SSC CHSL Tier-1 2022: Official Paper (Held On: 14 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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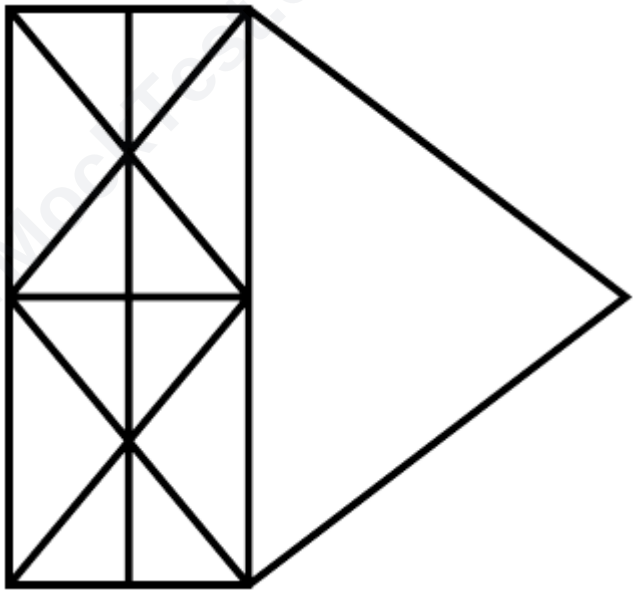
Practise under exam conditions, then review your answers after you submit.

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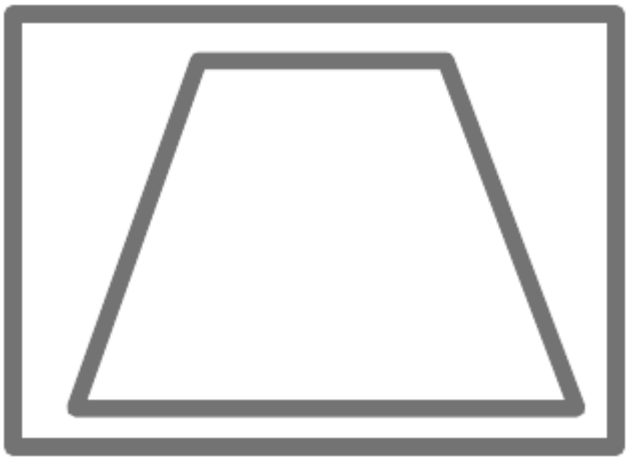
ENGLISH LANGUAGE

Q1. How many maximum triangles are there in the given figure?

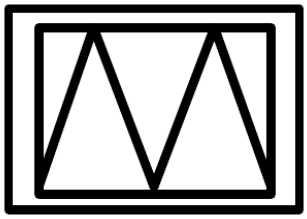


(a) 29
(b) 27
(c) 30
(d) 31

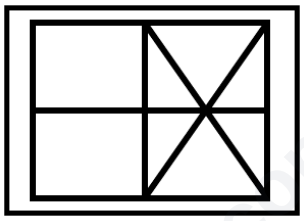
Q2. Select the option figure in which the given figure is embedded. (Rotation is NOT allowed).



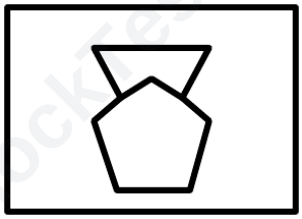
(a)



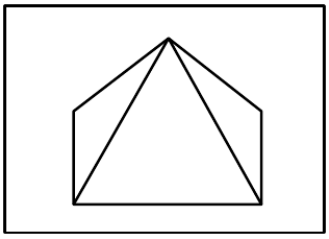
(b)



(c)



(d)



Q3. 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 the fourth number is related to the third number.

14 : 85 :: 20 : 121 :: 11 : ?

(a) 65
(b) 76
(c) 77
(d) 67

Q4. In the following question, select the related letters from the given alternatives.

LREA : MSFB :: BSFX : ?

(a) XFBA
(b) XFSB
(c) ERLA
(d) CTGY

Q5. 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)

(48, 16, 192)

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(22, 62, 341)

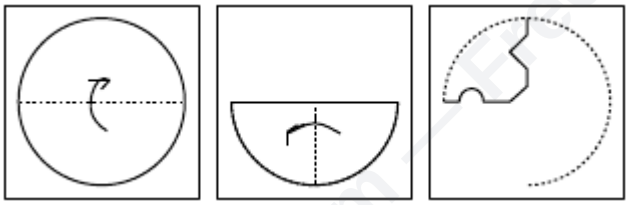
(a) (32, 24, 222)

(b) (74, 38, 713)

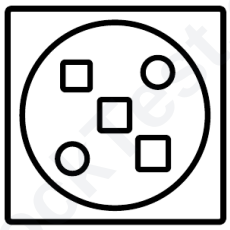
(c) (84, 78, 1638)

(d) (92, 46, 1068)

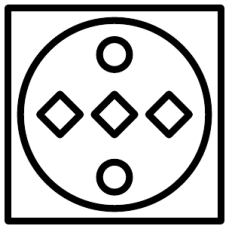
Q6. The sequence of folding a piece of paper and the manner in which the folded paper bas been cut is shown in the following figures. How would this paper look when unfolded?



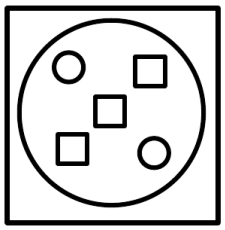
(a)



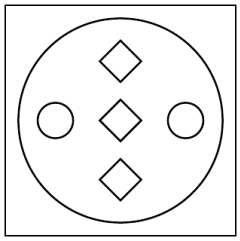
(b)



(c)



(d)



Q7. In a certain code language, 'ROUTE' is coded as '7', 'SHARE' is coded as '6'. What is the code for 'TABLE' in that code language?

(a) 5

(b) 4

(c) 7

(d) 2

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Q8. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

_Ifir_p_f_rsp_fir_ _Ifi_ _

(a) pslilsprr
(b) pslilspsr
(c) prlilsprs
(d) pslilsprs

Q9. In the following question, select the odd word pair from the given alternatives.

(a) Sugarcane - Jaggery
(b) Sack - Jute
(c) Road - Asphalt
(d) Wall - Brick

Q10. Select the option in which the numbers shares the same relationship in set as that shared by the numbers in the given set.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g.13 - Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(812, 879, 947)

(648, 715, 783)

(a) (428, 495, 573)
(b) (596, 664, 731)
(c) (612, 679, 747)
(d) (342, 409, 478)

Q11. In the given word pairs, the first word is related to the second word following a certain logic. Study the given pairs carefully, and from the given options, select the pair that follows the same logic.

Dry : Wet

(a) Tall : Large
(b) Healthy : Sick
(c) Good : Best
(d) Short : Tiny

Q12. E is the brother of F. D is the wife of E. G is the father of H. F is the sister of G. How is E related to G?

(a) Brother
(b) Son
(c) Brother in law
(d) Father

Q13. If 13 © 62 = 225 and 4 © 38 = 126, then 29 © 17 = ?

(a) 119
(b) 138
(c) 127
(d) 148

Q14. Select the correct option that indicates the arrangement of the given words in a logical and meaningful order.

1. India
2. Asia
3. Uttar Pradesh
4. Taj Mahal
5. World

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

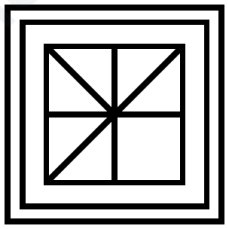
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(c) 5, 2, 1, 3, 4
(d) 5, 1, 2, 4, 3

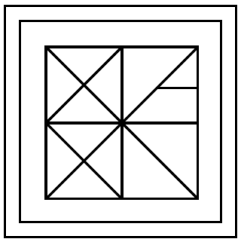
Q15. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



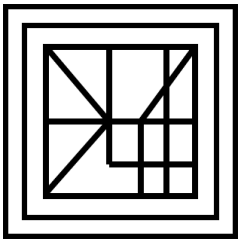
(a)



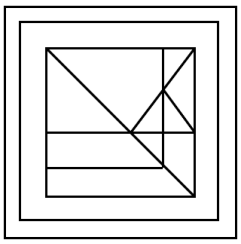
(b)



(c)



(d)



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

(a) SWA
(b) UYC
(c) VZC
(d) CGK

Q17. In the following question below are given some statements followed by some conclusions based on those statements. Taking the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion logically follows the given statements.

Statements:

I. All G are N.

II. No A is N.

Conclusion:

I. Some G are A.

II. Some N are G.

III. All A are G.

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

Q18. 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.

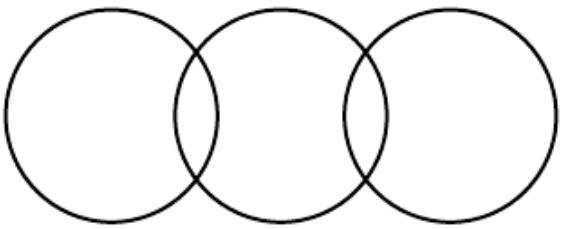
School : Teacher :: Laboratory : ?

(a) Actor
(b) Warrior
(c) Farmer
(d) Scientist

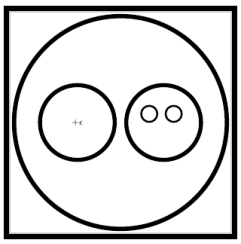
Q19. Select the Venn diagram that best represents the relationship between the following classes.

Indians, Brain specialist, Surgeon

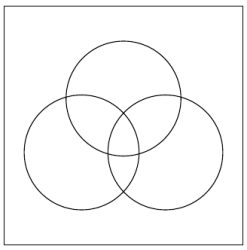
(a)



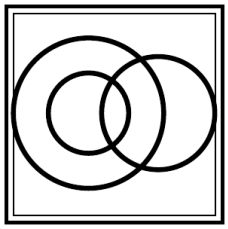
(b)



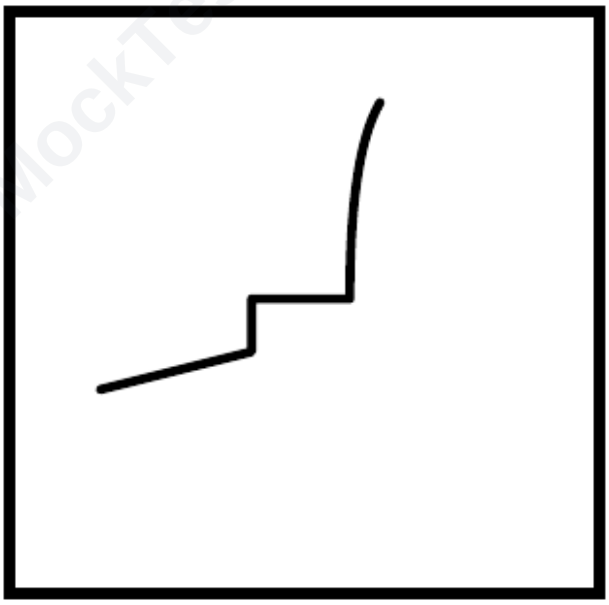
(c)



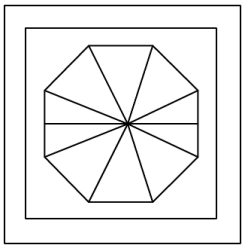
(d)



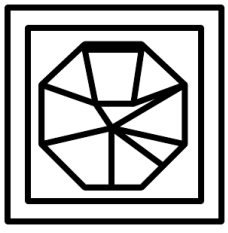
Q20. Select the option figure in which the given figure is embedded. (rotation is NOT allowed)



(a)

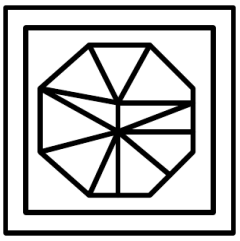


(b)

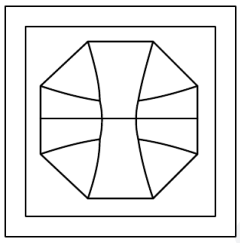


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(c)



(d)



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

89, 148, 207, 266, ?

