is written as '720'. How will 'CAT' be written in that code language?

(a) 120
(b) 60
(c) 720
(d) 180

Q3. 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.

Site : Engineer :: ?

(a) Waiter : Restaurant
(b) Grocer : Shop
(c) Scientist : Laboratory
(d) House : Servant

Q4. Select the word pair in which the words are related in the same way as the words are related in the following pair.

Bhutan : Thimphu

(a) Rome : Italy
(b) China : Hong Kong
(c) Pakistan : Islamabad
(d) Bangladesh : Taka

Q5. In the question three statements are given, followed by two conclusions, I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

Statements:

I. Some walls are broken.

II. All windows are broken.

III. Some walls are not painted.

Conclusions:

I. Some broken are windows.

II. All windows are painted.

(a) Only conclusion II follows.

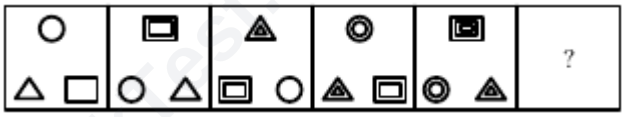
(b) Only conclusion I follows.
(c) Both conclusion I and II follow.
(d) Neither conclusion I nor II follow.

Q6. After arranging the given words according to dictionary order, which word will come at 'Fourth' position?

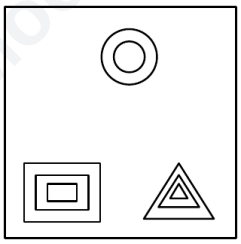
1. Activity
2. Activist
3. Activismal
4. Activisticy
5. Activize

(a) Activismal
(b) Activist
(c) Activity
(d) Activize

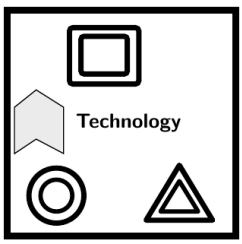
Q7. Select the figure that will come next in the following figure series.



(a)



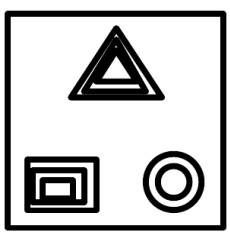
(b)



(c)



(d)



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Q8. By interchanging the given two signs which of the following equation will be not correct?

• and -

I. 18 ÷ 3 + 8 × 5 - 4 = 20

II. 6 + 8 × 9 ÷ 3 - 4 = 14

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

Q9. In a certain code language, 'CEMENT' is written as 'ECOCPR' and 'HEIGHT' is written as 'JCKEJR'. How will 'FATHER' be written in that language?

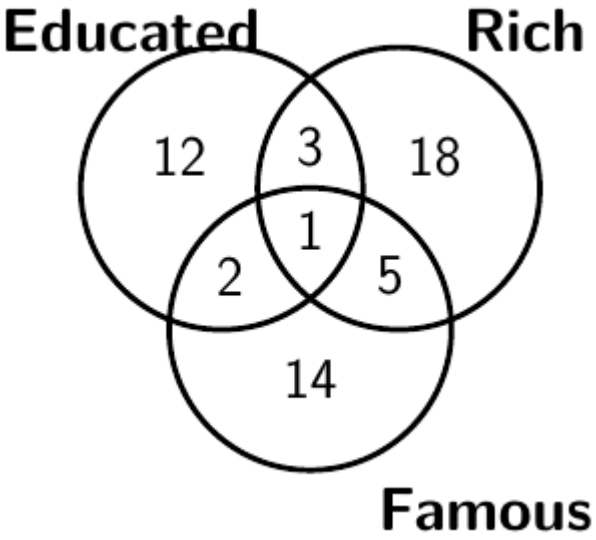
(a) HZVFGP
(b) HYVFGO
(c) HYVEGP
(d) HYVFGP

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

58 : 319 :: 32 : 176 :: 76 : ?

(a) 442
(b) 286
(c) 428
(d) 418

Q11. Study the given diagram carefully and answer the questions. The numbers in different sections indicate the number of persons. How many people are educated and rich but not famous?



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

Q12. 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)

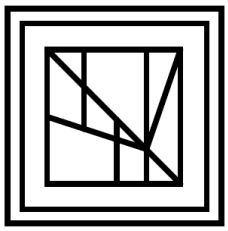
(a) 331235-66247

(b) 15265-3053
(c) 51265-10253
(d) 126215-25247

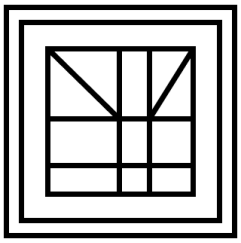
Q13. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



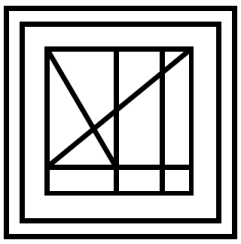
(a)



(b)

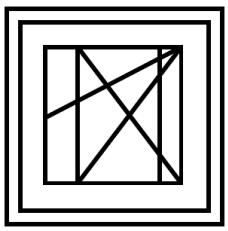


(c)



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(d)



Q14. In the following question, select the related letters from the given alternatives.

RV : TE :: EL : ?

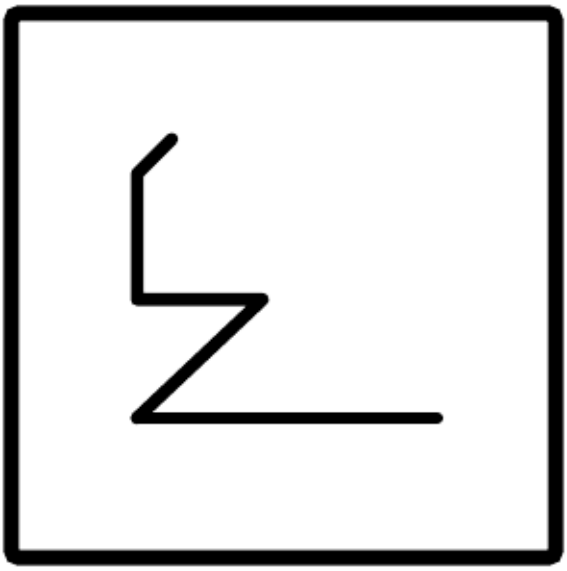
(a) LU
(b) GO
(c) NC
(d) DP

Q15. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

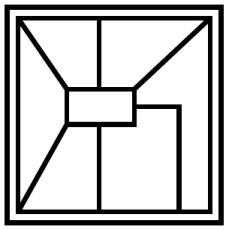
A A_AB_ABC_A_C_E

(a) BCCBD
(b) BCDBD
(c) AABCD
(d) BABCD

Q16. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)

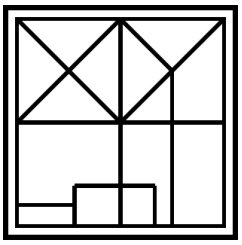


(a)

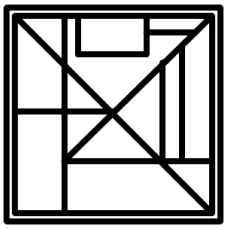


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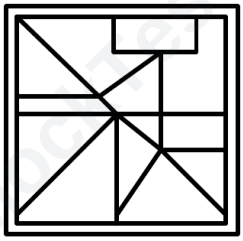
(b)



(c)



(d)



Q17. N is the brother of Y and Y is the sister of B. B is the wife of Z and C is the mother of Y. How Z is related to C?

(a) Son-in-law
(b) Daughter
(c) Maternal Uncle
(d) Sister

Q18. Select the correct mirror image of the given combination when the mirror is placed at line AB as shown.



(a)



(b)



(c)



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(d)



Q19. 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)

(8, 63, 81)

(11, 120, 144)

(a) (9, 80, 100)
(b) (6, 36, 49)
(c) (5, 24, 49)
(d) (7, 48, 96)

Q20. Three of the following four letter clusters are alike in a certain way and one is different.

Pick the cluster that is different from the rest.

(a) HS
(b) CX
(c) MN
(d) JP

Q21. In the following question, select the missing number from the given series.

48, 87, 165, 204, 282, 321, ?

(a) 399
(b) 389
(c) 419
(d) 409

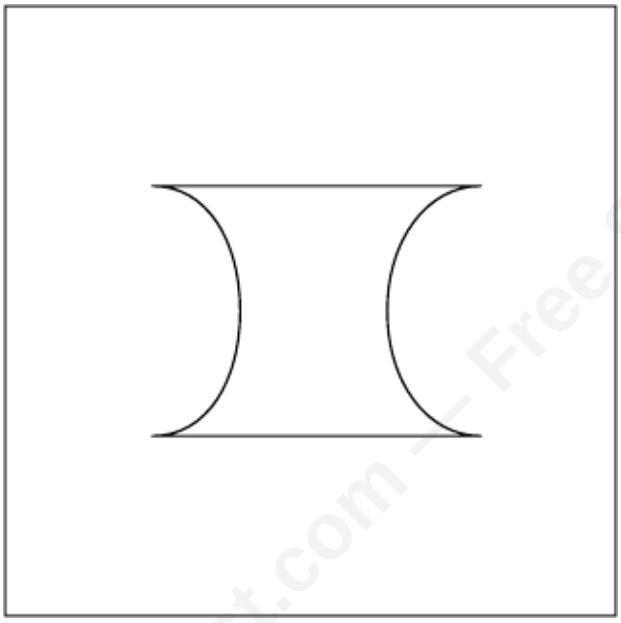
Q22. In the following question, four number pairs are given. In each pair the number on left side of (-) is related to the number of the right side of (-) with some Logic/Rule/Relation. Three pairs are similar on basis of same Logic/Rule/Relation. Select the odd one out from the given alternatives.

(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)

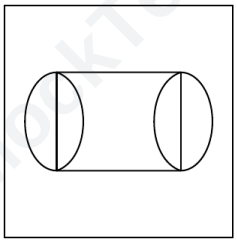
(a) 108-11664
(b) 116-13456
(c) 112-12544
(d) 104-10886

Q23. Select the option figure in which the question figure is embedded. (Rotation is NOT allowed)

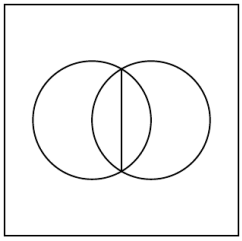
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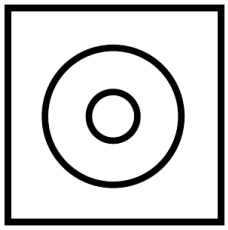
(a)



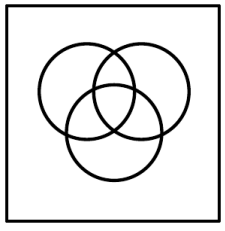
(b)



(c)

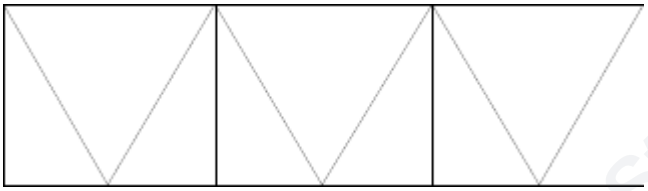


(d)



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Q24. Find the total number of triangles in the figure.



(a) 12
(b) 9
(c) 11
(d) 10

Q25. In the following question, select the odd word pair from the given alternatives.

(a) Poem - Poet
(b) Ornament - Goldsmith
(c) Clothes - Tailor
(d) Carpenter - Furniture

GENERAL INTELLIGENCE

Q26. The Planning Commission of India was replaced by NITI Aayog in _____.

(a) 2016
(b) 2015
(c) 2018
(d) 2017

Q27. Who was the first female Muslim ruler of India?

(a) Zebunnissa
(b) Razia Sultana
(c) Chand Bibi
(d) Jahanara

Q28. Who received a Nobel Peace Prize for dismantling apartheid in South Africa?

(a) Nelson Mandela
(b) Rabindranath Tagore
(c) Mahatma Gandhi
(d) Albert John Lutuli

Q29. As of 2022, India is the _____ largest economy in the world (as measured by nominal GDP).

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

Q30. Raman wants to use a rear-view mirror in his vehicle. Which type of mirror should he pick for it?

(a) Convex Mirrors
(b) Plane Mirrors
(c) Cylinderical Mirrors
(d) Concave Mirrors

Q31. When was the Direct Tax Code Bill introduced in the Parliament of India?

(a) 2010
(b) 2005
(c) 2020
(d) 2015

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Q32. Neeti wants to use an input device that works by sensing the user's finger movement and downward pressure. Which among the following should she use?

(a) Scanner
(b) Touchpad
(c) Light pen
(d) Keyboard

Q33. Which country hosted the FIFA U-17 Women's World Cup 2022?

(a) Egypt
(b) China
(c) France
(d) India

Q34. Which of the following is NOT application software?

(a) Operating systems
(b) Graphics software
(c) Spreadsheet software
(d) Word-processing software

Q35. Which among the following is another word for universe?

(a) Big Crunch
(b) Astronomy
(c) Cosmos
(d) Supernova

Q36. "Pay Roll Automation for Disbursement of Monthly Allowances (PADMA)" was launched in June 2022 by Ministry of _____.

(a) Civil Aviation
(b) Finance
(c) Defence
(d) Culture

Q37. Who among the following received the OSCAR for the best actor in leading role in 2022?

(a) Benedict Cumberbatch
(b) Andrew Garfield
(c) Denzel Washington
(d) Will Smith

Q38. In which year was the Dowry Prohibition Act passed in India?

(a) 1973
(b) 1982
(c) 1961
(d) 1954

Q39. PV Sindhu, a famous badminton player of India, won _____ Open title in July 2022.

(a) Thailand
(b) India
(c) Denmark
(d) Singapore

Q40. Who became the first athlete to win Gold in Yogasana at the 36th National Games, India in 2022?

(a) Pooja Patel
(b) Manisha Kumari
(c) Soham Swami
(d) Raja Gupta

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Q41. In India, palm, coconut, keora, agar are the common trees of which of the following forests?

(a) Mangrove Forests
(b) Tropical Evergreen Forests
(c) Tropical Deciduous Forests
(d) Montane Forests

Q42. In September 2022, who was appointed as the Attorney General of India?

(a) Mukul Rohtagi
(b) Ram Jethmalani
(c) R Venkataramani
(d) KK Venugopal

Q43. Which among the following lakes is also known as the "Srinagar's Jewel"?

(a) Tsomgo
(b) Vembanad
(c) Dal
(d) Loktak

Q44. Somewhat before the time of Mauryan empire, about _____ years ago, emperors in China began building the Great Wall.

(a) 1200
(b) 3500
(c) 2400
(d) 600

Q45. Shri Mani Prasad is associated with which form of music?

(a) Fusion Music
(b) Folk Music
(c) Carnatic vocal music
(d) Hindustani vocal music

Q46. Which among the following peaks is the highest peak of Jharkhand?

(a) Kangto
(b) Girnar
(c) Anamudi
(d) Parasnath

Q47. Which pass connects the Kullu Valley with the Lahaul and Spiti Valleys of Himachal Pradesh, India?

(a) Banihal Pass
(b) Thamarassery Pass
(c) Rohtang Pass
(d) Lipulekh Pass

Q48. Who among the following was the architect of the Integrated Guided Missile Development Program (IGMDP) in India?

(a) Har Gobind Khorana
(b) Vikram Sarabhai
(c) A. P. J. Abdul Kalam
(d) Homi J. Bhabha

Q49. Chikungunya is an infection caused by _____ mosquito.

(a) Culex
(b) Mansonia
(c) Aedes
(d) Anopheles

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Q50. Aga Khan Palace is located in _____ city of Maharashtra.

(a) Pune
(b) Aurangabad
(c) Ahmednagar
(d) Mumbai

QUANTITATIVE APTITUDE

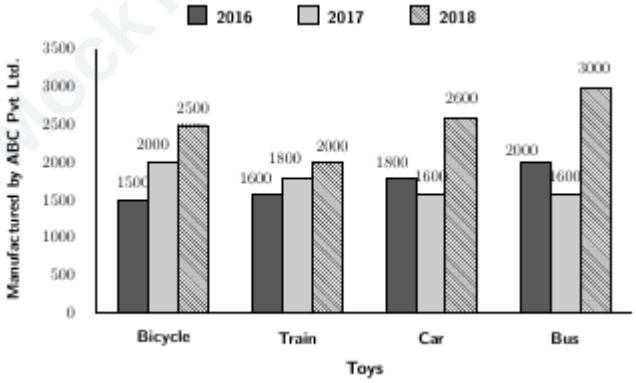
Q51. If A alone can complete a work in 20 days and B alone can complete the same work in 30 days, then which of the following statement(s) is/are correct?

I. Ratio of efficiency of A and B is 3 : 2.

II. Working together A and B can complete the same work in 12 days.

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

Q52. The Bar graph shows four different toys (Bicycle, Train, Car & Bus) manufactured by ABC Pvt Ltd. company in 3 consecutive years.



What is the ratio between the sum of cars and trains manufactured in 2017 and 2018 to the total number of buses manufactured in 2016, 2017 and 2018 together?

(a) 30 : 41
(b) 33 : 40
(c) 35 : 41
(d) 40 : 33

Q53. The length of rectangular sheet of paper is 24 cm more than the breadth and perimeter of the rectangular sheet is 128 cm. Find the length of the rectangular sheet.

(a) 20 cm
(b) 44 cm
(c) 48 cm
(d) 34 cm

Q54. Rs. 6000 is lent at the annual rate of 10 percent for 2 years. Which of the following is statement(s) is/are correct?

I. Simple interest to be received on this sum is Rs. 1200

II. Compound Interest (compounding annually) to be received on this sum is Rs. 1260

(a) Statement I is correct
(b) Both statement I and II are correct
(c) Statement II is correct
(d) None of them are correct.

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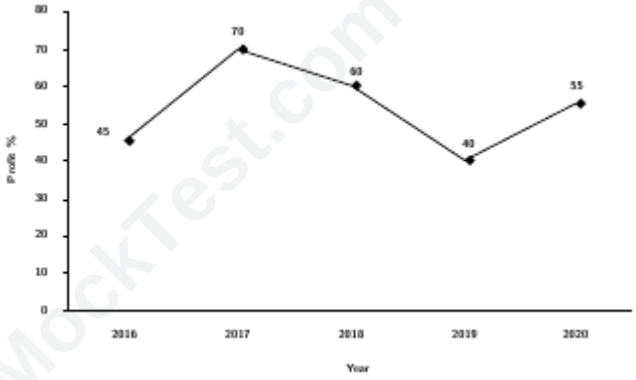
Q55. If tan θ + cot θ = 2, then what is the value of tan θ - cot θ?

(a) 0
(b) 5/8
(c) 1
(d) 3/4

Q56. If (a - b) = 5 and ab = 150, then what is the value of $a^3 - b^3$?

(a) 2640
(b) 1125
(c) 2375
(d) 2250

Q57. The following line graph shows the annual profit percentage earned by a company during the years 2016 to 2020.



What is the average profit percent earned by the company during the years 2016 to 2020 ?

(a) 55%
(b) 44%
(c) 48%
(d) 54%

Q58. A wheel makes 500 revolutions in covering a distance of 44 km. Find the radius of the wheel.

(a) 14 m
(b) 21 m
(c) 28 m
(d) 7 m

Q59. Length of chord MN is 40 cm. Distance of chord MN from the centre is 15 cm. What will be the radius of this circle?

(a) 42 cm
(b) 32 cm
(c) 30 cm
(d) 25 cm

Q60. What is cosec 90°/(1 - $\cos^2$ 60°)

(a) 0
(b) 4/3
(c) 1/4
(d) 3/4

Q61. Find the value of 1200 ÷ 15 × [45 ÷ (17 - 2)] of 2 + [-2 (1 + 2)]

(a) 486
(b) 0
(c) 484
(d) 474

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Q62. The table given below shows the number of male teacher and female teachers in 5 schools.

Schools	Male teachers	Female teachers
L	160	180
M	180	170
N	170	120
P	150	110
Q	130	130

Which of the following statement is correct?

I. The number of male teachers in school L is 135.44 percent of the number of female teachers in school P.

II. The ratio of the number of female teachers in M and N together to the number of male teachers in N and P together is 29 : 32

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

Q63. In the Lok Sabha election, Party A got 30% of the total votes. Party B got 25% of the total votes. Party C got the remaining votes and they got 9000 more votes than Party A. Find the number of votes Party B got.

(a) 12000
(b) 18000
(c) 21000
(d) 15000

Q64. If sin x = 1/2, then find the value of (sec^4 x + cosec^4 x) - (tan^4 x + cot^4 x)

(a) 26/3
(b) 97/12
(c) 26/23
(d) 2

Q65. How many prime numbers are there between 20 and 50?

(a) 8
(b) 5
(c) 6
(d) 7

Q66. If $2p + 5q = 12$ and $pq = 3$, find the value of $4p^2 + 25q^2$

(a) 64
(b) 24
(c) 84
(d) 44

Q67. In a triangle ABC, AB = 6 cm, BC = 11 cm. How many integral values of AC can be possible?

(a) 10
(b) 8
(c) 12
(d) 11

Q68. The table given below shows the cost price and value of profit of 6 articles.

Articles	Cost price	Profit
D	700	200

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E	600	150
F	400	300
G	500	400
H	300	250
I	800	350

Which of the following statement is NOT correct?

I. The profit of D, E and F is 30.63 percent of the cost price of G, H and I.

II. The ratio of total cost price to the total profit is 1 : 2.

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

Q69. A family consists of a father, mother and son. The ratio of their present ages is 8 : 5 : 2 and the present age of the father is 48 years. What will be the average age of family after 3 years?

(a) 30 years
(b) 31 years
(c) 33 years
(d) 35 years

Q70. What is the equivalent single discount of two successive discounts of 12% and 10%?

(a) 18 percent
(b) 20 percent
(c) 18.5 percent
(d) 20.8 percent

Q71. Janki purchased 10 dozen of corn at the rate of Rs. 180 per dozen. She sold each corn at the rate of Rs. 22. What was her percent profit?

(a) 46.6 percent
(b) 18.8 percent
(c) 37.7 percent
(d) 25.5 percent

Q72. What is the value of $x^2 + 4y^2 + z^2 - 4xy + 4yz - 2xz$?

(a) (x + 2y - z)2
(b) (x - 2y + z)2
(c) (2y - x + z)2
(d) (2x - y + z)2

Q73. The area (in cm^2) of biggest circle that could be drawn in a square of side 18 cm is:

(a) 91 π
(b) 81 π
(c) 49 π
(d) 168 π

Q74. If in the sales department of a company, the average salary per employee is Rs. 350, average salary of 10 senior employees is Rs.450 per employee and average salary of remaining staff is Rs. 250 per employee, then what is the total number of employees working in the sales department?

(a) 30
(b) 20
(c) 15
(d) 25

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Q75. Ram needs to reach the examination center in 6 hours, the journey itself is 250 km. If Ram has covered (3/5)th of the distance in 3.5 hours then what is the speed required to reach the destination 30 minutes early than the required time?

(a) 50 km/h
(b) 90 km/h
(c) 40 km/h
(d) 60 km/h

GENERAL AWARENESS

Q76. Select the word that is closest in meaning (SYNONYM) to the word given below.

ANXIOUS

(a) COLLECTED
(b) APPREHENSIVE
(c) ACCEPT
(d) FLAWLESS

Q77. Select the most appropriate meaning of the given idiom.

Slack off

(a) To understand a hidden meaning
(b) To ease pressure on something
(c) To make most effort
(d) To be very rude

Q78. Improve the underlined part of the sentence. Choose 'No improvement' as an answer if the sentence is grammatically correct.

This heap of rubbish has not been remove for 6 months.

(a) No improvement
(b) been removing from
(c) been removes since
(d) been removed for

Q79. Choose the option that is the correct indirect form of the sentence.

My mother said, "I am meeting your father today."

(a) My mother said that she were meeting my father that day.
(b) My mother says that she was meeting my father today.
(c) The mother said that she has been meeting my father that day.
(d) My mother said that she was meeting my father that day.

Q80. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

When we cook garlic, the sulphide molecules raise into the air and fill the room with their pleasing aroma.

(a) When we cook garlic, the sulphide
(b) molecules raise into the air
(c) No error
(d) and fill the room with their pleasing aroma.

Q81. Rearrange the parts of the sentence in correct order.

If a product placement

P. we are either less likely to notice the placement

Q. our attention is fixated on what will happen next,

R. or more likely to be annoyed by it if we do notice it

S. appears at the climax, the moment when

(a) RSQP

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(b) SPQR
(c) SQPR
(d) PRSQ

Q82. Fill in the blank with an appropriate option.

He was a handsome man in his _____ thirties.

(a) late
(b) lest
(c) latter
(d) least

Q83. Select the option that will improve the underlined part of the sentence. In case no improvement is needed, select 'No improvement'.