(a) 315
(b) 335
(c) 325
(d) 345

Q22. After interchanging the given two signs what will be the values of expression (I) and (II) respectively?

× and -

I. 24 ÷ 8 × 2 + 7 - 6

II. 8 × 6 - 9 ÷ 3 + 10

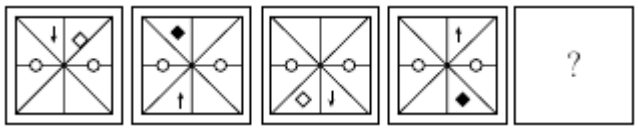
(a) 50 and 0
(b) 43 and 0
(c) 40 and 5
(d) 0 and 43

Q23. 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)

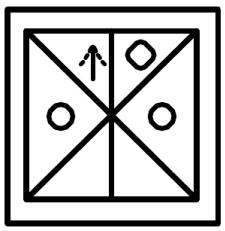
(a) 14-2762
(b) 16-4098
(c) 11-1333
(d) 13-2199

Q24. Select the figure from the given options that can replace the question mark (?) in the following series.

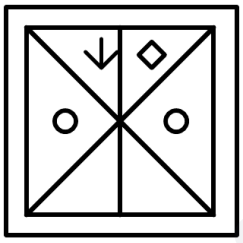


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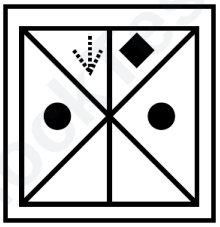
(a)



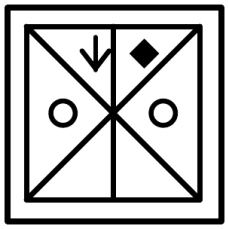
(b)



(c)



(d)



Q25. In a certain code language, 'GRMTS' is coded as 'OPINC'. What is the code for 'BATCH' in that code language?

(a) DVPWX
(b) DYPWX
(c) DYPXW
(d) DXPWX

GENERAL INTELLIGENCE

Q26. Which of the following shortcut key is used to repeat the last command or action, if possible, in MS-Excel 365?

(a) Ctrl + Z
(b) Shift + Z
(c) Ctrl + Y
(d) Shift + Y

Q27. Who built the Pathar Ki Masjid in Patna, Bihar?

(a) Feroz shah Tughlaq
(b) Parwez Shah
(c) Aurangzeb
(d) Alauddin Khilji

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Q28. If the price elasticity of demand is less than one, then the demand for the goods is said to be _____.

(a) Perfectly inelastic
(b) Inelastic
(c) Perfectly elastic
(d) Unitary-elastic

Q29. Rishu wants to input data to the computer by pressing keys. Which input device should he use?

(a) Keyboard
(b) Scanner
(c) Joystick
(d) Light Pen

Q30. Which of the following statements is correct regarding the Industrial Policy resolution 1956?

I. This resolution formed the basis of the Second Five Year Plan.
II. This policy was used for promoting industry in backward regions.

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

Q31. Which of the following seasons in India is known as the transition season?

(a) Retreating Monsoon
(b) Advancing Monsoon
(c) Cold Weather Season
(d) Hot Weather Season

Q32. '2G Saga Unfolds' book was written by _____

(a) Mohsin Hamid
(b) Tarun Vijay
(c) Andimuthu Raja
(d) Kanwaljit Singh

Q33. At places the groundwater is stored between layers of hard rock below the water table. This is known as _____.

(a) a well
(b) an aquifer
(c) a lake
(d) a pond

Q34. In humans, the digestion of carbohydrates like starch, begins in which of the following parts?

(a) Rectum
(b) Small Intestine
(c) Oesophagus
(d) Buccal cavity

Q35. _____ is a tributary of river Godavari.

(a) Tawa
(b) Banas
(c) Indravati
(d) Chambal

Q36. Which union territory of India has a sea named after it?

(a) Puducherry
(b) Andaman and Nicobar Islands
(c) Dadra and Nagar Haveli
(d) Daman and Diu

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Q37. Who emphasized the worship of God as Nirankar (Formless) in Punjab?

(a) Maharaja Ranjit Singh
(b) Baba Ram Singh
(c) Baba Dayal Das
(d) Guru Gobind Singh

Q38. Which of the following pair of "term - sport" is NOT correct?

I. Batting - Cricket
II. Goal - Netball

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

Q39. Concurrent list of seventh schedule does NOT have provision related to _____.

(a) Industrial and labour disputes
(b) Forests
(c) Taxes on lands and buildings
(d) Economic and social planning

Q40. Prime Minister Narendra Modi inaugurated the United Nations World Geospatial Congress (UNWGIC) 2022 held in _____.

(a) Bangalore
(b) Mumbai
(c) Hyderabad
(d) Pune

Q41. Suresh N Patel was appointed as chief of which organization in August 2022?

(a) NITI Ayog
(b) SEBI
(c) Election Commission of India
(d) Central Vigilance Commission

Q42. In May 2022, RailTel launched PM-WANI based on _____.

(a) food subsidy in 100 trains
(b) fire safety scheme
(c) free travel insurance scheme
(d) access to its Wi-Fi at 100 railway stations

Q43. In Kheda, Gujarat, Patidar peasants organised non-violent campaigns against which of the following demand of the British?

(a) Low labour rates
(b) Long working hours
(c) High land revenue
(d) Low price for crops

Q44. Which article of the Indian constitution specifies the composition of the Council of States?

(a) Article 80
(b) Article 395
(c) Article 51 A
(d) Article 12

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Q45. Which city will host the 2032 Summer Olympic Games?

(a) Athens
(b) Jakarta
(c) Brisbane
(d) Tokyo

Q46. The Natya shastra which provides information regarding musical instruments is compiled by _____.

(a) Amir Khusrau
(b) Bharat Muni
(c) Tansen
(d) Kalidas

Q47. In FIFA U-17 Women's World Cup 2022, the opening match was played between Morocco and _____.

(a) Brazil
(b) India
(c) Chile
(d) United States of America

Q48. Kailash Satyarthi has received the Noble Prize in the field of _____.

(a) Physics
(b) Literature
(c) Peace
(d) Economic studies

Q49. Which of the following statement is NOT correct regarding the prokaryotic cell?

(a) They have only very small ribosomes as organelles
(b) Membrane bound cell organelles are present
(c) Their chromosomes are composed of only nucleic acid.
(d) Their size is generally in the range of 1-10 µm

Q50. Which of the following statements regarding coal is NOT correct?

(a) Anthracite is the highest quality hard coal.
(b) Coal that has been buried deep and subjected to increased temperatures is bituminous coal.
(c) Lignite is a low-grade brown coal, which is soft with high moisture content.
(d) Metallurgical coal is high grade lignite coal which has a special value for smelting iron in blast furnaces.

QUANTITATIVE APTITUDE

Q51. Length of the chord AB of a circle is equal to the radius of the circle. What will be the angle subtended by the chord at the centre of the circle?

(a) 40 degree
(b) 60 degree
(c) 30 degree
(d) 50 degree

Q52. If $(x^2-1)/x=8$, then what is the value of $(x^6-1)/(x^3)$= ?

(a) 496
(b) 536
(c) 512
(d) 488

Q53. Radius of a circle is 10 cm. What will be the angle made by a chord of length 20 cm on the circumference of this circle?

(a) 90 degree
(b) 120 degree

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(c) 180 degree
(d) 135 degree

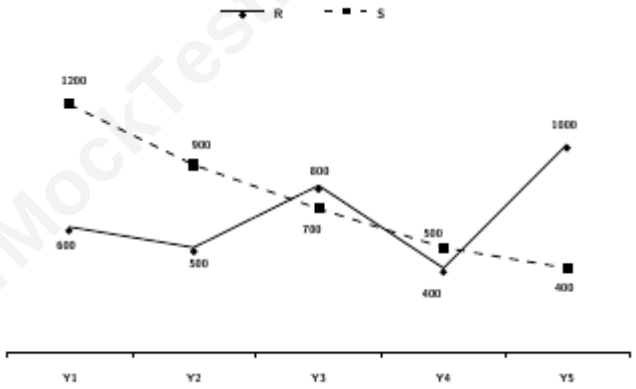
Q54. 12 men can do a work in 8 days while 4 boys can do it in 40 days. In how many days 9 boys and 3 men together will complete the same work?

(a) 10 days
(b) 280/13 days
(c) 80/7 days
(d) 260/17 days

Q55. If 6 Cot θ = 5, then find the value of (6 cos θ + sin θ)/(6 cos θ - 4 sin θ)

(a) 5
(b) 1
(c) 6
(d) 0

Q56. The line chart given below shows the expenditure of two companies R and S in different years.



Which of the following statement is NOT correct?

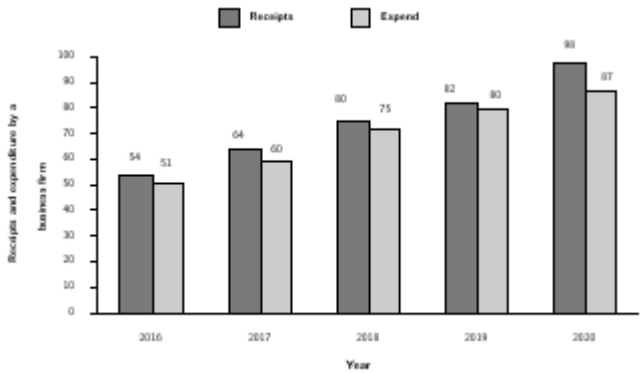
I. The expenditure of R in year Y1 and Y2 together is (Approximate) 81.66 percent of the expenditure of S in year Y3 and Y4 together

II. The total expenditure of company S is (Approximate) 112.12 percent of the total expenditure of company R.

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

Q57. The following bar graph shows receipts and expenditure by a business firm over 5 years.

Gain = Receipts - Expenditure.



In which year did the company gain the minimum amount?

(a) 2016
(b) 2017

(c) 2019
(d) 2018

Q58. A chair is marked for Rs. 210 and sold for Rs. 189. Find the discount rate for this transaction.
(a) 10%
(b) 12%
(c) 15%
(d) 80%

Q59. The ratio of the volume of first and second cylinder is 32 : 9 and the ratio of their heights is 8 : 9. If the area of the base of the second cylinder is 616 cm^2, then what will be the radius of the first cylinder?
(a) 24 cm
(b) 20 cm
(c) 28 cm
(d) 36 cm

Q60. ΔEFG is a right angled triangle. angle F = 90 degree, EF = 10 cm and FG = 15 cm. What is the value of cosec G?
(a) √13/2
(b) 2/√3
(c) √13/10
(d) 10/√3

Q61. Ritika purchased 'x' kg wheat at Rs.30/kg and sold 8 kg of this at Rs. 'x' per kg and remaining at Rs. 45/kg. Overall profit percent earned is 10%, then what quantity of wheat Ritika sold at Rs. 45/kg?
(a) 18 kg
(b) 16 kg
(c) 10 kg
(d) 14 kg

Q62. A car moves at the speed of 108 km/hr after repairing and moves at the speed of 72 km/hr before repairing. It covers a distance of x km in 3 hours after repairing. How much time will it take to cover a distance of 5 x km before repairing?
(a) 25 hours 20 minutes
(b) 24 hours
(c) 20 hours 40 minutes
(d) 22 hours 30 minutes

Q63. The ratio of incomes of P and Q is 1 : 2. Ratio of income of Q and R is 3 : 2. If one-third of P's income is Rs. 4400 less than the half of P's income, then what is the Q's income?
(a) Rs. 56600
(b) Rs. 52800
(c) Rs. 46600
(d) Rs. 41200

Q64. What is the value of $(2^2 + 1)$ (2^4 + 1) (2^8 + 1) (2^(16) + 1) ..... (2^(128)+ 1)?
(a) (2^(256)-1)/2
(b) (2^(256)-1)/3
(c) 2256 - 1
(d) (2^(256)-1)/4

Q65. In an exam, a student got 40 marks and still failed by 20 percent marks. If the passing percentage is 40 percent, then what are the maximum marks of the exam?
(a) 160
(b) 250
(c) 200
(d) 180

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Q66. In an equilateral triangle, circumradius is 14 cm. What is the length of median in this triangle?

(a) 14√3 cm
(b) 21 cm
(c) 18√3 cm
(d) 7√3 cm

Q67. What is the value of the expression 1 - 7 + 2 - 8 + 3 - 9 + 4 - 10 + _____ to 100 terms?

(a) -200
(b) -360
(c) -300
(d) -240

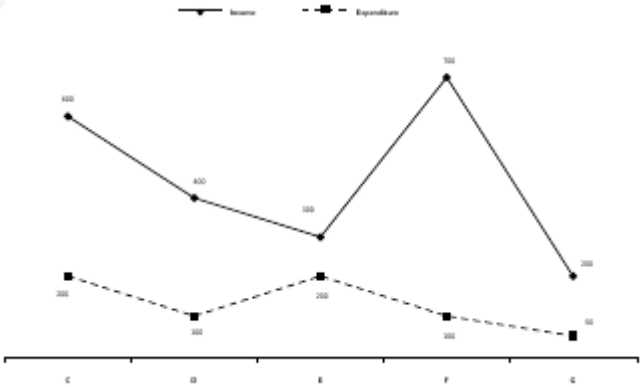
Q68. If -sin θ + cosec θ = 6, then what is the value of sin θ + cosec θ?

(a) 6
(b) √40
(c) √34
(d) √38

Q69. If $a^3 + 3a^2 + 3a = 63$, then the value of $a^2 + 2a$ is:

(a) 22
(b) 19
(c) 15
(d) 8

Q70. The line chart given below shows the income and expenditure of a company in five years.



Saving = Income - Expenditure

What is the difference between the average income and average saving in year C and D together?

(a) 450
(b) 250
(c) 150
(d) 350

Q71. The table given below shows the number of students studying in different streams of a particular college. Find the ratio of the average number of students studying science in the given years to the total strength of students studying in the year 2022.

Year	Arts	Science	History	Social Science
2018	65	78	43	24
2019	93	69	36	24
2020	67	83	25	30
2021	75	55	35	15
2022	76	65	48	31

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(a) 7 : 22
(b) 35 : 22
(c) 22 : 7
(d) 22 : 35

Q72. How many prime numbers are there between 100 and 120?

(a) 6
(b) 7
(c) 5
(d) 4

Q73. The average of 16 numbers is 35. It was found later that four numbers 18, 17, 24 and 35 were taken by mistake. What is the new average after removing these numbers?

(a) 38.83
(b) 42.33
(c) 46.66
(d) 33.33

Q74. If the 10 percent per annum rate of compound interest compounded yearly is equivalent to the rate of interest x percent per half-yearly when the compound interest is compounded half yearly, then what is the approximate value of x?

(a) 6.25 percent
(b) 5.32 percent
(c) 4.88 percent
(d) 4.55 percent

Q75. JKLM is a cyclic quadrilateral in which angle K is opposite to angle M. When JK and ML are produced, meet at point Z. JK = 10 cm, KZ = 12 cm and MZ = 33 cm. What is the length of LZ?

(a) 9 cm
(b) 8 cm
(c) 10 cm
(d) 12 cm

GENERAL AWARENESS

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

Scientists have a few tricks up their sleeves for dealing with the universe other objects.

(a) their sleeves for dealing with
(b) Scientists have a few tricks up
(c) No error
(d) the universe other objects

Q77. Choose the word that means the same as the given word.

Pacific

(a) Mollifying
(b) Bellicose
(c) Inimical
(d) Chafing

Q78. Select the word that is closest in meaning (SYNONYM) to the word given below.

Ferocious

(a) Frightful
(b) Mild
(c) Conscientious

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(d) Tame

Q79. Fill in the blank with an appropriate option.

Pandavas returned to Hastinapur after their thirteen years of _____.

(a) acceptance
(b) entertainment
(c) eminence
(d) exile

Q80. Choose the incorrectly spelt word.

(a) Guilde
(b) Build
(c) Shield
(d) Field

Q81. Select the most appropriate antonym of the given word.

INTERFERE

(a) INTERCEDE
(b) ADVANCE
(c) HAMPER
(d) JAM

Q82. Improve the underlined part of the sentence. Choose 'No improvement' as an answer if the sentence is grammatically correct.

The thieves entered a house at night and decamp with valuable worth Rs. 50,000.

(a) decamped with valuables
(b) No improvement
(c) decamps with valuable
(d) decamping with valuably

Q83. Improve the underlined part of the sentence. Choose 'No improvement' as an answer if the sentence is grammatically correct.

His father was few proud of his power over the horse.

(a) No improvement
(b) much proudest
(c) very proud
(d) very proudly

Q84. Choose the sentence with no spelling error.

(a) They were iresponsible in performing their dutes.
(b) They were irresponcible in perfroming their duties.
(c) They were irresponsible in performing ther dutys.
(d) They were irresponsible in performing their duties.

Q85. Rearrange the parts of the sentence in correct order.

P. American political economist Mancur Olson, who wrote in 1965
Q. the problems of collective action were popularized by the
R. that coercion or some other device must be present in order
S. for a group of individuals to act in their common interest

(a) PSRQ
(b) QRPS
(c) QPRS
(d) SPQR

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Q86. Fill in the blank with the most suitable word.

Still flaccid and _____ from lack of blood, Ed ambled slowly in front of the doors.

(a) liberal
(b) levity
(c) lethargic
(d) levy

Q87. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

The skull bones of a woodpecker has a different chemical composition and density.

(a) No error
(b) The skull bones of a
(c) woodpecker has a different
(d) chemical composition and density.

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

Affecting all or most people, places, things, etc.

(a) Particular
(b) Pertain
(c) Genre
(d) General

Q89. Select the correct passive form of the given sentence.

The gardener has watered the bushes.

(a) The bushes have been watered by the gardener.
(b) The bushes are being watered by the gardener.
(c) The bushes were being watered by the gardener.
(d) The bushes has been watered by the gardener.

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

Once in a blue moon

(a) Once in a day
(b) Frequently
(c) Rarely
(d) Once a week

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

Overly concerned with minute details or formalisms

(a) Blasphemy
(b) Rhapsodic
(c) Bohemian
(d) Pedantic

Q92. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction required' if the sentence is correct as given.

A name strong like the land, a name (that know) how to endure.

(a) that has learn
(b) No correction required
(c) that educating
(d) that knew

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Q93. Select the correct indirect form of the given sentence.

The lawyer said, "Your case is very complicated."

(a) The lawyer said that my case was very complicated.
(b) The lawyer reported that my case is very complicated.
(c) The lawyer said that my case had been very complicated.
(d) The lawyer warned that your case was very complicated.

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

Wager

(a) Gamble
(b) Scrutinize
(c) Crumble
(d) Scrupulous

Q95. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Apropos of nothing

(a) Any difficult situation or obstacle
(b) To be enraged
(c) Almost everything and anything has been included
(d) Having no relevance to any previous discussion or situation

Directions

In the following passage some of the words have been deleted. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Deserts probably existed much (1)_____, during former periods of global arid climate in the lee of mountain ranges that sheltered them from (2)__ or in the centre of extensive continental regions. However, this would have been primarily before the evolution of angiosperms which are (3)__ as seed producing plants. Only a few primitive plants, which may have been (4)_ of the ancient desert vegetation, occur in present day deserts. One (5)_____ is the bizarre conifer relative tumboa, in the Namib Desert of southwestern Africa.

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

(a) early
(b) earliest
(c) earnest
(d) earlier

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

(a) brash
(b) rain
(c) birds
(d) animals

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

(a) mandated
(b) summarized
(c) characterised
(d) presented

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

(a) Slot
(b) part
(c) task
(d) bit

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

(a) signal
(b) example
(c) instance
(d) sign

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) 29

The triangles are:

So, there are '29' triangles in the given figure.

Hence, the correct answer is "29".

Q2. Answer: (a) [figure]

The image embedded in given figure is as shown below:

Hence, "Option 1" is the correct answer.

Q3. Answer: (d) 67

The logic followed here is:

→ Second Number = (First Number × 6) + 1

Let's check as per the logic used,

14 : 85

→ 85 = (14 × 6) + 1

→ 85 = 84 + 1

→ 85 = 85.

20 : 121

→ 121 = (20 × 6) + 1

→ 121 = 120 + 1

→ 121 = 121.

Similarly,

11 :?

→ ? = (11 × 6) + 1

→ ? = 66 + 1

→ ? = 67

Hence, the correct answer is " 67 ".

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Q4. Answer: (d) CTGY

The logic followed here is:

→ Each letter in the second set is obtained by moving one position forward in the English alphabet from its corresponding letter in the first set.

Let's check as per the logic:

LREA : MSFB

Similarly,

BSFX : ?

Hence, the correct answer is " CTGY ".

Q5. Answer: (c) (84, 78, 1638)

The logic followed here is:

Logic: (First Number ÷ 2) × (Second Number ÷ 2) = Third Number.