Africa has glaciers on the Mount Kilimanjaro in Tanzania and on the Mount Kenya.

(a) Mount Kilimanjaro in Tanzania and the Mount Kenya
(b) Mount Kilimanjaro in Tanzania and on Mount Kenya
(c) No improvement
(d) the Mount Kilimanjaro in Tanzania and to Mount Kenya

Q84. Select the most appropriate one-word substitution for the given group of words.

Recovering from an illness or medical treatment.

(a) Bohemian
(b) Connoisseur
(c) Convalescent
(d) Cosmopolitan

Q85. 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.

There were two final

A. the story was the tale of Kunti

B. a story and a parchment.

C. gifts the sorceress gave me

D. mother of Arjun. The parchment was a map of Bharat's many kingdoms

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

Q86. 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'.

This was no strange sight / to the boy by that time, / for he had neither gun or spear.

(a) No error
(b) for he had neither gun or spear.
(c) to the boy by that time,
(d) This was no strange sight

Q87. Choose the word that means the same as the given word.

Gallivant

(a) Meander
(b) Grave
(c) Gall
(d) Brave

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Q88. Select the correct passive form of the given sentence.

Meghna has taken all the cash.

(a) All the cash had been taken by Meghna.
(b) All the cash has been taken by Meghna.
(c) All the cash had been taking by Meghna.
(d) All the cash was taken by Meghna.

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

Glib

(a) Inarticulate
(b) Implausible
(c) Easy
(d) Sincere

Q90. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Pig in a poke

(a) To bring something to an end
(b) A brave man amongst all the cowards
(c) Something that is bought without examining properly
(d) To obstruct someone's work

Q91. Select the word that is opposite in meaning (ANTONYM) to the word given below.

Fiend

(a) Vile
(b) Junkie
(c) Saint
(d) Atrocious

Q92. Rearrange the parts of the sentence in correct order.

The researchers

P. performed experiments and developed a model

Q. which explains how the worm's taste sensors

R. to direct its foraging behaviour

S. process information from the environment

(a) RPQS
(b) PQSR
(c) PSQR
(d) PRQS

Q93. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. In case no improvement is needed, select 'No improvement'.

(Hardly had the news leak out that) my telephone started ringing.

(a) No sooner did the news leaked out than
(b) No sooner had the news leaked out than
(c) No sooner had the news leaked out that
(d) No improvement

Q94. Choose the incorrectly spelt word.

(a) VISCOUS
(b) BENEVOLENT
(c) PERCIEVE
(d) BOISTEROUS

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Q95. Choose the correctly spelt word.

(a) VACILLATE
(b) STILLETOES
(c) OBSEQUIOS
(d) MAINTAINANCE

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.

Through the (1)___, lonely years of my childhood, when my father's palace (2)___ to tighten its grip (3)__ me until I couldn't (4)_ I would go to my nurse and ask for a story. And though she knew many wondrous and edifying tales, the one I made her tell me over and over was the (5)__ of my birth.

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

(a) long
(b) timid
(c) menial
(d) beautiful

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

(a) seemed
(b) perhaps
(c) besides
(d) thought

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

(a) encompassing
(b) revolving
(c) surround
(d) around

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

(a) breath
(b) breathed
(c) breathing
(d) breathe

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

(a) poem
(b) story
(c) ode
(d) news

ANSWER KEY

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

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

SOLUTIONS

Q1. Answer: (b) 25

The logic followed here is:
For, 64 # 58 # 32 = -26
=> 64 - (58 + 32)
=> 64 - 90 = -26.
For, 104 # 17 # 89 = -2
=> 104 - (17 + 89)
=> 104 - 106 = -2.
Similarly, for 56 # 7 # 24 = ?
=> 56 - (7 + 24)
=> 56 - 31 = 25.
Hence, the correct answer is "25".

Q2. Answer: (b) 60

The logic followed here is:
Logic: Product of the Place Value of the given letters.
Now,
'DO' is written as '60',
→ D = 4, O = 15,
=> 4 × 15 = 60.
'PIE' is written as '720',
→ P = 16, I = 9, E = 5,
=> 16 × 9 × 5 = 720.
Similarly, for 'CAT'
→ C = 3, A = 1, T = 20,
=> 3 × 1 × 20 = 60.
So, 'CAT' is written as '60'.
Hence, the correct answer is "60".

Q3. Answer: (d) House : Servant

The logic followed here is:
Site : Engineer → An engineer is associated with a specific location where they work.
Similarly,
House : Servant → A servant is associated with a specific House where they work.
Hence, the correct answer is "Option 4".
Additional Information
Waiter : Restaurant → A Waiter is associated with a specific Restaurant where they work.
Grocer : Shop → A Grocer is associated with a specific Shop where they work.
Scientist : Laboratory → A Scientist is associated with a specific Laboratory where they work.

Q4. Answer: (c) Pakistan : Islamabad

The logic followed here is:
Bhutan : Thimphu → Thimphu is the capital city of Bhutan.
Similarly,
Pakistan : Islamabad → Islamabad is the capital city of Pakistan.
Hence, the correct answer is "Option 3".

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Additional Information Rome : Italy → Rome is the capital city of Italy.

China : Hong Kong → Hong Kong is a Special Administrative Region of China.

Bangladesh : Taka → Taka is the currency of Bangladesh.

Q5. Answer: (b) Only conclusion I follows.

Given Statements:

I. Some walls are broken.

II. All windows are broken.

III. Some walls are not painted.

The least possible Venn diagram for the given statement is:

Conclusions:

I. Some broken are windows - True (All window are broken it means some part of broken will be also window).

II. All windows are painted - False (Because, there is no definite relation given between window and painted, so it can be possible only).

So, Only conclusion I follows.

Hence, the correct answer is "Option 2".

Q6. Answer: (c) Activity

Let's arrange the words in alphabetical order. All words begin with "Activi", so we'll compare the next letters:

1. Activity (t)
2. Activist (s)
3. Activismal (m)
4. Activisticy (s)
5. Activize (z)

After "Activi", the words beginning with "m", "s", "t", and "z" are our differentiators. Alphabetically, "m" comes before "s", "s" comes before "t", and "t" comes before "z". We also have two words starting with "s" - "Activist" and "Activisticy", and in this case, the shorter word comes first.

So, when we arrange these words in alphabetical order, we get:

3. Activismal
2. Activist
4. Activisticy
1. Activity
5. Activize

Therefore, the word that will come in the 'Fourth' position is "Activity".

Q7. Answer: (d) [figure]

The logic followed here is:

Step I: Circle is getting shifted and getting doubled from the fourth image.

Step II: Triangle is getting shifted and getting doubled from the third image.

Step III: Rectangle is getting shifted and getting doubled from the second image.

So, 'Option 4' will replace the question mark.

Hence, the correct answer is "Option 4".

Q8. Answer: (d) Both I and II

BODMAS Table:

Given equation I. $18 \div 3 + 8 \times 5 - 4 = 20$

Now, if '+ and -' are interchanged, then:

$\Rightarrow 18 \div 3 - 8 \times 5 + 4 = 20$

$\Rightarrow 6 - 8 \times 5 + 4 = 20$

$\Rightarrow 6 - 40 + 4 = 20$

$\Rightarrow 10 - 40 = 20$

$\Rightarrow -30 \neq 20$

LHS ≠ RHS.

Given equation II: $6 + 8 \times 9 \div 3 - 4 = 14$

Now, if '+ and -' are interchanged, then:
=> 6 - 8 × 9 ÷ 3 + 4 = 14
=> 6 - 8 × 3 + 4 = 14
=> 6 - 24 + 4 = 14
=> 10 - 24 = 14
=> -14 ≠ 14
LHS ≠ RHS.
Here, Both Equation I and II are the incorrect after interchanging the given symbol.
Hence, the correct answer is "Option 4".

Q9. Answer: (d) HYVFGP

The logic followed here is:
For, 'CEMENT' is written as 'ECOCPR',
For, 'HEIGHT' is written as 'JCKEJR',
Similarly, for 'FATHER'
So, 'FATHER' is coded as 'HYVFGP'.
Hence, the correct answer is "Option 4".

Q10. Answer: (d) 418

The logic followed here is:
Logic: (1st number × 5) + (1st number ÷ 2) = 2nd number.
Now,
For, 58 : 319
=> (58 × 5) + (58 ÷ 2)
=> 290 + 29 = 319.
For, 32 : 176
=> (32 × 5) + (32 ÷ 2)
=> 160 + 16 = 176.
Similarly, for 76 : ?
=> (76 × 5) + (76 ÷ 2)
=> 380 + 38 = 418.
Hence, the correct answer is "Option 4".

Q11. Answer: (c) 3

According to the given Venn diagram:
The shaded area shows "the educated and rich but not famous peoples".
So, there are 3 peoples are educated and rich but not famous.
Hence, the correct answer is "3".

Q12. Answer: (d) 126215-25247

The logic followed here is:
Logic: 1st number ÷ 5 = 2nd number.
Now, checking the options:
Option 1) 331235-66247 → 331235 ÷ 5 = 66247.
Option 2) 15265-3053 → 15265 ÷ 5 = 3053.
Option 3) 51265-10253 → 51265 ÷ 5 = 10253.
Option 4) 126215-25247 → 126215 ÷ 5 = 25243 ≠ 25247.
So, '126215-25247' odd among the given options.
Hence, the correct answer is "Option 4".

Q13. Answer: (a) [figure]

The image embedded in given figure is as shown below:
Hence, "Option 1" is the correct answer.

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Q14. Answer: (b) GO

The logic followed here is:

RV : TE

Similarly, for EL : ?

So, 'EL : GO' would be the related letters.

Hence, the correct answer is "Option 2".

Q15. Answer: (b) BCDBD

The logic followed here is:

Given Sequence: A A_AB_ABC_A_C_E

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

Option 1) BCCBD → A / A B / A B C / A B C C / A B C D E

Option 2) BCDBD → A / A B / A B C / A B C D / A B C D E

Here, 'Option 2' followed a pattern.

Option 3) AABCD → A / A A / A B A / A B C B / A C C D E

Option 4) BABCD → A / A B / A B A / A B C B / A C C D E

Hence, the correct answer is "Option 2".

Q16. Answer: (c) [figure]

The image embedded in given figure is as shown below:

Hence, "Option 3" is the correct answer.

Q17. Answer: (a) Son-in-law

Family Chart:

Given:

N is the brother of Y,

Y is the sister of B,

B is the wife of Z.

C is the mother of Y.

So, Z is Son in law of C.

Hence, the correct answer is "Option 1".

Q18. Answer: (d) [figure]

The mirror image for the given question is:

Hence, the correct answer is "Option 4".

Q19. Answer: (a) (9, 80, 100)

The logic followed here is:

Logic: (1st number)^2 - 1 = 2nd number,

(1st number + 1)^2 = 3rd number.

Now,

For, (8, 63, 81)

=> 8^2 - 1 = 64 - 1 = 63.

=> $(8 + 1)^2 = 9^2 = 81$.

For, (11, 120, 144)

=> 112 - 1 = 121 - 1 = 120.

=> (11 + 1)2 = 122 = 144.

Similarly, for (9, 80, 100)

=> 92 - 1 = 81 - 1 = 80.

=> (9 + 1)2 = 102 = 100.

Hence, the correct answer is "Option 1".

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Q20. Answer: (d) JP

The logic followed here is:

Option 1) HS → H and S is the opposite letters.

Option 2) CX → C and X is the opposite letters.

Option 3) MN → M and N is the opposite letters.

Option 4) JP → J and P is not the opposite letters, J + 6 = P.

Hence, the correct answer is "Option 4".

Q21. Answer: (a) 399

The logic followed here is:

So, '399' will complete the series.

Hence, the correct answer is "Option 1".

Q22. Answer: (d) 104-10886

The logic followed here is:

Logic: (1st number)² = 2nd number.

Now, checking the options:

Option 1) 108-11664 → $(108)^2 = 11664$.

Option 2) 116-13456 → (116)2 = 13456.

Option 3) 112-12544 → (112)2 = 12544.

Option 4) 104-10886 → (104)2 = 10816 ≠ 10886.

So, '104-10886' is odd among the given options.

Hence, the correct answer is "Option 4".

Q23. Answer: (a) [figure]

The image embedded in the given figure is as shown below:

Hence, "Option 1" is the correct answer.

Q24. Answer: (c) 11

The triangles are:

So, there are 11 triangles are in the given figure.

Hence, the correct answer is "11".