Let's check as per the logic,

(48, 16, 192):

→ (48 ÷ 2) × (16 ÷ 2) = 192

→ 24 × 8 = 192

→ 192 = 192 → LHS = RHS.

(22, 62, 341):

→ (22 ÷ 2) × (62 ÷ 2) = 341

→ 11 × 31 = 341 → LHS = RHS.

Let's check each option as per the logic,

1) (32, 24, 222):

→ (32 ÷ 2) × (24 ÷ 2) = 222

→ 16 × 12 = 222

→ 192 ≠ 222 → LHS ≠ RHS.

2) (74, 38, 713):

→ (74 ÷ 2) × (38 ÷ 2) = 713

→ 37 × 19 = 713

→ 703 ≠ 713 → LHS ≠ RHS.

3) (84, 78, 1638):

→ (84 ÷ 2) × (78 ÷ 2) = 1638

→ 42 × 39 = 1638

→ 1638 = 1638→ LHS = RHS.

4) (92, 46, 1068):

→ (92 ÷ 2) × (46 ÷ 2) = 1068

→ 46 × 23 = 1068

→ 1058 ≠ 1068 → LHS ≠ RHS.

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

Hence, the correct answer is "(84, 78, 1638)".

Q6. Answer: (d) [figure]

The paper after unfolded will be:

Hence, the correct answer is "Option 4".

Q7. Answer: (b) 4

The logic followed here is:

Logic: Digit sum of the Sum of the place value of the given word.

Now,

‘ROUTE’ is coded as ‘7’

=> R(18) + O(15) + U(21) + T(20) + E(5)

=> 79 → 7 + 9 = 16

=> 16 → 1 + 6 = 7.

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For, ‘SHARE’ is coded as ‘6’

=> S(19) + H(8) + A(1) + R(18) + E(5)

=> 51 → 5 + 1 = 6.

Similarly, for ‘TABLE’

=> T(20) + A(1) + B(2) + L(12) + E(5)

=> 40 → 4 + 0 = 4.

So, 'TABLE' will be coded as '4'.

Hence, the correct answer is "4".

Q8. Answer: (d) pslilsprs

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) pslilsprr → p l f i r s / p l f i r s / p l f i r s / p l f i r r

Option 2) pslilspsr → p l f i r s / p l f i r s / p l f i r s / p l f i s r

Option 3) prlilsprs → p l f i r r / p l f i r s / p l f i r s / p l f i r s

Option 4) pslilsprs → p l f i r s / p l f i r s / p l f i r s / p l f i r s

Here, 'Option 4' followed a pattern.

Hence, the correct answer is "Option 4".

Q9. Answer: (a) Sugarcane - Jaggery

The logic followed here is:

→ The first word is used to manufacture the Second word.

Let's check using the logic,

1	Sugarcane	Jaggery
2	Sack	Jute
3	Road	Asphalt
4	Wall	Brick

=> In the pair "Sugarcane - Jaggery," jaggery is a product or derivative of sugarcane.

It is not directly related to the other word pairs where the second word is a material or substance used in the construction or manufacturing process.

Hence, the correct answer is " Sugarcane - Jaggery ".

Q10. Answer: (c) (612, 679, 747)

The logic followed here is:

Logic: (2nd number + 3rd number) ÷ 2 - 101 = 1st number.

Now,

For (812, 879, 947)

→ (879 + 947) ÷ 2 - 101

→ 1826 ÷ 2 - 101

→ 913 - 101 = 812.

For (648, 715, 783)

→ (715 + 783) ÷ 2 - 101

→ 1498 ÷ 2 - 101

→ 749 - 101 = 648.

Similarly, for (612, 679, 747)

→ (679 + 747) ÷ 2 - 101

→ 1426 ÷ 2 - 101

→ 713 - 101 = 612.

Hence, the correct answer is "Option 3".

Alternate MethodLogic: 1st number + 67 = 2nd number;

2nd number + 68 = 3rd number.
For (812, 879, 947)
→ 812 + 67 = 879
→ 879 + 68 = 947.
For (648, 715, 783)
→ 648 + 67 = 715
→ 715 + 68 = 783.
Similarly, for (612, 679, 747)
→ 612 + 67 = 679
→ 679 + 68 = 747.
Hence, the correct answer is "Option 3".

Q11. Answer: (b) Healthy : Sick

The logic followed here is:
=> The relationship between the words is that they are antonyms, representing opposite conditions or states.
Dry : Wet
→ Wet is the antonym of Dry.
Let's check each option as per the logic:
1) Tall : Large:
→ These words do not represent opposite conditions or states. They are not antonyms.
2) Healthy : Sick:
→ These words represent opposite conditions, similar to "Dry : Wet." They are antonyms.
3) Good : Best:
→ These words represent different degrees or levels of quality, not opposite conditions. They are not antonyms.
4) Short : Tiny:
→ These words represent different sizes but not opposite conditions. They are not antonyms.
=> Based on the logic that the word pairs represent antonyms, the pair that follows the same logic is option 2.
Hence, the correct answer is " Healthy : Sick ".

Q12. Answer: (a) Brother

Family Chart:
Given:
E is the brother of F.
D is the wife of E.
G is the father of H.
F is the sister of G.
So, E is Brother of G.
Hence, the correct answer is "Option 1".

Q13. Answer: (b) 138

The logic followed here is:
=> © denotes addition.
=> (Sum of the numbers) × 3 = Final result.
Let's check as per the logic,
13 © 62 = 225
→ (13 + 62) × 3 = 225
→ (75) × 3 = 225
→ 225 = 225.
4 © 38 = 126
→ (4 + 38) × 3 = 126
→ (42) × 3 = 126
→ 126 = 126.
Similarly,

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29 © 17 =?
→ (29 + 17) × 3
→ (46) × 3 = 138.
Hence, the correct answer is " 138 ".

Q14. Answer: (c) 5, 2, 1, 3, 4

The correct logical order is:
5) World
2) Asia
1) India
3) Uttar Pradesh
4) Taj Mahal
=> The world consists of various countries and continents, including Asia.
India is a country located in Asia.
Uttar Pradesh is a state in India.
The Taj Mahal is a famous monument located in Uttar Pradesh.
Hence, the correct answer is " 5, 2, 1, 3, 4 ".

Q15. Answer: (b) [figure]

The image embedded in given figure is as shown below:
Hence, "Option 2" is the correct answer.

Q16. Answer: (c) VZC

The logic followed here is:
→ 4 has been added in each letter's positional value to get the next term.
Let's check as per the logic,
1) SWA:
2) UYC:
3) VZC:
4) CGK:
Here, the correct answer is " VZC ".

Q17. Answer: (d) Only conclusion II follows

Given Statements:
I. All G are N.
II. No A is N.
The least possible Venn diagram for the given statement is:
Conclusions:
I. Some G are A - False (Because, all G are N, and no N is A, it implies that no G is A).
II. Some N are G - True (All G are N implies that Some N are G).
III. All A are G - False (Because, all G are N, and no N is A, it implies that no G is A).
So, Only conclusion II follows.
Hence, the correct answer is "Option 4".

Q18. Answer: (d) Scientist

The logic followed here is:
Logic: The first word is a place, and the second word is a professional who works in that place.
Here,
School : Teacher → A teacher works in a school.
Similarly,
Laboratory : ? → A scientist works in a laboratory.
Hence, the correct answer is "Scientist".

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Q19. Answer: (c) [figure]

The Venn diagram which correctly represents the relationship between Indians, Brain Specialist and Surgeon is shown below:

Hence, the correct answer is " Option 3 ".

Q20. Answer: (d) [figure]

The image embedded in given figure is as shown below:

Hence, "Option 4" is the correct answer.

Q21. Answer: (c) 325

The logic followed here is:

So, '325' will complete the series.

Hence, the correct answer is "325".

Q22. Answer: (b) 43 and 0

Equation I: 24 ÷ 8 × 2 + 7 - 6

After interchanging × and -, we get the equations:

→ 24 ÷ 8 - 2 + 7 × 6

→ 3 - 2 + 7 × 6 =?

→ 3 - 2 + 42 =?

→ 45 - 2 = 43.

Equation II. 8 × 6 - 9 ÷ 3 + 10

After interchanging × and -, we get the equations:

→ 8 - 6 × 9 ÷ 3 + 10

→ 8 - 6 × 3 + 10 =?

→ 8 - 18 + 10 =?

→ 18 - 18 = 0.

Hence, the correct answer is " 43 and 0 ".

Q23. Answer: (a) 14-2762

The logic followed here is:

=> First Number × (First Number)² + 2 = Second Number.

Let's check as per the logic,

1) 14 - 2762

→ 14 × (14)² + 2 = 2762

→ 14 × 196 + 2 = 2762

→ 2744 + 2 = 2762

→ 2746 ≠ 2762

→ LHS ≠ RHS.

2) 16 - 4098

→ 16 × (16)2 + 2 = 4098

→ 16 × 256 + 2 = 4098

→ 4096 + 2 = 4098

→ 4098 = 4098

→ LHS = RHS.

3) 11 - 1333

→ 11 × (11)2 + 2 = 1333

→ 11 × 121 + 2 = 1333

→ 1331 + 2 = 1333

→ 1333 = 1333

→ LHS = RHS.

4) 13 - 2199

→ 13 × (13)2 + 2 = 2199

→ 13 × 169 + 2 = 2199

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→ 2197 + 2 = 2199

→ 2199 = 2199

→ LHS = RHS.

Here, we can see that only Option 1 doesn't follow the logic.

Hence, the correct answer is " 14 - 2762 ".

Q24. Answer: (b) [figure]

The logic followed here is:

Step I: The arrow and rhombus are getting exchanged and flipped in all alternate images.

Step II: The arrow and rhombus are getting exchanged with it's place in all alternate images.

Hence, the correct answer is "Option 2".

Q25. Answer: (b) DYPWX

The logic followed here is:

'GRMTS' is coded as 'OPINC',

Similarly, for 'BATCH'

So, 'BATCH' is coded as 'DYPWX'.

Hence, the correct answer is "Option 2".

Q26. Answer: (c) Ctrl + Y

The correct answer is Ctrl + Y.

Key Points

• Ctrl + Y is used to redo the last action in MS- Excel.

Additional Information

Open a document.	**Ctrl+O**
Create a new document.	Ctrl+N
Save the document.	Ctrl+S
Close the document.	Ctrl+W
Cut the selected content to the Clipboard.	Ctrl+X
Copy the selected content to the Clipboard.	Ctrl+C
Paste the contents of the Clipboard.	Ctrl+V
Select all document content.	Ctrl+A
Apply bold formatting to text.	Ctrl+B
Apply italic formatting to text.	Ctrl+I
Apply underline formatting to text.	Ctrl+U
Decrease the font size by 1 point.	Ctrl+[
Increase the font size by 1 point.	Ctrl+]
Center the text.	Ctrl+E
Align the text to the left.	Ctrl+L
Align the text to the right.	Ctrl+R
Cancel a command.	Esc
Undo the previous action.	Ctrl+Z
Redo the previous action, if possible.	Ctrl+Y
Adjust the zoom magnification.	Alt+W, Q, then tab in the Zoom dialogue box to the value you want.
Split the document window.	Ctrl+Alt+S

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Remove the document window split.	Alt+Shift+C or Ctrl+Alt+S

Q27. Answer: (b) Parwez Shah

The correct answer is Parwez Shah.

Key Points

• Pathar Ki Masjid, also known as Saif Khan's Mosque, Chimni Ghat mosque, and Sangi Masjid, is a mosque in Patna, Bihar, India.

• It was built in 1621 by Parvez Shah, the son of Mughal emperor Jahangir.

• The mosque is built of stone, hence the name "Pathar ki Masjid".

• It is located on Ashok Rajpath between Sultanganj and Alamganj.

• The mosque is a single-domed structure with four minarets.

• The central dome is supported by four arches.

• The mosque is a fine example of Mughal architecture.

• Pathar Ki Masjid is a beautiful and historic mosque that is an important part of the cultural heritage of Patna.

• It is a popular tourist destination and a place of worship for the Muslim community.

Q28. Answer: (b) Inelastic

The correct answer is Inelastic.

Key Points

• Demand -

• Demand means quantity demanded by customers at different prices during a given time period.

• Inelastic Demand:

• When due to change in price (whether increase or decrease), quantity demanded remains same, it is known as inelastic Demand.

• In case of inelastic Demand, when the price is increased, it will cause the total expenditure of the consumer to increase because total expenditure = quantity demanded × price.

• The demand will not change but the change in price cause consumer's total expenditure to increase.

Additional Information

• Perfectly inelastic

• A perfectly inelastic demand has an elasticity of 0.

• A perfectly inelastic demand is one when there is no change in the demand for a product with a change in its price.

• For a perfectly inelastic demand, the demand curve is represented as a straight vertical line.

• Perfectly elastic

• When a small change in the price of a product causes a major change in its demand, it is said to be perfectly elastic demand.

• In perfectly elastic demand, a small rise in price results in a fall in demand to zero, while a small fall in price causes an increase in demand to infinity.

• In such a case, the demand is perfectly elastic or e = ∞.

• Unitary elastic

• The demand curve for unitary elastic demand is a rectangular hyperbola.

• When the proportionate change in demand produces the same change in the price of the product the demand is referred to as unitary elastic demand.

• The elasticity of a unitary elastic demand is 1.

Q29. Answer: (a) Keyboard

The correct answer is Keyboard.

Key Points

• An input device is a peripheral (piece of computer hardware equipment) used to provide data and control signals to an information processing system such as a computer or other information appliance.

• The Central Processing Unit (CPU) of a computer receives the input and processes it to produce the output.

• Examples of input devices include

• Keyboards, mouse, scanners, digital cameras, joysticks, Microphone, TouchPad, Webcam, remote, biometric devices, etc.

• Keyboard is a basic input device that is used to enter data into a computer or any other electronic device by pressing keys.

• Mouse is a hand-held input device that is used to move cursor or pointer across the screen.

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• Scanner uses the pictures and pages of text as input.

Q30. Answer: (b) Both I and II

Te correct answer is Both I and II.

Key Points The Industrial Policy Resolution (IPR) 1956

• Adopted to achieve the aim of a socialist state with the government controlling the major strategic industries of the economy.

• According to this resolution, industries were classified into the following three categories:

• Category 1: Those industries that were established and owned exclusively by the public sector.

• Category 2: Those industries in which the public sector would perform the primary role while the private sector would play the secondary role i.e., the private sector supplements the public sector In these industries and new units could be set up only by the public sector.

• Category 3: Those industries that are not included in Category 1 and Category 2 were left to the private sector.

• The government kept indirect control of the industries in the private sector through the policy of industrial licensing.

Additional Information

• Highlights of IPR 1956:

• In order to initiate a new industry or expand existing capacity, private entrepreneurs were supposed to obtain licenses from the government.

• Licensing, imposition of the tax, tax exemptions, and subsidies were used by the government:

• to regulate private industries.

• bring about a reduction in regional disparities in industrial development.

• to keep a check on the production of goods that are socially undesirable.

• Hence, the government fully controlled the private sector either directly or Indirectly through the IPR 1956.

Q31. Answer: (a) Retreating Monsoon

Correct Answer Retreating Monsoon

Key Points:Retreating monsoons:

• During October-November, with the apparent movement of the sun towards the south, the monsoon trough or the low-pressure trough over the northern plains becomes weaker.

• This is gradually replaced by a high-pressure system.

• The south-west monsoon winds weaken and start withdrawing gradually.

• By the beginning of October, the monsoon withdraws from the Northern Plains.

• The months of October-November form a period of transition from hot rainy season to dry winter conditions.

• The retreat of the monsoon is marked by clear skies and a rise in temperature.

• While day temperatures are high, nights are cool and pleasant.

Thus, October-November months are associated with retreating monsoons/the transition season.

Additional InformationSouthwest monsoon season:

• The period June to September is referred to as the 'Southwest Monsoon' period.

• The Southwest Monsoon period is the principal rainy season for the Indian subcontinent.

• This is the summer monsoon period where the southwest monsoon holds away over the country.

• The whole country receives nearly 75% of its rainfall during this period.

Monsoon:

• Monsoon, a major wind system that seasonally reverses its direction, such as one that blows for approximately six months from the northeast and six months from the southwest.

• The primary cause of monsoons lies in different warming trends over land and sea, though other factors may be involved.

• There are two monsoons (or rainy seasons) in India.

• The summer monsoon season in India, otherwise known as the southwest monsoon, lasts from June to September and affects the whole of India.

• Then the northeast or winter monsoon brings seasonal rainfall to Southeast India from October to December.

Q32. Answer: (c) Andimuthu Raja

Correct Answer Andimuthu Raja

Key Points

• The 2G Saga refers to a major corruption scandal that unfolded in India in 2008, involving the allocation of 2G (second-generation) telecom spectrum licenses.

• It was one of the biggest corruption scandals in Indian history and had far-reaching consequences.

• Andimuthu Raja is an Indian politician who was a central figure in the 2G spectrum allocation scandal.

• He was the Minister of Communications and Information Technology in the Government of India from 2007 to 2010.

• Raja, a member of the Dravida Munnetra Kazhagam (DMK) political party, played a key role in the allocation of 2G spectrum licenses at significantly undervalued prices, leading to allegations of corruption and irregularities.

Q33. Answer: (b) an aquifer

The correct answer is an aquifer

Key Points:

• An aquifer is an underground layer of porous rocks or permeable rocks that store and retain groundwater levels in the soil.

• The underground aquifer is built with all types of porous or permeable rock materials, such as sand, gravel, or silt, making it a suitable water absorber.

• The rainwater enters the aquifer through the soil and becomes a part of the groundwater.

• The groundwater from the aquifers then resurfaces from springs and wells.

• We can also extract the aquifer water with the help of a water well.

• The study of groundwater, aquifer, and their property is known as hydrogeology.

Additional Information:Pond:

• A pond is an area filled with water, either natural or artificial, that's lower than a lake.

• Defining them to be lower than 5 hectares (12 acres) in area, lower than 5 measures (16 ft) deep, and with lower than 30 emergent foliage helps in distinguishing their ecology from that of lakes and washes.

Lake:

• A lake is an area filled with water, localized in a basin, surrounded by land, and distinct from any river or other outlet that serves to feed or drain the lake.

Well:

• A well is an excavation or structure created in the ground by digging, driving, or drilling to access liquid resources, usually water.

Q34. Answer: (d) Buccal cavity

The correct answer is Buccal cavity

Key Points:The human digestive system consists of two parts, the alimentary canal, and the associated glands.

• The mouth leads the food to be digested to the buccal cavity.

• The buccal cavity has a number of teeth and a muscular tongue.

• The uppermost part of the buccal cavity is called the palate.

• The digestion of carbohydrates begins in the buccal cavity.

• From the mouth, food reaches into the stomach through a food pipe called the esophagus.

• There is no digestion inside the food pipe.

• The digestion of fat begins in the stomach.

• Lipase is the digestive enzyme of fat.

• The digestion of protein occurs in the stomach and duodenum.

• Pepsin is the digestive enzyme of protein.

Additional Information Digestive system:

• It consists of the long alimentary canal and associated glands.

• The alimentary canal includes

• Mouth (buccal cavity)

• Oesophagus (food pipe)

• Stomach

• Small intestine

• Large intestine

The glands associated with the digestive system are as follows:

• Liver

• Pancreas

• Intestinal glands

Q35. Answer: (c) Indravati

The correct answer is Indravati

Key Points:

• The Godavari river is the largest river system in Peninsular India.

• The Godavari basin extends over the States of Maharashtra, Andhra Pradesh, Chhattisgarh, and Odisha in addition to smaller parts in Madhya Pradesh, Karnataka, and Puducherry (Yanam).

• The other names for the Godavari River are The Vriddh (Old) Ganga or the Dakshin (South) Ganga.

• Godavari river drains into the Bay of Bengal.

• Godavari river originates from Bramhagiri mountains at Trimbakeshwar.

• Tributaries: Pravara, Purna, Manjira, Penganga, Wardha, Wainganga, Pranhita (combined flow of Wainganga, Penganga, Wardha), Indravati, Maner, and the Sabri.

• The longest tributary- The Manjira

• The largest tributary- The Pranhita

Additional Information Chambal:

• The Chambal river originates in Manpura near Indore in Madhya Pradesh.

• The length of the river is 900 km and it is a tributary of the Yamuna river.

• The Chambal River remains one of North India's unpolluted rivers, home to a rich diversity of flora and fauna.

• The National Chambal Gharial Wildlife Sanctuary is famous for the rare Ganges river dolphin.

• Apart from the Ganges river dolphin, the other inhabitants of the sanctuary include magar (crocodile) and gharial (alligator). Migratory birds from Siberia form part of its rich avian fauna.

Banas:

• Banas river originates from Khamnor Hills of the Aravalli Range, near Kumbhalgarh in Rajsamand, Rajasthan. '

• Banas river is a tributary of the Chambal River and ii is approximately 512 kilometers in length.

• This river is also called 'Van Ki Asha'.

• There is another river in Rajasthan with name of Banas.

• The Banas river entirely flows within the Rajasthan in:-

• Ajmer, Bhilwara, Bundi, Chittorgarh, Dausa, Jaipur, Pali, Rajsamand, Sawai Madhopur, Sirohi, Tonk, and Udaipur districts of Rajasthan.

• It flows northeast through the Mewar region of Rajasthan and meets the Chambal near the village of Rameshwar in Sawai Madhopur district.

Tawa:

• Tawa River is the tributary of the Narmada River.

• It is the longest tributary of the Narmada River.

• Its origin is in the Satpura range.

• It meets the Narmada at Hoshangabad district.

• Its length is 172 km.

Q36. Answer: (b) Andaman and Nicobar Islands

Correct Answer Andaman and Nicobar Islands

The elongated chain of islands located in the Bay of Bengal extending from north to south is called Andaman and Nicobar islands.