Q25. Answer: (d) Carpenter - Furniture

The logic followed here is:

Logic: Product : Creator

Product	Creator
Poem	Poet
Ornament	Goldsmith
Clothes	Tailor
Furniture	Carpenter

Option 1) Poem - Poet → A poet is the person who creates a poem. This is a creation-creator relationship.

Option 2) Ornament - Goldsmith → A goldsmith is the person who crafts ornaments. This is also a creation-creator relationship.

Option 3) Clothes - Tailor → A tailor is the person who makes clothes. Again, this is a creation-creator relationship.

Option 4) Carpenter - Furniture → A carpenter is the person who makes furniture, this is a creator-creation relationship.

Here, 'Carpenter - Furniture' is odd among the options.

Hence, the correct answer is "Option 4".

Q26. Answer: (b) 2015

The correct answer is 2015.

Key Points

• The Planning Commission was charged with the responsibility of making assessments of all resources of the country,

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augmenting deficient resources, formulating plans for the most effective and balanced utilization of resources, and determining priorities.

• On 1 January 2015, a Cabinet resolution was passed to replace the Planning Commission with the newly formed NITI Aayog.

Additional Information

• NITI-National Institution for Transforming India

• NITI Aayog is a policy think tank of the Government of India which replaced the Planning Commission of India. It was established with the aim of achieving sustainable development goals with cooperative federalism by fostering the involvement of State Governments in economic policies.

• One of the objectives of NITI Aayog is to develop mechanisms to formulate credible plans at the village level and aggregate these progressively at higher levels of government.

• Chairman of NITI Aayog- PM Narendra Modi

Q27. Answer: (b) Razia Sultana

The correct answer is Razia Sultana.

Key Points

• Razia Sultana was the first female Muslim ruler of the Indian subcontinent.

• She ruled in Delhi from 1236 to 1240 as the Sultan herself – it was a title never before bestowed on a woman, a position of power never before attained by a woman.

• Before ascending to the throne of Delhi after her father's death, the reign was briefly handed over to her half-brother Rukn ud-din Firuz.

• But after Firuz's assassination within 6 months of his ascendency, the nobles agreed to place Razia on the throne.

Additional Information

Slave Dynasty

• Established by Qutb ud-Din Aibak.

• Dynasty lasted from 1206 to 1290.

• It was the first of the dynasties to rule as the Delhi Sultanate.

• Dynasty ended when Jalal ud din Firuz Khilji overthrew the last Mamluk ruler Muiz ud din Qaiqabad in 1290.

• Dynasty was succeeded by the Khilji (or Khalji) dynasty, the second dynasty of the Delhi Sultanate.

Q28. Answer: (a) Nelson Mandela

The correct answer is Nelson Mandela.

Key Points

• Nelson Mandela

• His autobiography is Long Walk to Freedom.

• Nelson Mandela, in full Nelson Rolihlahla Mandela, by name Madiba.

• He won the Nobel Prize for Peace in 1993.

• Mandela is also known for being the first black president of South Africa, serving from 1994 to 1999.

• He created the Nelson Mandela Foundation, focusing its work towards c

• Mandela used the country's love for rugby as a way to unite blacks and whites in the racially divided country.

• Nelson Mandela International Day is celebrated on 18 July every year to remember the contributions of Mandela to the culture of peace, human rights, reconciliation and freedom.

Additional Information

• The Nobel Prize in Literature is a Swedish literature prize that is awarded annually, since 1901, to an author from any country who has, in the words of the will of Swedish industrialist Alfred Nobel, "in the field of literature, produced the most outstanding work in an idealistic direction".

• Though individual works are sometimes cited as being particularly noteworthy, the award is based on an author's body of work as a whole.

Q29. Answer: (c) Fifth

The correct answer is Fifth.

Key Points

• On the basis of nominal GDP, India is the world's fifth-largest economy as of 2022.

• GDP stands for Gross Domestic Product.

• GDP is the total market value of all final goods and services produced during a given time period within a nation's domestic borders.

• GDP is the most referred indicator for highlighting a country's economy, whether its size or its performance, and GDP is used as the benchmark growth indicator.

• The major contribution of GDP in India is of the service sector, followed by the manufacturing sector, and then by the primary sector.

Additional Information

• GDP:

• GDP's full form is Gross Domestic Product is evaluated regularly to account for changing production structure, relative prices, and better recording of economic activities.

• Gross Domestic Product (GDP) is the total monetary value of final goods and services produced in the economic territories of a country in a given year.

• Non-monetary goods and services (e.g. cooking by housewives) are not included in GDP calculation.

• Economic transactions virtually include everything economic in the country. For e.g., if a stockbroker sells and purchases the same stock worth Rs. 1000 five times in a day, it does not increase the GDP of the country by Rs. 5000.

• Economic transactions may also include buying and selling of bonds, FII inflows, and outflows, etc.

• GDP includes the value of all goods and services produced within a country within a year.

Q30. Answer: (a) Convex Mirrors

The correct answer is Convex Mirrors.

Key Points Convex mirror:

• The spherical mirror whose reflecting surface is in upside is called a convex mirror.

• It is always from a virtual image of any object.

• It is used as a rear-view mirror in the vehicle

• It is also from a full-size diminished image of the objects placed at far away distances with a wide range of field of; view.

• Due to a wide range of fields of view, we can see the image of the maximum object behind the vehicles.

Additional Information

• The optical instrument which reflects the light falling on it and makes images of anybody is called a mirror.

• A mirror that has a spherical reflecting surface is called a spherical mirror.

• A mirror whose reflecting surface is flat is called a plane mirror.

• A mirror whose reflecting surface is part of a cylindrical surface is called a cylindrical mirror.

Q31. Answer: (a) 2010

The correct answer is 2010.

Key Points

• On 12 August 2009, the first draft of the Direct Tax Code Bill was created.

• In 2010, a Revised Discussion Paper was created.

• In 2010, The Direct Tax Code bill was introduced in Parliament, and a Standing Committee of Finance (SCF) was appointed for a detailed discussion.

• In 2012, the committee submitted its report to Parliament.

• In 2014, a revised version of the Direct Tax Code was created after the committee report.

• The bill lapsed due to the change in government after the general elections.

• In 2017, An expert committee was set up to draft a fresh Direct Tax Code.

• In Aug 2019, the task force report was submitted to the Finance Minister.

Additional Information

Tax Type	Description
Income Tax	A tax on the income earned by individuals, HUFs, companies, and other entities.
Goods and Services Tax (GST)	A value-added tax on the supply of goods and services, which replaced several indirect taxes such as excise duty, VAT, and service tax.
Corporate Tax	A tax on the profits earned by companies and other business entities.
Capital Gains Tax	A tax on the profits earned from the sale of capital assets such as property, shares, and mutual funds.

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Wealth Tax	A tax on the net wealth of individuals and HUFs, which was abolished in 2015.
Customs Duty	A tax on the import and export of goods across India's borders.
Excise Duty	A tax on the production and manufacture of goods within the country.
Securities Transaction Tax (STT)	A tax on the purchase and sale of securities such as stocks, bonds, and mutual funds.
Professional Tax	A tax on the income earned by professionals such as doctors, lawyers, and chartered accountants.
Property Tax	A tax on the ownership or occupation of property, which is levied by local authorities such as municipalities and panchayats.

Q32. Answer: (b) Touchpad

The correct answer is Touchpad.

Key Points

• Neeti should use a touchpad as an input device.

• A touchpad works by sensing the user's finger movement and downward pressure, and it is commonly used on laptops and other portable devices.

• With a touchpad, Neeti can move the cursor on the screen and perform various operations such as clicking, scrolling, and zooming by using different gestures.

• Touchpads are easy to use and provide a convenient way to interact with a computer without the need for an external mouse or keyboard.

Additional Information

Input Device	Description
Scanner	A device that captures images or text and converts them into a digital format.
Light Pen	A pointing device that detects light emitted by the screen when the user touches it with a pen-like device.
Keyboard	A device that allows users to input text and commands by pressing keys.

Q33. Answer: (d) India

The correct answer is India.

Key Points

• The 2022 FIFA U-17 Women's World Cup was the 7th edition of the FIFA U-17 Women's World Cup.

• Odisha Chief Minister Naveen Patnaik launched the FIFA U-17 Women's World Cup India 2022 Host City logo.

• The FIFA U-17 Women's World Cup India 2022 was held from October 11 to October 30 in Odisha, Goa, and Maharashtra.

• This was the first FIFA women's competition to be held in India and the first FIFA competition to be organized by the state of Odisha.

• The launch of the official Host City logo of Odisha was an important milestone that also reflects the progress of women's football.

• The official host city logo of Odisha is a composite that represents the official emblem of the FIFA U-17 Women's World Cup India 2022 with a specially designed artwork that highlights the rich cultural heritage, vibrant sports ecosystem, and overall splendour of the state.

Additional Information

• 2022 FIFA U-17 Women's World Cup

• Since its inception, the biennial international women's youth football championship has been contested by the under-17 national teams of FIFA's member associations. 2008.

• The tournament will be hosted by India, which would have hosted the 2020 edition before it was cancelled due to the COVID-19 pandemic.

• This is the second time that India hosts a FIFA tournament after the men's 2017 FIFA U-17 World Cup.

• This is the first time India hosts a FIFA women's football tournament.

• Morocco and Tanzania also made their debuts along with hosts India.

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Q34. Answer: (a) Operating systems

The correct answer is Operating systems.

Key Points

• Operating systems is not an application software.

• It is system software that manages computer hardware and software resources and provides common services for computer programs.

• Application software refers to programs that are designed to perform specific tasks for the user, such as creating documents, editing photos, or managing data.

Additional Information

Operating System	Developer	Year Released
Windows	Microsoft	1985
macOS	Apple	2001
Linux	Various	1991
Android	Google	2008
iOS	Apple	2007
Chrome OS	Google	2011

Q35. Answer: (c) Cosmos

The correct answer is Cosmos.

• The word "Universe" refers to the entirety of all matter and energy, including all celestial bodies and forms of energy in space.

• Astronomy and cosmology are fields of study focused on understanding the nature, properties, and origins of the universe.

• The term "cosmos" is often used as a synonym for the universe and is derived from the Greek word "kosmos," which means "order" or "harmony."

• The ancient Greeks believed the universe was a perfectly ordered and harmonious system.

• Today, "cosmos" is often used in a more poetic or philosophical context than "universe" to refer to the larger philosophical questions inspired by our observations of the universe.

• The term "cosmos" emphasizes the idea of order and harmony in the universe and is often used to describe the beauty and mystery of the universe.

• Big Crunch:

• A theoretical scenario in which the expansion of the universe eventually reverses and all matter collapses back into a hot, dense singularity.

• Astronomy:

• The scientific study of celestial objects and phenomena in the universe, including stars, planets, galaxies, and black holes, as well as the properties, physics, and evolution of these objects.

• Supernova:

• A powerful and luminous explosion that occurs when a massive star reaches the end of its life and expels most of its mass in a massive burst of energy and radiation.

Q36. Answer: (c) Defence

The correct answer is Defence.

Key Points

• Pay Roll Automation for Disbursement of Monthly Allowances (PADMA), an automated Pay & Allowances module for the Indian Coast Guard was inaugurated by Shri Rajnish Kumar, Controller General of Defence Accounts (CGDA), Ministry of Defence.

• PADMA is an automated platform leveraging latest technology which will provide seamless and timely disbursal of Pay & Allowances to around 15,000 Indian Coast Guard personnel.

• This module has been developed under the aegis of Defense Accounts Department and will be operated by Pay Accounts Office Coast Guard, Noida.

• The launch marked the beginning of the Centralized Pay System (CPS), the foundation of which is being laid down by the Defence Accounts Department Headquarters to provide one stop pay accounting solutions for all organizations under the Ministry.

• The CGDA emphasized that the Government has campaigned for Digital India to ensure dedicated services and reduce manual intervention at every level & to promote E-Governance in a big way.

• Launch of PADMA will strengthen the Digital India concept.

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• Also, it is an 'Atmanirbhar Bharat' initiative as the entire module has been designed and developed by Indian entrepreneurs assisted by domain experts.

Additional Information

• About Ministry of Defence:

• The Ministry of Defence (MoD) is a central government ministry of the Government of India responsible for managing the country's armed forces.

• Its primary objective is to ensure India's territorial integrity, security, and sovereignty.

• The ministry is responsible for formulating defence policies and plans, procuring and maintaining equipment and ammunition for the armed forces, and coordinating with other departments to ensure national security.