Key Points:Andaman and Nicobar islands:

• Andaman and Nicobar Islands situated in the Bay of Bengal, run like a narrow chain in the north-south direction extending between 6° 45′ N to 13° 45′ N.

• This archipelago is composed of around 265 big and small islands (203 Andaman islands + 62 Nicobar Islands)

• The Andaman and Nicobar Islands extend from 6° 45′ N to 13° 45′ N and from 92° 10′ E to 94° 15′ E for a distance of about 590 km.

• The total area of this elongated island is 8,249 sq. km.

• The Andaman islands are divided into three main islands i.e. North, Middle, and South.

• Duncan's passage separates Little Andaman from South Andaman.

• The Great Andaman group of islands in the north is separated by the Ten Degree Channel from the Nicobar group in the south.

• The Grand Channel is between the Great Nicobar islands and the Sumatra islands of Indonesia.

• The Coco Strait is between the North Andaman islands and the Coco Islands of Myanmar.

• Port Blair, the capital of Andaman Nicobar Islands lies in the South Andaman.

• Among the Nicobar islands, the Great Nicobar is the largest.
• It is the southernmost island and is very close to Sumatra island of Indonesia.
• The Car Nicobar is the northernmost.
• Most of these islands are made of tertiary sandstone, limestone, and shale resting on basic and ultrabasic volcanoes.
• The Barren and Narcodam Islands, north of Port Blair, are volcanic islands

Additional Information Puducherry:

• There are total 4 Districts in Puducherry.
• The city is surrounded by Tamil Nadu state, on the Coromandel Coast of the Bay of Bengal, 105 miles (170 km) south of Chennai (Madras).
• The Union Territory of Puducherry has been formed consolidating four erstwhile French establishments viz Puducherry, Karaikal, Mahe and Yanam.
• Karaikal District is in the state of Tamil Nadu and is next to Puducherry in area and population.
• Mahe is surrounded by the State of Kerala and Yanam by the state of Andra Pradesh.
• Yanam is one of the regions in the Union Territory of Puducherry which is 870 km away from it.
• The town of Yanam lies on the mouth of the Godavari River where it flows into the Bay of Bengal.

'Daman' is the capital of the Union Territory of Daman and Dadra and Nagar Haveli.

Dadra and Nagar Haveli and Daman and Diu are part of the union territory.

Q37. Answer: (c) Baba Dayal Das

The correct answer is 'Baba Dayal Das'.

Key Points:

• Nirankari is a religious reform movement within Sikhism.
• The Nirankari movement was founded by Baba Dayal Das in 1851.
• He believed that God is formless, or nirankar (hence the name Nirankari).
• The movement expanded in northwest Punjab.

Additional Information Baba Ram Singh:

• Baba Ram Singh was born in the year 1815.
• He was a son of a poor carpenter, in a small village of Bhaini.
• Which was around 7 kilometers away from Ludhiana.
• In the early 1840s, he served as a soldier in the Sikh Army of Prince Naunihal Singh.
• He left the army after the overthrow of the Sikh rule.
• In the year 1838, he came in contact with Baba Balak Singh, and he also remained in touch with Bhagat Jawar mal as well.

Guru Gobind Singh

Birth:

• He was born on December 22 in Patna in the year 1666.
• His birth anniversary is observed as Guru Gobind Singh Jayanti every year in accordance with the lunar calendar.
• He was a poet, spiritual leader, philosopher, warrior and writer.
• 10^(th) Guru:
• He was the tenth Guru of the Sikhs.

Khalsa Panth:

• He was the founder of the Khalsa Panth.
• He also founded the Sikh warrior community called Khalsa in 1699.
• He became a Sikh guru at the age of nine, after the death of his father Guru Tegh Bahadur.
• His father was executed by Aurangzeb.

Five K's

• He introduced the five K's for the Sikhs including:
• Kesh: uncut hair
• Kangha: a wooden comb
• Kara: an iron or steel bracelet worn on the wrist
• Kirpan: a sword
• Kacchera: short breeches.

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Q38. Answer: (d) Neither I nor II

The correct answer is Neither I nor II.

Key Points

• Both pairs are correctly associated. Batting is a term used in cricket, and a goal is a term used in netball.

• Here are tables of important terms related to cricket and netball:

Additional Information

• Terms related to cricket.

Term	Definition
Batting	The act of hitting the ball with the bat in an attempt to score runs.
Bowling	The action of the player throwing the ball towards the wicket defended by the batsman.
Run	The basic unit of scoring in cricket, achieved by batsmen running between the wickets.
Wicket	The set of stumps and bails; also refers to the dismissal of a batsman.
Over	A set of six deliveries bowled by the same bowler from the same end of the pitch.
Innings	The period in which a team or a batsman is at bat.
Duck	A score of zero by a batsman.
Century	A score of 100 runs by a batsman in a single innings.
Maiden Over	An over in which no runs are scored off the bowler's deliveries.
Out	The condition when a batsman is dismissed from play.

• Terms related to Netball.

Term	Definition
Goal	A successful shot in the opponent's net, worth one point.
Centre Pass	The method of starting and restarting play at the beginning of each quarter and after a goal is scored.
Wing Attack	The position that links the attack and centre court, feeding the ball to the shooters.
Goal Circle	The semi-circular area in front of each goal from within which goals may be scored.
Footwork	The rule that states a player may land and then pivot on one foot while in possession of the ball.
Free Pass	A pass awarded after an infringement by the opposing team.
Offside	An infringement that occurs when a player moves out of their designated area.
Penalty Pass	A free pass awarded where the infringement occurred.
Pivot	A player using one foot as a swivel while moving the other foot in any direction.
Throw in	A method of restarting play when the ball has gone out of court.

Q39. Answer: (c) Taxes on lands and buildings

The correct answer is Taxes on lands and buildings

Key PointsUnion List Subjects:

• It originally had 97 subjects but now it has 100 subjects.

• Defence

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• Army
• International Relations
• Ports
• Railways
• Highways
• Communication
• Economy

State List Subjects:

• It originally had 66 subjects but now it has 61 subjects
• Public order
• Police
• Public health and sanitation
• Hospitals and dispensaries
• Betting and gambling
• Taxes on Buildings and Lands.

Concurrent List Subjects:

It has 52 subjects.

• Education
• Forest
• Trade unions
• Marriage
• Adoption
• Succession
• Industrial and labour disputes
• Economic and social planning

Q40. Answer: (c) Hyderabad

The correct answer is Hyderabad.

Key Points:

• India will host the second United Nations World Geospatial Information Congress (UNWGIC) in October 2022, at Hyderabad.
• The theme would be ”Towards Geo-enabling the Global Village.”
• Every four years, the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) hosts UNWGIC.
• China in 2018 hosted the UNWGIC for the first time in October.
• UNWGIC is organized with the objective of enhancing international collaboration among the Member States and relevant stakeholders in Geospatial information management and capacities.
• Prime Minister Narendra Modi inaugurated the function.

Q41. Answer: (d) Central Vigilance Commission

The correct answer is Central Vigilance Commission.

Key Points

• Vigilance Commissioner Suresh N. Patel was sworn in as the Central Vigilance Commissioner (CVC) by President Droupadi Murmu on 3 August 2022.
• Mr Patel also administered the oath of office to former Intelligence Bureau (IB) chief Arvind Kumar and ex-IAS officer Praveen Kumar Srivastava as the vigilance commissioners.

Additional Information

• The Indian government's highest authority, the Central Vigilance Commission (CVC), combats official corruption.
• The Commission consists of:
• A Central Vigilance Commissioner – Chairperson;
• Not more than two Vigilance Commissioners – Members.

Important Points

• Vigilance Commissioner Praveen Kumar Srivastava has been appointed as the acting Central Vigilance Commissioner (CVC) on 28 Dec 2022.

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Q42. Answer: (d) access to its Wi-Fi at 100 railway stations

The correct answer is access to its Wi-Fi at 100 railway stations.

Key Points

• RailTel, a Mini Ratna PSU, has launched Prime Minister Wi-Fi Access Network Interface (PM-WANI) scheme based on access to its Public Wi-Fi services across 100 railway stations across the country.

• This public-friendly service was virtually launched by RailTel chairman and managing director Puneet Chawla.

• To access this Wi-Fi network, android users can download the mobile app 'Wi-DOT' available on Google Play Store.

• This app has been developed in close coordination with C-DOT.

• This method of accessing Wi-Fi through the 'mobile app' will be in addition to the existing method of accessing Wi-Fi at these stations through the conventional method of selecting Rail Wire Service Set Identifier (SSID).

• PM-WANI is an ambitious program of the Department of Telecom (DoT) to connect all silo Wi-Fi networks for ease of use and to proliferate broadband usage for the masses.

• The government had further plans to extend the PM-WANI-based access of Rail-Tel's public Wi-Fi services to all 6,102 railway stations in a phased manner.

Additional Information

• Indian railway:

• The first railway on the Indian sub-continent ran over a stretch of 21 miles from Bombay to Thane.

• The governor-general at that time was Lord Dahousie

• The idea of a railway to connect Bombay with Thane, Kalyan, and with the Thal and Bhore Ghats inclines first occurred to Mr. George Clark, the Chief Engineer of the Bombay Government, during a visit to Bhandup in 1843.

• The formal inauguration ceremony was performed on 16th April 1853.

• The first train had 14 railway carriages and carried about 400 guests.

• It was operated by three locomotives, named Sahib, Sultan, and Sindh.

Q43. Answer: (c) High land revenue

The correct answer is High land revenue.

Key Points

• The Patidar peasants in Kheda, Gujarat, organized non-violent campaigns against the British primarily due to their demand for high land revenue.

• This was one of the key issues that led to the Kheda Satyagraha of 1918, a significant event in the Indian independence movement, which was led by figures like Mohandas Karamchand Gandhi, Vallabhbhai Patel, and others.

Additional Information

• Kheda Satyagraha

• In the middle of the Kheda Satyagraha (1918), Gandhi also got involved in the Ahmedabad textile mill strike.

• Here his adversaries were the Gujarati millowners.

• The immediate reason for the industrial conflict was the withdrawal of plague bonus, which was being given to dissuade workers from leaving the city in the face of mounting plague-related deaths.

• Also, it was during Ahmedabad textile mill strike that Gandhiji for the first time during the Indian National Movement took fast unto death(to strengthen the workers' resolve).

• Hence his first hunger strike was during Ahmedabad Strike and not at Kheda.

• The cause for Kheda Satyagraha was that the peasants of Kheda district were in extreme distress due to a failure of crops and that their appeals for the remission of land revenue were being ignored by the Government.

• Discontinuation of the Plague bonus was the immediate cause for Ahmedabad textile mill strike.

Q44. Answer: (a) Article 80

The correct answer is 80.

Key Points

• The Rajya Sabha or Council of States is the upper house of the Parliament of India.

• Composition/Strength of Rajya Sabha:

• Article 80 of the Constitution lays down the maximum strength of Rajya Sabha as 250.

• Out of 250 seats of Rajya Sabha, 12 members are nominated by the President and 238 are representatives of the States and of the two Union Territories.

• The present strength of Rajya Sabha is 245, out of which 233 are representatives of the States and Union territories of Delhi and Puducherry and 12 are nominated by the President.

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• The members nominated by the President are persons having special knowledge or practical experience in respect of such matters as literature, science, art and social service.

Important Points

• Rajya Sabha (Council of States):

• The Government of India Act, 1919 provided for the creation of a 'Council of State' as a second chamber of the then legislature.

• Rajya Sabha is the Upper house of the bicameral Parliament of India.

• Allocation of Seats:

• The Fourth Schedule of the Constitution provides for the allocation of seats to the States and Union Territories in Rajya Sabha.

• The allocation of seats is made on the basis of the population of each State.

Additional Information

• Lok Sabha:

• Lok Sabha is composed of representatives of the people chosen by direct election on the basis of adult suffrage.

• Article 81 of the Constitution defines the composition of the House of the People or Lok Sabha.

• The maximum strength of the House envisaged by the Constitution is 550.

• Out of 550 seats of Lok Sabha:

• Up to 530 members represent the States

• Up to 20 members represent the Union Territories

• The house currently has 543 seats, which are filled by the election of up to 543 elected members.

Q45. Answer: (c) Brisbane

The correct answer is Brisbane.

Key Points

• American executive Cindy Hook has been appointed as the inaugural CEO of the organising committee for the 2032 Olympic and Paralympic Games in Brisbane.

• The organising committee announced the appointment on December 13 after engaging with 50 candidates over six months.

• Hook was based in Singapore as CEO of Deloitte Asia Pacific until June and had previously worked for the international professional services network in the US and in Australia, moving to Sydney in 2009 to lead the auditing practice for six years and later becoming CEO of the Australian operation in 2015.

• The International Olympic Committee awarded the 2032 Games to Brisbane in July of last year, under a revamped procedure for choosing host cities that saw a small group of IOC members identify and propose host cities to the board.

• Australia has twice previously hosted the Summer Olympics, at Melbourne in 1956 and Sydney in 2000.

• The 2032 organizing committee held its first board meeting in April and, on July 23, started the decade-long countdown.

Additional Information

• The 2032 Summer Olympics, officially known as the Games of the XXXV Olympiad and also known as Brisbane 2032, will be an international multi-sport event scheduled to take place from 23 July to 8 August 2032, in Brisbane, Queensland, Australia.

• Following changes in the bidding rules, the International Olympic Committee selected and announced Brisbane as the winning bid on 21 July 2021, two days before the start of the 2020 Summer Olympics.

Q46. Answer: (b) Bharat Muni

The correct answer is Bharat Muni.

Key Points

• The Natya Shastra, an ancient Indian treatise on the performing arts, encompassing theatre, dance and music, is traditionally attributed to Bharata Muni.

• It provides information about musical instruments, as well as a wide range of other subjects related to the performing arts.

Additional Information

• Amir Khusrau:

• A legendary figure in Indian music and culture, Amir Khusrau was a 13th-century Sufi musician, poet, and scholar from India.

• He has been credited with introducing several musical styles and instruments to Indian music, such as the qawwali and the sitar.

• Khusrau served in the court of several Delhi sultans and is known for his contributions to Hindustani classical music.

• Tansen:

• Tansen, originally named Ramtanu, was a prominent figure of Hindustani classical music in the medieval period.

• He was a court musician in the darbar (court) of the Mughal Emperor Akbar.

• His contributions to Indian music include compositions in Dhrupad, one of the oldest genres of Hindustani classical music.

• Many legends are associated with his musical prowess.

• Kalidas:

• Kalidas was a classical Sanskrit writer and is often considered ancient India's greatest playwright and poet.

• His notable works include plays like Abhijnana Shakuntalam (The Recognition of Shakuntala) and epic poems like Raghuvamsha (The Dynasty of Raghu).

• However, he is not directly associated with musical instruments or treatises on music.

Q47. Answer: (a) Brazil

The correct answer is Brazil.

Key Points

• Brazil beat Morocco 1-0 in the opening match of the 2022 FIFA U-17 World Cup at the Kalinga Stadium in Bhubaneswar.

• The national football federation has never provided an explanation for the choice, however, there are many theories.

• Some stated the All-India Football Federation (AIFF) could not afford to send the players to Brazil at the time, while some claimed it was because the team intended to play barefoot.

• The 32 football games of the FIFA U-17 Women's World Cup 2022 were played at three locations.

• The DY Patil Stadium in Navi Mumbai, Maharashtra; the Pandit Jawaharlal Nehru Stadium in Margao, Odisha.

• It took place at Navi Mumbai.

• At the Kalinga Stadium in Bhubaneswar, the seventh FIFA U17 Women's World Cup got underway on October 11, 2022.

• On October 30, the championship game was placed at the DY Patil Stadium.

• Spain, defending champions won the FIFA U-17 Women's World Cup against the first-time finalists Colombia. FIFA U-17 Women's World Cup was played between Spain and Colombia in the Patil Sports Stadium.

• India hosted the competition for the first time this year and made their debut.

Additional Information

• The FIFA Under 17 Women's World Cup took place in India in 2022.

• It was the first time the nation has hosted a competition from the women's world football governing body.

• This is the third-most significant Women's Competitions event on the FIFA calendar, featuring 36 games between 16 nations at 5 locations in India.

• One of the most significant tournaments ever to be organised in Indian football history, the FIFA Under 17 Women's World Cup has served as a crucial starting stone in the careers of several international football heroes.

• The FIFA Under 17 Women's World Cup had a long-lasting impact on Indian football, modernising the facilities, establishing suitable operational guidelines, and raising the level of play in general.

• Unquestionably, the FIFA Under-17 Women's World Cup in India in 2022 has the potential to revolutionise Indian football.

• With an expected global audience of around 200 million people from almost 200 different nations, the tournament has a significant impact on the entire world.

• This presents India with a fantastic opportunity to showcase its cities, culture, and capacity to host events of the greatest calibre.

Q48. Answer: (c) Peace

The correct answer is Peace.

Important Points

• Kailash Satyarthi

• Kailash Satyarthi is an Indian social activist who works and campaigned against child labour in India and elsewhere and advocated the right to education.

• In 2014 he was the recipient of the Nobel Peace Prize, along with Pakistan Malala Yousafzai, “for their struggle against the suppression of children and young people and for the right of all children to education”.

• Kailash Satyarthi founded the movement called Bachapan Bachao Andolan in India. Hence statement B is correct.

• Kailash Satyarthi is the fifth Indian Nobel prize winner.

• Other Noble Prize winners from India:

• Rabindranath Tagore

• Chandrashekhar Venkataraman

• Mother Teresa

• Amartya Sen

Key Points

• The 2025 Nobel Prizes were awarded across five categories, highlighting achievements in quantum physics, materials science, immunology, literature, and peace.

• Physics Prize:

• Awarded to John Clarke, Michel H. Devoret, and John M. Martinis for their work in macroscopic quantum mechanical tunneling and energy quantization in electric circuits, showcasing quantum mechanics at a macroscopic scale.

• Their work enabled advances in quantum computing, cryptography, and quantum sensors.

• Chemistry Prize:

• Awarded to Susumu Kitagawa, Richard Robson, and Omar M. Yaghi for their development of metal-organic frameworks (MOFs), materials with vast internal surface areas for various applications such as water harvesting, carbon capture, and toxic gas storage.

• Medicine Prize:

• Awarded to Mary E. Brunkow, Fred Ramsdell, and Shimon Sakaguchi for discovering regulatory T cells (Tregs) that prevent autoimmune diseases and play a role in cancer therapy.

• Their work has revolutionized the understanding of autoimmune diseases and immunotherapy.

• Literature Prize:

• Awarded to László Krasznahorkai for his visionary works, including "Satantango", which explore themes of apocalyptic terror, chaos, and human isolation.

• Known for long, complex sentences and dark, philosophical narratives.

• Peace Prize:

• Awarded to Maria Corina Machado, a Venezuelan leader and symbol of democratic resistance against authoritarianism in Venezuela, emphasizing "ballots over bullets" and leading the opposition.

• Praised for her courage despite life-threatening risks and for unifying the opposition around democratic principles.

Additional Information

• Geographical Distribution:

• United States leads with six laureates.

• Other countries: Japan (2 laureates), Australia, Hungary, and Venezuela (1 laureate each).

• Ceremony:

• The award ceremony will take place on December 10, 2025, in Stockholm (Peace Prize in Oslo).

• Each prize includes 11 million Swedish kronor, a gold medal, and a diploma.

Q49. Answer: (b) Membrane bound cell organelles are present

The correct answer is Membrane-bound cell organelles are present.

Key Points

• Statement 2 is incorrect because one of the primary distinguishing characteristics of prokaryotic cells is the absence of membrane-bound organelles.

• Unlike eukaryotic cells, prokaryotic cells do not contain a nucleus or other organelles (like mitochondria, endoplasmic reticulum, or Golgi apparatus) that are enclosed within membranes.

• Instead, the genetic material in prokaryotic cells, typically a circular strand of DNA, is found in a part of the cell called the nucleoid, which is not a membrane-bound structure.

• The other metabolic activities in the cell occur in the cytoplasm or across the cell membrane, not within specialized organelles.

• In contrast, eukaryotic cells, which include animal and plant cells, do contain a variety of membrane-bound organelles, each with specific functions.

• For example, the nucleus contains the cell's genetic material, while mitochondria generate most of the cell's supply of adenosine triphosphate (ATP), used as a source of chemical energy.

Additional Information

• Other Statements:

• They have only very small ribosomes as organelles:

• Prokaryotic cells, such as bacteria, do contain ribosomes, which are small structures that participate in protein synthesis.

• Unlike eukaryotic cells, the ribosomes in prokaryotes are smaller (70S as opposed to the 80S ribosomes in eukaryotes), and they are not membrane-bound.

• Their chromosomes are composed of only nucleic acid:

• The chromosome of a prokaryotic cell is typically a single, circular DNA molecule that's located in the nucleoid region.

• Unlike eukaryotic chromosomes, prokaryotic chromosomes are not associated with histone proteins.

• The DNA is more or less "naked," and directly interacts with the cytoplasm.

• Their size is generally in the range of 1-10 μm:

• Prokaryotic cells are generally smaller than eukaryotic cells.

• They typically range in size from 1-10 micrometres (μm), which is significantly smaller than most eukaryotic cells.

• This smaller size allows for a larger surface area to volume ratio, which helps nutrients and waste to quickly enter and exit the

cell.

Q50. Answer: (d) Metallurgical coal is high grade lignite coal which has a special value for smelting iron in blast furnaces.

The correct answer is Option 4.

Key Points

• Metallurgical coal is high-grade lignite coal which has a special value for smelting iron in blast furnaces, this statement is NOT correct.

• Metallurgical coal, also known as coking coal, is a high-quality hard coal (not lignite) used to produce coke, which is necessary for iron smelting in blast furnaces.