• The Defence Minister is the head of the Ministry of Defence and is responsible for overall policy direction and decision-making.

• The ministry is also responsible for managing the Defence Research and Development Organization (DRDO), Ordnance Factories Board (OFB), and other defence-related institutions.

• Rajnath Singh is the current (2023) Defence Minister of India.

Q37. Answer: (d) Will Smith

The correct answer is Will Smith.

Key Points

• The winners of the 94th Academy Awards or Oscar awards were announced on 28 March 2022.

• Will Smith was declared the best actor for 'King Richard.

• While Jessica Chastain won the best actress Oscar for "The Eyes of Tammy Faye."

• Jane Campion became just the third woman in the 94-year history of the Oscars to win the best director, for her "Power of the Dog.

Important Points

• Oscar Award:

• It was instituted in 1929 and is conferred annually by the Academy of Motion Pictures in the United States.

• Mahboob Khan's Mother India was the first Indian film to be nominated in the best foreign film category in 1958.

• The first Indian to share the Oscar was Bhanu Athaiya for the film 'Gandhi'.

• Satyajeet Ray was the first Indian who was awarded Oscar for lifetime achievement in cinema in 1992.

• The 2022 Oscar awards were the 94th edition.

• It was held at Dolby Theatre at Ovation Hollywood.

Category	Winners
Best Actress in Leading Role	Jessica Chastain- The Eyes of Tammy Faye
Best Actor in Leading Role	Will Smith- King Richard
Best Director	Jane Campion- The Power of the Dog
Best Picture	CODA

Q38. Answer: (c) 1961

The correct answer is 1961.

Key Points

• The Dowry Prohibition Act was passed in India in 1961.

• The Act prohibits the giving or taking of dowry in India and provides penalties for offenders.

• The Act was enacted to curb the practice of dowry, which is a social evil in India that has resulted in the exploitation and harassment of women.

• The Act is enforced by the Indian police and legal system.

• The Act has been amended over the years to strengthen its provisions and increase the penalties for offenders.

Additional Information

Act	Year of enactment	Purpose
Indian Independence Act	1947	Transferred legislative sovereignty to the Indian Constituent Assembly
Constitution of India	1950	Established the framework for governance and fundamental rights and duties

Dowry Prohibition Act	1961	Prohibits the giving or taking of dowry in India
Right to Information Act	2005	Provides the right to access information held by public authorities
National Rural Employment Guarantee Act	2005	Provides a legal guarantee for 100 days of employment to rural households
Right to Education Act	2009	Provides free and compulsory education to all children aged 6 to 14 years
Goods and Services Tax Act	2017	Replaced multiple indirect taxes with a single tax on the supply of goods and services
Citizenship Amendment Act	2019	Amended the Citizenship Act, 1955 to provide a path to citizenship for religious minorities from Pakistan, Afghanistan, and Bangladesh

Q39. Answer: (d) Singapore

The correct answer Singapore.

Key Points

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

• She defe in the final of the Singapore Open.

• Sindhu has won three titles in 2022 - the Swiss Open, Syed Modi India International, and now the Singapore Open.

Additional Information

• The Singapore Open tournament:

• The Singapore Open is an annual badminton tournament held in Singapore.

• It is part of the BWF World Tour and is a Super 500 level event, which makes it one of the most prestigious badminton tournaments in the world.

• The tournament features events for men's and women's singles, doubles, and mixed doubles, and attracts top players from around the world.

• The Singapore Open has been held since 1987 and is organized by the Badminton Association of Singapore.

• The tournament offers significant prize money and world ranking points, making it an important event for professional badminton players.

• The Singapore Open is typically held in April each year and has been won by many of the greatest badminton players in history.

Q40. Answer: (a) Pooja Patel

The correct answer is Pooja Patel.

Key Points

• At the 36th National Games, Pooja Patel of Gujarat has become the first athlete to win gold in Yogasana.

• Pooja won the gold medal in the traditional Yogasana category.

• Yogasana is one of the five sports to be played at the National Games in 2022 for the first time.

• This Indian indigenous sport made its debut at the Khelo India University Games in early 2022.

Additional Information

• The 36th edition of the National Games is being held at six cities in Gujarat.

• PM Modi had inaugurated the 36th National Games in the Narendra Modi stadium in Ahmedabad, Gujarat on 29 Sept 2022.

• The mascot of the games is named as 'Savaj' which means cub in Gujarati.

• While the theme of the anthem of the national games is 'Ek Bharat Shreshtha Bharat.'

Q41. Answer: (a) Mangrove Forests

The correct answer is Mangrove Forests

Key PointsMangrove Forests

• Found in the areas of coasts influenced by tides. Mud and silt get accumulated on such coasts.

• Dense mangroves are the common varieties with roots of the plants submerged underwater.

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• The deltas of the Ganga, the Mahanadi, the Krishana, the Godavari, and the Kaveri are covered by such vegetation.

• In the Ganga Brahmaputra delta, Sundari trees are found, which provide durable hard timber.

• Palm, coconut, keora, agar, also grow in some parts of the delta.

• Royal Bengal Tiger is the famous animal in these forests. Turtles, crocodiles, gharials, and snakes are also found in these forests.

Additional InformationTropical Evergreen Forests:

• These forests are restricted to heavy rainfall areas of the Western Ghats and the island groups of Lakshadweep, Andaman, and Nicobar, upper parts of Assam, and Tamil Nadu coast.

• They are at their best in areas having more than 200 cm of rainfall with a short dry season.

• The trees reach great heights up to 60 meters or even above.

• Since the region is warm and wet throughout the year, it has luxuriant vegetation of all kinds.

• The trees, shrubs, and creepers give it a multilayered structure.

• There is no definite time for trees to shed their leaves.

• As such, these forests appear green all the year-round

Tropical Deciduous Forests

• These are the most widespread forests of India.

• They are also called the monsoon forests and spread over the region receiving rainfall between 200 cm and 70 cm.

• Trees of this forest type shed their leaves for about six to eight weeks in dry summer.

• On the basis of the availability of water, these forests are further divided into moist and dry deciduous.

Natural vegetation refers to a plant community, which has grown naturally without human aid and has been left undisturbed by humans for a long time. The following major types of vegetation may be identified in our country

1. Tropical Evergreen Forests
2. Tropical Deciduous Forests
3. Tropical Thorn Forests and Scrubs
4. Montane Forests
5. Mangrove Forests

Q42. Answer: (c) R Venkataramani

Correct Answer R Venkataramani

Key Points

• R Venkataramani is the incumbent Attorney-General for India. He succeeded to the office as the 16th Attorney-General on 1 October 2022. His predecessor was K. K. Venugopal.

• Mukul Rohatgi

• Mukul Rohatgi is an Indian lawyer and designated senior advocate.

• He was the 14th Attorney General of India.

• He had a three-year term as Attorney General from 19 June 2014 to 18 June 2017.

• He is a senior advocate in the Supreme Court of India.

• He has also previously served as the Additional Solicitor General of India.

• KK Venugopal

• KK Venugopal is an Indian constitutional lawyer and a senior advocate in the Supreme Court of India.

• On 1 July 2017, he was appointed as the Attorney General of India.

Additional Information

• Attorney General Constitutional Provisions

• According to Article 76 of the Indian Constitution, the Attorney General (AG) of India is the highest law officer of India.

• As the Chief Legal Adviser to the Government of India, the Attorney General acts to advise the Central Government on all legal matters.

• Apart from this, the Attorney General of India also represents the Central Government in the Supreme Court.

Q43. Answer: (c) Dal

The correct answer is Dal

Key Points:Dal is a lake in Srinagar.

• It is an urban lake, which is the second largest in the union territory of Jammu and Kashmir.

• It is integral to tourism and recreation in Kashmir and is named the "Lake of Flowers", "Jewel in the crown of Kashmir" or

"Srinagar's Jewel".

Additional Information

• Pangong Tso Lake, also popularly known as Pangong Lake is situated 160kms from Leh.

• It is based at an altitude of around 4350m above sea level in the eastern part of Leh on the Changtang plateau.

• Wular Lake is one of the largest freshwater lakes in Asia.

• It is sited in the Bandipora district in Jammu and Kashmir, India.

• The lake basin was formed as a result of tectonic activity and is fed by the Jhelum River.

Vembanad:

• Vembanad (Vembanad Kayal or Vembanad Kol) is the longest lake in India and the largest lake in the state of Kerala.

• With an area of 2033 square kilometres, it is the second-largest Ramsar site in India only after the Sunderbans in West Bengal.

• Spanning several districts in Kerala, it is known as Vembanadu Lake in Kottayam, Punnamada Lake in Alappuzha and Kochi Lake in Kochi.

Q44. Answer: (c) 2400

Correct Answer 2400

Key Points:

• Somewhat before the time of the Mauryan empire, about 2400 years ago, emperors in China began building the Great Wall.

• It was meant to protect the northern frontier of the empire from pastoral people.

• Additions to the wall were made over a period of 2000 years because the frontiers of the empire kept shifting.

• The wall is about 21,196 km long and is made of stone and brick, with a road along the top.

• Several thousand people worked to build the wall.

• There are watch towers all along, at distances of about 100-200 m.

Additional Information Mauryan Empire

• The Maurya dynasty (321–185 BC) was a powerful dynasty in ancient India.

• The Maurya dynasty ruled India for 137 years.

• The credit for its establishment is given to Chandragupta Maurya and his minister Chanakya (Kautilya).

• This empire started from the plains of the Ganges river (today's Bihar and Bengal) in the state of Magadha in the east.

• Its capital was Pataliputra (near present-day Patna city).

• Chandragupta Maurya established this empire in 321 BC and rapidly expanded his empire towards the west.

• The Mauryan Empire grew and thrived during the Iron Age.

• He took advantage of the differences between several small regional kingdoms that had arisen after Alexander's invasion.

• By 316 BC, the Maurya dynasty had occupied the whole of North Western India.

• The Maurya dynasty expanded on a large scale in the reign of the Chakravarti emperor Ashoka.

• Due to Emperor Ashoka, the Maurya Empire became the greatest and most powerful and became famous all over the world.

Q45. Answer: (d) Hindustani vocal music

Correct Answer Hindustani vocal music

Key Points

• Shri Mani Prasad was a renowned Hindustani classical vocalist.

• He was a disciple of the legendary musician Ustad Bade Ghulam Ali Khan.

• He is known for his expertise in the Patiala Gharana style of Hindustani classical music.

• Mani Prasad was a distinguished performer and teacher of music and has left a lasting impact on the Hindustani classical music tradition

Q46. Answer: (d) Parasnath

The correct answer is Parasnath

• Parasnath Hill is the highest peak in Jharkhand state.

Key Points:

• It is named after Lord Parshvanatha, the 23rd Tirthankara of the Jain religion.

• It is located in the Giridih district of Jharkhand.

• The height of Parasnath Hill is about 1365 m.

• For Jain people, it is the most important pilgrimage center.

• Jain calls the hill "Sammed Sikhar".

• Parasnath was the 23rd Tirthankara and the hill was named after him.
• Some believe that the 9th Tirthankaras achieved salvation on this hill.
• There is a shrine on the hill for each Tirthankara.

Additional Information Anamudi is the highest peak of the Anaimalai hills.
• Anaimalai hills are situated in the north of Anamudi.
• Anamudi is located in Kerala.
• Anamudi is also known as the Everest of South India.
• The elevation of Anamudi hill is 2,695 meters.
• The name Anamudi means "elephant's head".
• General Douglas Hamilton made the first recorded ascent of Anamudi.
• Anamudi is the meeting point of Anamalai, Palanimalai, and ealaimalai.

Girnar hills:-
• It is a group of mountains situated in the Junagadh district of Gujarat.
• It is a sacred pilgrimage site of both Hindus and Jains and is considered to be older than even the Himalayas.
• The highest point in Gujarat, Mt. Girnar has for centuries been one of the most important pilgrimage sites in the state and in all of Western India, with 866 Hindu and Jain temples spread over the 5 summits.

Q47. Answer: (c) Rohtang Pass

Correct Answer Rohtang Pass

Rohtang Pass
• It is a high mountain pass on the eastern end of the Pir Panjal Range of the Himalayas around 51 km from Manali.
• It connects the Kullu Valley with the Lahaul and Spiti Valleys of Himachal Pradesh.
• It links Manali and Leh by road.
• The pass lies on the watershed between the Chenab and Beas basins.
• It as polar climate köppen (ET).

Other important passes:

Passes	Location
Zoji La (Pass)	Zaskar range of Jammu & Kashmir
Banihal Pass	Jammu & Kashmir
Shipki La (Pass)	Himachal Pradesh
Bara-Lacha Pass	Himachal Pradesh
Mana Pass	Uttarakhand
Niti Pass	Uttarakhand
Jelep La (Pass)	Sikkim

Q48. Answer: (c) A. P. J. Abdul Kalam

Correct Answer A. P. J. Abdul Kalam.

Key Points Integrated Guided Missile Development Programme
• IGMDP was the brainchild of renowned scientist Dr APJ Abdul Kalam.
• It was intended to attain self-sufficiency in the field of missile technology.
• After keeping in mind the requirements of various types of missiles by the defense forces, the program recognized the need to develop five missile systems.
• The IGMDP formally got the approval of the Indian government on 26th July 1983.
• The missiles developed under IGMDP are:
• Short-range surface-to-surface ballistic missile – Prithvi
• Intermediate-range surface-to-surface ballistic missile – Agni
• Short-range low-level surface-to-air missile – Trishul
• Medium-range surface-to-air missile – Akash
• Third-generation anti-tank missile – Nag

Additional Information Vikram Sarabhai:

• Dr. Vikram Sarabhai was born on August 12, 1919, in Ahmadabad.

• Dr. Vikram Sarabhai was considered the Father of the Indian space program.

• He was a great institution builder and established a large number of institutes in diverse fields.

• He was instrumental in establishing the Physical Research Laboratory (PRL) in Ahmedabad in November 1947.

• He was also Chairman of the Atomic Energy Commission.

• Dr. Sarabhai's dialogue with NASA in 1966, the Satelite Instructional Television Experiment (SITE) was launched during July 1975-July 1976.

• Dr. Sarabhai started a project for the fabrication and launch of an Indian Satellite.

• As a result, the first Indian satellite, Aryabhata, was put in orbit in 1975 from a Russian Cosmodrome.

• He founded a Community Science Centre at Ahmedabad in 1966.

• Today, the Centre is called the Vikram A Sarabhai Community Science Centre.

Homi J. Bhabha:

• Homi J. Bhabha was an Indian nuclear physicist, founding director, and professor of physics at the Tata Institute of Fundamental Research. Colloquially known as the father of the Indian nuclear program.

• Homi J. Bhabha was the Chairman of the Atomic Energy Commission that was set-up in August 1948.

• Dr. Homi Bhabha established the Atomic Energy Establishment, Trombay (AEET) in January 1954.

• In 1966, Atomic Energy Establishment, Trombay was renamed; Bhabha Atomic Research Centre (BARC).

• Dr. Bhabha was one of the founding directors of the Tata Institute of Fundamental Research.

• He was awarded the Admas Prize.

Q49. Answer: (c) Aedes

Correct Answer Aedes

Key Points

• Chikungunya

• Chikungunya is a viral disease that is primarily transmitted to humans through the bite of infected mosquitoes. Here are some key points to understand about Chikungunya:

• Cause:

• Chikungunya is caused by the Chikungunya virus, which belongs to the alphavirus genus of the family Togaviridae. The primary vectors for Chikungunya are the Aedes species of mosquitoes, particularly Aedes aegypti and Aedes albopictus, which are also responsible for transmitting diseases such as dengue and Zika.

• Transmission:

• The Chikungunya virus is typically transmitted from human to human through the bite of an infected female mosquito. The mosquitoes typically bite during the day, with peak hours around dawn and dusk. Unlike some other mosquito-borne diseases, Chikungunya does not have an animal reservoir and primarily circulates among humans.

• Symptoms:

• After an incubation period of 2 to 12 days, people infected with Chikungunya typically develop symptoms abruptly.

Additional Information

Culex:

• Culex mosquitoes are most commonly associated with the transmission of West Nile virus, Japanese encephalitis, and St. Louis encephalitis.

• They typically breed in stagnant water and are often found in urban and suburban areas. Culex mosquitoes are generally most active during dusk and dawn.

• Carrier: Aedes mosquitoes (primarily Aedes aegypti and Aedes albopictus)

Mansonia:

• Mansonia mosquitoes are less well-known but can transmit diseases such as lymphatic filariasis.

• These mosquitoes breed in weedy swamps and marshes. They are unique in that their larvae and pupae attach to aquatic plants to obtain oxygen, rather than coming to the water’s surface.

Anopheles:

• Anopheles mosquitoes are best known for spreading malaria. They can also transmit other diseases such as lymphatic filariasis and some forms of encephalitis.

• Anopheles mosquitoes breed in clean, unpolluted water and are active primarily at night. They are distinguished by their characteristic resting posture, where their bodies are lifted at an angle to the surface.

• Carrier: Anopheles mosquitoes (primarily Anopheles gambiae, Anopheles funestus, among others)

Q50. Answer: (a) Pune

The correct answer is Pune

Key Points:

• The Aga Khan Palace was built by Sultan Muhammed Shah Aga Khan III in the city of Pune, Maharashtra in 1892.

• The palace was an act of charity by the spiritual leader of the Nizari Ismaili Muslims, who wanted to help the poor in the neighboring areas of Pune, who were drastically hit by famine.

Additional Information:

• Sir Sultan Mahomed Shah, Aga Khan III was the 48th Imam of the Nizari Ismaili sect of Islam.

• He played a very important role in giving the Muslims a political stance to express their opinions to the British.

• In 1906, the Aga Khan was a founding member and first president of the All India Muslim League.

Q51. Answer: (b) Both I and II

Given:

A can complete the work in 20 days

B can complete the work in 30 days

We need to determine whether the following statements are correct or not:

I. Ratio of efficiency of A and B is 3 : 2.

II. Working together A and B can complete the same work in 12 days.

Formula used:

If A can complete a work in x days, then the work done by A in one day = 1/x.

If A can do the work in x days, then B can do the same work in y days, then the ratio of work done by A and B in one day = 1/x : 1/y = y/x.

If A and B work together, their work done in one day = (1/x + 1/y).

If A and B can complete a work together in d days, then their work done in one day = 1/d.

Solution:

Let the total work be W.

A can complete the work in 20 days, so his daily efficiency is 1/20 of the work.

B can complete the work in 30 days, so his daily efficiency is 1/30 of the work.

I. Ratio of efficiency of A and B is (1/20) : (1/30) = 3 : 2. Therefore, statement I is correct.

II. Let the number of days it takes A and B to complete the work together be d.

Then, the work done by A in one day = 1/20, and the work done by B in one day = 1/30.

Their work done in one day working together = (1/20) + (1/30) = 1/12.

Therefore, A and B can complete the work together in 12 days. So, statement II is correct.

Hence, both statement I and statement II are correct.

Therefore Option 2 is the correct answer.

Q52. Answer: (d) 40 : 33

Calculation:

The sum of cars and trains manufactured in 2017 and 2018 = 1600 + 2600 + 1800 + 2000 = 8000

Total number of buses manufactured in 2016, 2017 and 2018 together = 2000 + 1600 + 3000 = 6600

Ratio = 8000 : 6600

=> 40 : 33

Therefore Option 4 is the correct answer.

Q53. Answer: (b) 44 cm

Given:

Length of rectangular sheet = Breadth + 24 cm

Perimeter of rectangular sheet = 128 cm

Formula used:

Perimeter of a rectangle = 2(length + breadth)

Solution:

Let the breadth of the rectangular sheet be x cm.

Then, the length of the rectangular sheet = x + 24 cm (as given in the question)

Perimeter of the rectangular sheet = 2(length + breadth)
128 = 2(x + x + 24)
128 = 4x + 48
4x = 80
x = 20
Therefore, the breadth of the rectangular sheet is 20 cm.
Length of the rectangular sheet = breadth + 24 = 20 + 24 = 44 cm.
Hence, the length of the rectangular sheet is 44 cm.
Therefore Option 2 is the correct answer.

Q54. Answer: (b) Both statement I and II are correct

Given:
Principal amount (P) = Rs. 6000
Rate of interest (R) = 10% per annum
Time period (t) = 2 years
Formula used:
I. Simple Interest (S.I.) = (P * R * t) / 100
II. Compound Interest (C.I.) = P * [1 + (R/100)]^t - P
where, P is the principal amount, R is the rate of interest, t is the time period.
For annual compounding, t = number of years.
Solution:
I. Simple Interest = (P * R * t) / 100
= (6000 * 10 * 2) / 100
= Rs. 1200
Therefore, statement I is correct.
II. Compound Interest = P * [1 + (R/100)]^t - P
= 6000 * [(1 + (10/100))^2 - 1]
= 6000 * [(1.1)^2 - 1]
= 6000 * [1.21 - 1]
= 6000 * 0.21
= Rs. 1260
Therefore, statement II is also correct.
Hence, both statement I and statement II are correct.
Therefore Option 2 is the correct answer.

Q55. Answer: (a) 0

Given:
tan θ + cot θ = 2
Calculation:
=> (sin θ/cos θ) + (cos θ/sin θ) = 2
=> (sin2 θ + cos2 θ)/sin θcos θ = 2 (Because sin2 θ + cos2 θ = 1)
=> 2sin θcos θ = 1
=> sin 2θ = 1 (Because sin 2A = 2sinAcosA)
=> 2θ = 90o (Because sin 90o = 1)
=> θ = 45o
tan θ - cot θ = tan 45o - cot 45o = (1) - (1) = 0
Therefore tan θ - cot θ = 0

Q56. Answer: (c) 2375

Given:
a - b = 5 and ab = 150
Concept used:
a3 - b3 = (a - b)3 + 3ab(a - b)

Calculation:

a3 - b3 = (a - b)3 + 3ab(a - b)

Putting these equations in the above identity

=> a3 - b3 = $(5)^3$ + 3 × 150(5)

=> a3 - b3 = 125 + 2250

=> a3 - b3= 2375

Therefore a3 - b3 = 2375

Q57. Answer: (d) 54%

Calculation:

Profit percent earned by the company during the years 2016 to 2020 = 45 + 70 + 60 + 40 + 55 = 270

Average profit percent earned by the company during the years 2016 to 2020 = 270/5

=> 54%

Therefore Option 4 is the correct answer.

Q58. Answer: (a) 14 m

Shortcut Trick

Radius (r) = [Total Distance] ÷ [2 × π × Revolutions]

Distance = 44 km = 44,000 m.

r = 44,000 ÷ (2 × 22/7 × 500)

r = (44,000 × 7) ÷ (44 × 500)

r = 1,000 × 7 ÷ 500 = 14 m.

Therefore The correct answer is 14 m.

Alternate Method

Given: Total Distance = 44 km, Number of Revolutions = 500.

Formula: Distance = Number of Revolutions × Circumference (2πr)

=> Total Distance = 44 × 1000 = 44,000 m

=> Distance covered in 1 revolution = 44,000 ÷ 500

=> Circumference (2πr) = 88 m

=> 2 × (22/7) × r = 88

=> (44/7) × r = 88

=> r = (88 × 7) ÷ 44

=> r = 2 × 7 = 14 m

Therefore The correct answer is 14 m.

Additional Information

Circumference of a Circle

The distance around the edge of a circle is calculated as C = 2πr or C = πd, where r is the radius and d is the diameter.

Distance and Revolutions

For any rolling wheel, the Total Distance covered is always equal to the Number of Revolutions × Circumference.

Unit Conversion

Always ensure units are consistent; 1 kilometer (km) = 1000 meters (m) and 1 meter (m) = 100 centimeters (cm).

Q59. Answer: (d) 25 cm

Given:

The distance of chord MN from the center is 15 cm

The length of chord MN is 40 cm

Concept:

Chord length using perpendicular distance from the centre = 2 × √ (r2 – d2) [Because r = radius, d = perpendicular distance]

Calculation:

Length of Chord = 2 × √ (r^2 – d^2)

40 = 2 × √ (r^2 – 15^2) = 25 cm

Therefore Option 4 is the correct answer.

Q60. Answer: (b) 4/3

We know that

cosec 90° = 1

cos 60° = 1/2

Calculation:

cosec 90°/(1 - cos2 60°)

=> 1/ 1 - (1/2)²

=> 1/(3/4)

=> 4/3

Therefore Option 2 is the correct answer.

Q61. Answer: (d) 474

Concept used:

Follow the BODMAS rule to solve this question, as per the order given below,

Calculation:

1200 ÷ 15 × [45 ÷ (17 - 2)] of 2 + [-2 (1 + 2)]

1200 ÷ 15 × [45 ÷ 15] of 2 + [- 6]

=> 1200 ÷ 15 × [(3)] of 2 - 6

=> 1200 ÷ 15 × 6 - 6

=> 80 × 6 - 6

=> 480 - 6 = 474

Therefore Option 4 is the correct answer.

Q62. Answer: (a) Only II

Calculation:

I. The number of male teachers in school L is 135.44 percent of the number of female teachers in school P.

Number of male teachers in school L = 160

Number of female teachers in school P = 110

(160/110) x 100% ≈ 145.45%

Therefore, the statement I is incorrect. The correct percentage is 145.45% and not 135.44%.

II. The ratio of the number of female teachers in M and N together to the number of male teachers in N and P together is 29 : 32.

Number of female teachers in schools M and N together = 170 + 120 = 290

Number of male teachers in schools N and P together = 170 + 150 = 320

The ratio of the number of female teachers in M and N together to the number of male teachers in N and P together = 290 : 320

We can simplify this ratio by dividing both numbers by 10.

29 : 32

Therefore, statement II is correct.

Q63. Answer: (d) 15000

Given:

Party A got 30% of the total votes

Party B got 25% of the total votes

Party C got the remaining votes and got 9000 more votes than Party A

Formula:

The percentage of votes received by a party can be converted to the actual number of votes by multiplying the percentage by the total number of votes.

Solution:

Let's assume that the total number of votes in the Lok Sabha election is 'x'.

Then,

The number of votes received by Party A is 0.3x.

The number of votes received by Party B is 0.25x.

The number of votes received by Party C is = x - 0.3x - 0.25x = 0.45x.

The number of votes received by Party C is 9000 more than the number of votes received by Party A, so:

0.45x = 0.3x + 9000
Simplifying this equation:
0.15x = 9000
x = 60000
Therefore, the total number of votes in the Lok Sabha election is 60000.
The number of votes received by Party B is:
0.25x = 0.25(60000) = 15000
Therefore, Party B got 15000 votes.

Q64. Answer: (a) 26/3

Given:
sin x = 1/2
Formula used:
(1.) sec2θ - tan2θ = 1
(2.) cosec2θ - cot2θ = 1
(3.) sin(30?) = 1/2
Calculation:
According to the question,
Since sin(30?) = 1/2,
Therefore, x = 30?
Again according to the question,
=> ? = (sec4x + cosec4x) - (tan4x + cot4x)
=> ? = sec4x + cosec4x - tan4x - cot4x
=> ? = sec4x - tan4x + cosec4x - cot4x
=> ? = (sec2x - tan2x)(sec2x + tan2x) + (cosec2x - cot2x)(cosec2x + cot2x)
=> ? = (1)(sec2x + tan2x) + (1)(cosec2x + cot2x)
=> ? = (sec2x + tan2x) + (cosec2x + cot2x)
=> ? = (sec230? + tan230?) + (cosec230? + cot230?)
=> ? = (2/(√ 3))2 + (1/(√ 3))2 + (2)2 + (√3)2
=> ? = 4/3 + 1/3 + 4 + 3
=> ? = (4 + 1 + 12 + 9)/3 = 26/3
Therefore, ' 26/3 ' is the required answer.
Additional Information
(1.) If secθ + tanθ = a, then secθ - tanθ = 1/a
(2.) If cosecθ + cotθ = a, then cosecθ - cotθ = 1/a

Q65. Answer: (d) 7

Shortcut Trick
Use the Prime Number count mnemonic for 1−100: 44−22−3−22−3−2−1.
The numbers from 21 to 50 fall into the 3^(rd), 4^(th), and 5^(th) intervals.
21−30 (3^(rd) interval) = 2 prime numbers (23, 29).
31−40 (4^(th) interval) = 2 prime numbers (31, 37).
41−50 (5^(th) interval) = 3 prime numbers (41, 43, 47).
Total = 2 + 2 + 3 = 7.
Therefore The correct answer is 7.
Alternate Method
Given Range: 20 to 50
A prime number has only two factors: 1 and itself. Check odd numbers between 20 and 50:
=> Numbers to check: 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49.
=> Multiples of 3: 21, 27, 33, 39, 45 (Not prime).
=> Multiples of 5: 25, 35 (Not prime).
=> Multiples of 7: 49 (Not prime).

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=> Remaining Prime Numbers: 23, 29, 31, 37, 41, 43, 47.

=> Count = 7.

Therefore The correct answer is 7.

Additional Information

Prime Numbers from 1 to 100

There are exactly 25 prime numbers between 1 and 100. The only even prime number is 2.

Composite Numbers

A natural number greater than 1 that is not prime is called a composite number. 1 is neither prime nor composite.

Twin Primes

Pairs of prime numbers that have a difference of 2 (e.g., 29 and 31, or 41 and 43) are called Twin Primes.

Q66. Answer: (c) 84

Calculation:

We have:

$2p + 5q = 12$ .....(1)

$pq = 3$ .....(2)

Squaring equation (1), we get:

$4p^2 + 20pq + 25q^2 = 144$

Substituting the value of pq from equation (2), we get:

$4p^2 + 20(3) + 25q^2 = 144$

Simplifying this equation:

$4p^2 + 25q^2 = 84$

Therefore, the value of $4p^2 + 25q^2$ is 84.

Q67. Answer: (d) 11

Shortcut Trick

For any triangle with two given sides a and b (where a < b), the number of possible integral values for the third side is given by the formula:

Number of values = (2 × smaller side) − 1

Given sides: 6 cm and 11 cm.

=> Smaller side = 6 cm

=> Number of integral values = (2 × 6) − 1 = 12 − 1 = 11

Therefore The correct answer is 11.

Alternate Method

Given:

Side AB = 6 cm

Side BC = 11 cm

Let the third side AC be x cm.

Formula Used:

According to the Triangle Inequality Theorem, for any triangle with sides a, b, and c:

$|a - b| < c < a + b$

Calculations:

Applying the inequality to the given sides:

=> $|11 - 6| < x < 11 + 6$

=> $5 < x < 17$

Since x must be an integral value (integer), the possible values for x are:

=> x in {6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16}

Counting the total number of integers in this range:

=> Count = 16 − 6 + 1 = 11

Therefore The correct answer is 11.

Additional Information

Triangle Inequality Theorem

The theorem states that the sum of the lengths of any two sides of a triangle must be strictly greater than the length of the third side. Conversely, the difference between any two sides must be strictly less than the third side.

Types of Triangles by Sides

If the third side x satisfies $x^2 < a^2 + b^2$, the triangle is acute. If $x^2 = a^2 + b^2$, it is a right triangle. If $x^2 > a^2 + b^2$, it is obtuse.

Range of the Third Side

For given sides a and b, the third side c always lies in the open interval (b − a, b + a). The total number of integers in this range is (2 × smaller side) − 1.

Q68. Answer: (a) Both I and II

Calculation:

Total cost price of articles D, E, and F = 700 + 600 + 400 = 1700

Total cost price of articles G, H, and I = 500 + 300 + 800 = 1600

Total profit of articles D, E, and F = 200 + 150 + 300 = 650

Total profit of articles G, H, and I = 400 + 250 + 350 = 1000

Statement I: The profit of D, E and F is 30.63 percent of the cost price of G, H and I.

Profit of D, E and F = 200 + 150 + 300 = 650

Cost price of G, H, and I = 500 + 300 + 800 = 1600

The percentage is (650/1600) × 100 = 40.625%

So, this statement is incorrect.

Statement II: The ratio of total cost price to the total profit is 1 : 2.

Total cost price = 1700 + 1600 = 3300

Total profit = 650 + 1000 = 1650

The ratio of total cost price to the total profit is 3300 : 1650 = 2 : 1

So, this statement is also incorrect.

Therefore, both statements are incorrect.

Q69. Answer: (c) 33 years

Given:

The ratio of present ages of father, mother, and son = 8:5:2

Present age of father = 48 years

Formula used:

Average age = Total age/Number of members

Calculation:

We can find the present ages of the mother and son by using the ratio:

Mother's age = (5/8) × Father's age = (5/8) * 48 = 30 years

Son's age = (2/8) × Father's age = (1/4) × 48 = 12 years

After 3 years, their ages will be:

Father's age = 48 + 3 = 51 years

Mother's age = 30 + 3 = 33 years

Son's age = 12 + 3 = 15 years

The total age of the family after 3 years will be:

Total age = 51 + 33 + 15 = 99

The average age of the family after 3 years will be:

Average age = Total age/Number of members

Average age = 99/3 = 33

Therefore, the average age of the family after 3 years will be 33 years.

Q70. Answer: (d) 20.8 percent

Given:

Two successive discounts of 12% and 10%.

Formula Used:

Equivalent discount = 100% - [(100% - discount1) × (100% - discount2)]/100%

where discount1 and discount2 are the two successive discounts given.

Solution:

Substituting discount1 = 12% and discount2 = 10% in the formula, we get:

Equivalent discount = 100% - [(100% - 12%) × (100% - 10%)]/100%

= 100% - [(88%) × (90%)]/100%

= 100% - 79.2%

= 20.8%

Therefore, the equivalent single discount of two successive discounts of 12% and 10% is 20.8%.

Q71. Answer: (a) 46.6 percent

Given:

Janki purchased 10 dozen corn at the rate of Rs. 180 per dozen.

She sold each corn at the rate of Rs. 22.

Formula:

Cost Price (CP) = Cost of 1 dozen of corn = Rs. 180

Selling Price (SP) = Rs. 22

Profit = SP - CP

Profit Percentage = (Profit /CP) × 100

Calculation:

To solve this problem, we need to find the total cost of 10 dozen of corn, the total selling price of all the corn, and then calculate the profit percentage.

Total Cost Price = 10 × CP = 10 × 180 = Rs. 1800

Total Selling Price = Number of corn sold × SP = 120 × 22 = Rs. 2640

Profit = Selling Price - Cost Price = 2640 - 1800 = Rs. 840

Profit Percentage = (Profit/CP) × 100 = (840/1800) × 100 = 46.67%

Therefore, Janki's percent profit is 46.67%.

Q72. Answer: (c) (2y - x + z)2

Given:-

$x^2 + 4y^2 + z^2 - 4xy + 4yz - 2xz$

Formula used :-

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

Calculation:-

=> x2 + 4y2 + z2 - 4xy + 4yz - 2xz

=> x2 + $(2y)^2$ + z2 - 2.(x).(2y) + 2.(z).(2y) - 2.(x).(z)

=> $(-x)^2 + (2y)^2 + z2 + 2.(-x).(2y) + 2.(z).(2y) + 2.(-x).(z)$

Comparing (a + b +c)2 = a2 + b2+ c2 + 2ab + 2bc + 2ca

We get

=> (-x)2 + (2y)2 + z2 + 2.(-x).(2y) + 2.(z).(2y) + 2.(-x).(z)

=> $(2y - x + z)^2$

Therefore The required answer is (2y - x + z)2

Q73. Answer: (b) 81 π

Given:

A square with a side of length 18 cm.

Formula:

The area of a circle = πr^2, where r is the radius of the circle.

Calculation:

To find the area of the biggest circle that could be drawn in a square of side 18 cm, The side of the square will be equal to the diameter of the circle.

The length of side = 18

The radius of the circle = diameter/2 = (18/2) = 9

The area of the circle = $\pi \times r^2 = \pi \times (9)^2 = 81\pi$

Therefore, the area of the biggest circle that could be drawn in a square of side 18 cm is 81π.

Q74. Answer: (b) 20

Given:

The average salary per employee in the sales department is Rs. 350.

The average salary of 10 senior employees is Rs. 450 per employee.

The average salary of the remaining staff is Rs. 250 per employee.

Formula:

Average = (Sum of observations)/(Number of observations)

The sum of observations = Average × Number of observations

Calculation:

Let the total number of employees in the sales department be x.

The sum of salaries of all the employees in the sales department is:

(10 × 450) + (x - 10) × 250

The average salary per employee is given as Rs. 350, so we can write:

350 = [(10 × 450) + (x - 10) × 250]/x

Multiplying both sides by x, we get:

350x = (10 × 450) + (x - 10) × 250

Expanding the right-hand side, we get:

350x = 4500 + 250x - 2500

Simplifying and solving for x, we get:

100x = 2000

x = 20

Therefore, the total number of employees working in the sales department is 20.

Q75. Answer: (a) 50 km/h

Shortcut Trick

Remaining distance ratio = 1 − 3/5 = 2/5

Remaining distance = 250 × (2/5) = 100 km

Target time to reach = 6 hours − 0.5 hours (30 min) = 5.5 hours

Remaining time = 5.5 − 3.5 = 2 hours

Required Speed = 100 ÷ 2 = 50 km/h

Therefore The correct answer is 50 km/h.

Alternate Method

Given:

Total Distance = 250 km

Total Time allowed = 6 hr

Distance covered = 3/5 of 250 km in 3.5 hr

Target = Reach 30 minutes early

Formula Used:

Speed = Distance ÷ Time

Calculations:

=> Distance covered = (3 ÷ 5) × 250 = 150 km

=> Remaining distance = 250 − 150 = 100 km

=> Target reaching time = 6 hr − (30 ÷ 60) hr = 5.5 hr

=> Time remaining for the journey = 5.5 − 3.5 = 2 hr

=> Required speed = 100 ÷ 2 = 50 km/h

Therefore The correct answer is 50 km/h.

Additional Information

Average Speed

It is calculated as Total Distance ÷ Total Time. If a journey is divided into parts, Average Speed = (d1 + d2) ÷ (t1 + t2).

Speed Conversion

To convert km/h to m/s, multiply by 5/18. To convert m/s to km/h, multiply by 18/5.

Relative Speed

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When two objects move in the same direction, relative speed = |u − v|. In opposite directions, relative speed = u + v.

Q76. Answer: (b) APPREHENSIVE

The solution is in Hindi. Read it online.

Q77. Answer: (b) To ease pressure on something

The solution is in Hindi. Read it online.

Q78. Answer: (d) been removed for

The correct improvement for the underlined part of the sentence is option 4) been removed for.

Explanation:

The underlined part of the sentence "has not been remove for 6 months" contains a grammatical error. The verb 'remove' is in the present tense, but it should be in the past participle form to show that the action has already been completed. The correct form of the verb in this case is "been removed."

Q79. Answer: (d) My mother said that she was meeting my father that day.

The correct indirect form of the given sentence is option 4) My mother said that she was meeting my father that day.

Explanation:

In indirect or reported speech, we report what someone said without using their exact words. The tense of the reported speech is usually shifted back one tense, and pronouns and time expressions are also changed accordingly.

In the given sentence, the reporting verb "said" is in the past tense, which means that the tense of the reported speech should also be shifted back one tense. "I am meeting your father today" is in the present continuous tense, which should be changed to the past continuous tense ("was meeting") in reported speech.

Therefore, the correct indirect form of the sentence is "My mother said that she was meeting my father that day".

Q80. Answer: (b) molecules raise into the air

The error is in option 2) "molecules raise into the air."

The correct form of the verb in this sentence is "rise" because it should be in the present tense. The correct sentence should read, "When we cook garlic, the sulphide molecules rise into the air and fill the room with their pleasing aroma."

Q81. Answer: (c) SQPR

The correct order of the parts of the sentence is: SQPR

Key Points

• S. appears at the climax, the moment when

• This sentence sets the context by stating that a product placement occurs at the climax, which is the moment of highest intensity or suspense in a narrative.

• Q. our attention is fixated on what will happen next,

• The sentence starting with "our attention is fixated" describes the state of focus or concentration that occurs during the climax. At this point, the audience is eagerly anticipating what will happen next in the story.

• P. we are either less likely to notice the placement

• This statement suggests that due to the heightened focus on the narrative's unfolding events, there is a reduced likelihood of noticing the product placement. The audience's attention is primarily directed towards the storyline rather than the presence of any advertising.

• R. or more likely to be annoyed by it if we do notice it

• In this final part, it is mentioned that if the audience does happen to notice the product placement during the climax, there is a higher chance of them being annoyed by it. This annoyance can stem from the distraction it poses or the perception of the advertisement interrupting the narrative flow.

The sentence is discussing the effects of product placement in a narrative, and the proper order of events is:

"If a product placement appears at the climax, the moment when our attention is fixated on what will happen next, we are either less likely to notice the placement or more likely to be annoyed by it if we do notice it."

Q82. Answer: (a) late

The correct option to fill in the blank is "late."

Explanation of the options:

"Late" means near or towards the end of a particular period of time, in this case, the thirties.

"Lest" means with the intention of preventing something undesirable; it is not the correct word for the given sentence.

"Latter" means the second of two things mentioned, and it does not make sense in the given sentence.

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"Least" means the smallest in amount or extent and is not relevant to the sentence.

Therefore, "late" is the correct option to complete the sentence.

Q83. Answer: (b) Mount Kilimanjaro in Tanzania and on Mount Kenya

The correct option is "Mount Kilimanjaro in Tanzania and on Mount Kenya".

Key Points

• The proper sentence should read: "Africa has glaciers on Mount Kilimanjaro in Tanzania and on Mount Kenya".

• The use of the definite article 'the' before each mountain name, as in the original sentence, is redundant and grammatically incorrect as specific geographical locations typically don't use it.

• Using 'on' before each mountain's name maintains parallel structure and consistency, which enhances readability and clarity.

• This modification makes a more concise and correct sentence, meeting English language standards for geographical names.

Therefore, the correct option is 'Option 4'.

Additional Information

• Option 1 (Mount Kilimanjaro in Tanzania and the Mount Kenya) still incorrectly uses 'the' before Mount Kenya.

• Option 3 (No improvement) doesn't modify the sentence, which has grammatical errors.

• Option 4 (the Mount Kilimanjaro in Tanzania and to Mount Kenya) retains the incorrect 'the' and awkwardly uses 'to' instead of 'on'.

Q84. Answer: (c) Convalescent

The solution is in Hindi. Read it online.

Q85. Answer: (b) CBAD

The correct sequence of the jumbled sentence is:

C. Gifts the sorceress gave me.

B. A story and a parchment.

A. The story was the tale of Kunti, mother of Arjun

D. mother of Arjun. The parchment was a map of Bharat's many kingdoms.

Explanation:

There were two final gifts the sorceress gave me: a story and a parchment. The story was the tale of Kunti, mother of Arjun. The parchment was a map of Bharat's many kingdoms.

Therefore, the correct sequence of the jumbled sentence is option 1) CBAD.

Q86. Answer: (b) for he had neither gun or spear.

Option 2 contains a grammatical error.

The correct sentence should be: "for he had neither gun nor spear."

Explanation:

The error in option 2 is the use of "or" instead of "nor." "Neither/nor" is used to indicate a negative correlation between two items, whereas "either/or" is used to indicate a positive correlation. In this case, the sentence is stating that the boy had neither a gun nor a spear, so "nor" is the correct word to use.

Q87. Answer: (a) Meander

The solution is in Hindi. Read it online.

Q88. Answer: (b) All the cash has been taken by Meghna.

The correct passive form of the given sentence is: "All the cash has been taken by Meghna." (Option 2)

Explanation

All the cash had been taken by Meghna. - This is a correct passive construction, but it uses the past perfect tense, which implies that the action was completed before another past action. In the given sentence, there is no such indication of a past action, so this option is not appropriate.

All the cash has been taken by Meghna. - This is the correct passive form of the given sentence. It uses the present perfect tense, which indicates that the action was completed in the past, but the result is still relevant in the present.

All the cash had been taking by Meghna. - This is incorrect as "taking" is not the correct form of the verb to use in a passive construction.

All the cash was taken by Meghna. - This is a correct passive construction, but it uses the past tense, which implies that the action was completed in the past and is not relevant in the present. The present perfect tense is a more appropriate choice in this case.

Q89. Answer: (c) Easy

The correct answer is Option 3.

Key Points

• Option 1) Inarticulate: This word means unable to express oneself clearly or fluently. It is the opposite of the meaning of 'glib' which means fluent and voluble but insincere and shallow. Therefore, this option is incorrect.

• Option 2) Implausible: This word means not seeming reasonable or probable; failing to convince. It is not a synonym of 'glib'. Therefore, this option is incorrect.

• Option 3) Easy: This word means achieved without great effort; presenting few difficulties. This option is a synonym of 'glib'. Therefore, this option is correct.

• Option 4) Sincere: This word means free from pretence or deceit; proceeding from genuine feelings. It is the opposite of the meaning of 'glib' which means fluent and voluble but insincere and shallow. Therefore, this option is incorrect.

Hence, the correct answer is option 3) Easy.

Q90. Answer: (c) Something that is bought without examining properly

The solution is in Hindi. Read it online.

Q91. Answer: (c) Saint

The solution is in Hindi. Read it online.

Q92. Answer: (b) PQSR

The correct order of the sentence is: PQSR

Explanation:

The sentence starts with an independent clause. It introduces the subject of the sentence, which is 'the researchers'.

R - "performed experiments and developed a model" describes the actions taken by the researchers. They conducted experiments and created a model.

Q - "which explains how the worm's taste sensors" introduces the aspect being explained by the model developed by the researchers. It focuses on the worm's taste sensors and how they work.

S - "process information from the environment" describes the process carried out by the worm's taste sensors. They receive information from the environment.

R - "to direct its foraging behaviour" the last part of the sentence explains the purpose of the model developed by the researchers. It helps the worm to direct its foraging behaviour.

Therefore, the correct order of the sentence is PQSR.

Q93. Answer: (b) No sooner had the news leaked out than

Option 2 is the correct answer: "No sooner had the news leaked out than"

Explanation:

The original sentence uses the phrase "hardly had" to indicate that something happened immediately after something else. The correct phrase to replace it with is "no sooner had."

Additional Information

Option 1, "No sooner did the news leaked out than," is incorrect because it uses the wrong verb tense. "Leaked" is past tense, but "did" requires present tense.

Option 3, "No sooner had the news leaked out that," is also incorrect because it uses the wrong conjunction. "That" is not the correct conjunction to use after "leaked out" in this context.

Option 4, "No improvement," is incorrect because the original sentence needs to be improved to make grammatical sense.

Q94. Answer: (c) PERCIEVE

The incorrectly spelled word is "PERCIEVE" (Option 3).

Explanation:

"VISCOUS" is correctly spelt and means having a thick, sticky consistency between solid and liquid.

"BENEVOLENT" is correctly spelt and means well-meaning and kind.

"PERCIEVE" is incorrectly spelt. The correct spelling is "PERCEIVE," which means to become aware or conscious of something through the senses.

"BOISTEROUS" is correctly spelt and means energetic and noisy.

Therefore, the answer is option 3 - PERCIEVE.

Q95. Answer: (a) VACILLATE

Option 1, "VACILLATE," is the correctly spelt word, meaning to waver or hesitate in decision-making.

Option 2, "STILLETOES," is misspelt. The correct spelling is "STILETTOS," which refers to a type of high-heeled shoe.

Option 3, "OBSEQUIOS," is misspelt. The correct spelling is "OBSEQUIOUS," which means obedient or submissive.

Option 4, "MAINTAINANCE," is misspelt. The correct spelling is "MAINTENANCE," which refers to the act of maintaining or preserving something.

Therefore, the correct answer is option 1, "VACILLATE."

Q96. Answer: (a) long

The given blank requires an adjective that describes the years of the speaker's childhood. The years of childhood are being described as lonely in the previous sentence.

Hence, the most appropriate option to fill in the blank would be "long".

Therefore, the correct answer is option 1) long.

Q97. Answer: (a) seemed

The solution is in Hindi. Read it online.

Q98. Answer: (d) around

The solution is in Hindi. Read it online.

Q99. Answer: (d) breathe

The correct answer is "breathe" (option 4).

Explanation:

The sentence talks about a difficult situation in the narrator's childhood, where the father's palace is tightening its grip on them, making it difficult for the narrator to even breathe. Here, the word 'breathe' is used in an infinitive form, which means that it does not require an auxiliary verb like 'had' or 'have.'

Let's look at the other options:

breath - This is a noun and does not fit in the sentence contextually.

breathed - This is a past participle form and is not the correct tense for this sentence.

breathing - This is a present participle form and does not fit grammatically or contextually in this sentence.

Therefore, the correct answer is "breathe"

Q100. Answer: (b) story

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

Explanation:

The sentence talks about a child who went to their nurse and asked for a story during the lonely years of their childhood. The child made the nurse tell them the story of their birth repeatedly. Therefore, the most appropriate option to fill in the blank No. 5 is "story", which means a narrative or tale.

Key Points:

The blank No. 5 requires a word that refers to a narrative or tale.

The sentence mentions that the child made the nurse tell them the story repeatedly.

The word "story" fits the context and meaning of the sentence.

Additional Information:

A "poem" is a piece of writing that uses figurative language and rhythm to evoke emotions and ideas.

An "ode" is a type of poem that celebrates or praises a person, place, or thing.

"News" refers to information about current events or recent happenings, which does not fit the context of the sentence.

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