• Metallurgical coal needs to have low sulfur and phosphorus contents, making it much rarer and more valuable than thermal coal, which is used to produce heat and electricity.

• Typically, bituminous coal or anthracite is used for this purpose, not lignite, which is lower-grade coal.

Additional Information

• Anthracite is the highest quality hard coal:

• Anthracite is indeed the highest grade of coal.

• It's the oldest type of coal, having spent the most time underground exposed to pressure and heat.

• It's very hard and shiny (hence "hard coal") and burns cleanly with little soot, making it much cleaner than other types of coal.

• It's less common than other forms, which makes it more expensive.

• Coal that has been buried deep and subjected to increased temperatures is bituminous coal:

• Bituminous coal is a medium-rank coal between sub-bituminous coal and anthracite.

• It has been subjected to higher pressures and temperatures than lignite and sub-bituminous coal, but not as much as anthracite.

• Bituminous coal is commonly used for generating electricity and heating in industrial processes.

• Lignite is a low-grade brown coal, which is soft with high moisture content:

• Lignite, often referred to as brown coal, is indeed a low-grade coal.

• It's softer than bituminous coal or anthracite, and it has a high moisture content.

• This makes it less energy-dense and more polluting than higher-grade coals.

• Lignite is often used in electricity production in power plants located near mining sites.

Q51. Answer: (b) 60 degree

Given:

The length of chord AB is equal to the radius of the circle

Formula used:

The subtended angle θ in a circle can be found using the formula $\theta = 2 \arcsin(d/2r)$, where d is the length of the chord and r is the radius of the circle.

Calculation:

Given that the length of the chord AB (d) is equal to the radius (r), we can substitute r for d in the formula:

$\theta = 2 \arcsin(r/2r)$

This simplifies to:

$\theta = 2 \arcsin(1/2)$

Using the arcsine values we know that $\arcsin(1/2)$ is equal to 30 degrees. So:

$\theta = 2 \times 30$

$\theta = 60$ degrees

Therefore The angle subtended by the chord at the centre of the circle is 60 degrees.

Shortcut Trick

In a circle, a chord of the same length as the radius subtends an angle of 60 degrees at the center. This is a property of circles, and it can be proved using elementary geometry and trigonometry. You don't need to do the full calculation if you remember this fact.

Q52. Answer: (b) 536

Given:

$(x^2-1)/x=8$

Formula used:

If $(x - 1/x) = k$, then $(x^3 - 1/(x^3)) = k^3 + 3k$

Calculation:

=> $(x^2)/x - 1/x = 8$

=> $x - 1/x = 8$

=> $(x^6-1)/(x^3) = x^3 - 1/(x^3)$

=> $x^3 - 1/(x^3) = 8^3 + 3 \times 8$

=> 512 + 24

=> 536

Therefore The correct answer is option (2).

Q53. Answer: (a) 90 degree

Given:

The radius of a circle is 10 cm.

A chord of length 20 cm is drawn.

Concept used:

The diameter of a circle subtends an angle of 90° at the circumference of the circle.

The diameter is the largest chord of a circle.

The length of the diameter = 2 × Radius

Calculation:

Let the radius of the circle be R cm.

According to the concept,

R = 10 cm

So, Diameter = 2 × R = 2 × 10 = 20 cm

According to the question,

The chord has a length of 20 cm.

A diameter divides the circle into two semi-circles, each having an angle of 90 degrees at the circumference of the circle.

So, the angle made by the chord (diameter in this case) at the circumference of the circle is 90 degrees.

Therefore, the correct answer is 1) 90 degrees.

Q54. Answer: (c) 80/7 days

Given:

12 men can do a work in 8 days while 4 boys can do it in 40 days.

Concept Used:

M1D1 = M2D2

Calculation:

=> 12M × 8 = 4B × 40

=> 3M = 5B

=> M : B = 5 : 3

Total work = 12 × 5 × 8 = 480

9 boys and 3 men together will complete the same work in = 480/(9 × 3 + 3 × 5)

=> 480/42

=> 80/7 days

Therefore Option 3 is the correct answer.

Q55. Answer: (c) 6

Shortcut Trick

Given that 6 cot θ = 5, we can simplify the required expression.

Divide both the numerator and the denominator by sin θ to convert the terms into cot θ.

Expression = (6 cot θ + 1) / (6 cot θ − 4)

Substitute 6 cot θ = 5 directly: (5 + 1) / (5 − 4) = 6 / 1 = 6.

Therefore The correct answer is 6.

Alternate Method

Given: 6 cot θ = 5

Formula Used: cot θ = Base / Perpendicular = cos θ / sin θ

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=> 6 cot θ = 5 => cot θ = 5/6

=> Since cot θ = cos θ / sin θ, we can assume cos θ = 5k and sin θ = 6k.

=> Required value = (6 cos θ + sin θ) / (6 cos θ − 4 sin θ)

=> Substituting the values: [6(5k) + 6k] / [6(5k) − 4(6k)]

=> Value = (30k + 6k) / (30k − 24k)

=> Value = 36k / 6k = 6

The calculated result 6 matches Option 3.

Therefore The correct answer is 6.

Additional Information

Trigonometric Ratio Identities

The fundamental quotient identity for cotangent is cot θ = cos θ / sin θ and for tangent is tan θ = sin θ / cos θ.

Reciprocal Relationships

The cotangent function is the reciprocal of the tangent function: cot θ = 1 / tan θ.

Pythagorean Identity

Another important identity involving cotangent is $1 + \cot^2 \theta = \operatorname{cosec}^2 \theta$.

Q56. Answer: (b) Only I

Calculation:

Statement I:

The expenditure of R in year Y1 and Y2 together = 600 + 500 = 1100

The expenditure of S in year Y3 and Y4 together = 700 + 500 = 1200

Percentage of the expenditure of R in year Y1 and Y2 together to the expenditure of S in year Y3 and Y4 together = 1100/1200 × 100 = 91.66%

Statement I is not correct.

Statement II:

Total expenditure of company S = 1200 + 900 + 700 + 500 + 400 = 3700

Total expenditure of company R = 600 + 500 + 800 + 400 + 1000 = 3300

Percentage of the total expenditure of company S to the total expenditure of company R = 3700/3300 × 100 = 112.12%

Statement II is correct.

Therefore Option 2 is the correct answer.

Q57. Answer: (c) 2019

Calculation:

Company gain in 2016 = 54 - 51 = 3

Company gain in 2017 = 64 - 60 = 4

Company gain in 2018 = 80 - 75 = 5

Company gain in 2019 = 82 - 80 = 2

Company gain in 2020 = 98 - 87 = 11

Company gain the minimum amount in 2019.

Therefore Option 3 is the correct answer.

Q58. Answer: (a) 10%

Given:

Marked price = (M.P) = Rs. 210

Selling price = (S.P) = Rs. 189

Formula used:

If marked price is M.P, selling price is S.P and discount is D, then

Discount = M.P - S.P

Rate of discount = (100/M.P) × Discount

Calculation:

Discount = 210 - 189 = Rs. 21

So, Rate of discount = (21/210) × 100 = 10 %

Therefore The rate of discount is 10 %

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Q59. Answer: (c) 28 cm

Shortcut Trick

Ratio of Volumes (V1/V2) = (r1/r2)² × (h1/h2)

32/9 = (r1/r2)² × (8/9) => (r1/r2)² = 4 => r1/r2 = 2/1

Base Area of second cylinder = 616 cm² => πr2² = 616 => r2 = 14 cm

Radius of first cylinder (r1) = 2 × r2 = 2 × 14 = 28 cm

Therefore The correct answer is 28 cm.

Alternate Method

Given: Ratio of Volumes = 32 : 9, Ratio of Heights = 8 : 9, Base Area of 2^(nd) cylinder = 616 cm².

Formula Used: Volume of Cylinder = Base Area × Height

=> V1 / V2 = (Area1 × h1) / (Area2 × h2)

=> 32 / 9 = (Area1 / 616) × (8 / 9)

=> 32 / 8 = Area1 / 616

=> Area1 = 4 × 616 = 2464 cm²

=> π × r1² = 2464

=> 22/7 × r1² = 2464

=> r1² = (2464 × 7) / 22 = 112 × 7 = 784

=> r1 = √784 = 28 cm

Therefore The correct answer is 28 cm.

Additional Information

Volume of a Cylinder

The volume (V) is calculated as the product of the base area and the height: V = πr²h.

Surface Area of a Cylinder

Curved Surface Area (CSA) = 2πrh and Total Surface Area (TSA) = 2πr(r + h).

Radius and Area Relation

If the base area is A, then the radius r = √(A/π). For A = 616 cm², r = 14 cm.

Q60. Answer: (a) √13/2

Shortcut Trick

Ratio of sides EF : FG = 10 : 15 = 2 : 3.

In a right triangle with sides 2 and 3, Hypotenuse (EG) = √(2² + 3²) = √13 units.

For angle G, Perpendicular = EF = 2 units and Hypotenuse = √13 units.

cosec G = Hypotenuse ÷ Perpendicular = √13 / 2.

Therefore The correct answer is √13/2.

Alternate Method

Given: In ΔEFG, angle F = 90°, EF = 10 cm, FG = 15 cm.

Formula: Pythagoras Theorem: EG² = EF² + FG² | cosec G = Hypotenuse / Opposite side.

=> In ΔEFG, by Pythagoras Theorem:

=> EG² = 10² + 15²

=> EG² = 100 + 225 = 325

=> EG = √325 = √(25 × 13) = 5√13 cm

=> cosec G = Hypotenuse / Perpendicular (Opposite to G)

=> cosec G = EG / EF

=> cosec G = (5√13) / 10

=> cosec G = √13 / 2

Therefore The correct answer is √13/2.

Additional Information

Trigonometric Ratio Definitions

In a right-angled triangle, sin θ = Perpendicular/Hypotenuse, cos θ = Base/Hypotenuse, and tan θ = Perpendicular/Base.

Reciprocal Relations

cosec θ is the reciprocal of sin θ (1/sin θ), sec θ is the reciprocal of cos θ (1/cos θ), and cot θ is the reciprocal of tan θ (1/tan θ).

Pythagoras Theorem

For any right triangle with legs a, b and hypotenuse c, the relationship is always $a^2 + b^2 = c^2$.

Q61. Answer: (c) 10 kg

Shortcut Trick

Overall Selling Price = 30 × 1.10 = Rs. 33/kg.

Equating total SP parts: 8x + 45(x − 8) = 33x

53x − 360 = 33x => 20x = 360 => x = 18

Quantity sold at Rs. 45/kg = x − 8 = 18 − 8 = 10 kg.

Therefore The correct answer is 10 kg.

Alternate Method

Given:

Cost Price (CP) = Rs. 30/kg, Overall profit = 10%

Quantity sold at Rs. x/kg = 8 kg

Quantity sold at Rs. 45/kg = (x − 8) kg

Formula Used:

Mean SP = CP × (100 + Profit%) ÷ 100

Alligation ratio = (SP2 − Mean SP) / (Mean SP − SP1)

Calculations:

=> Mean Selling Price = 30 × 1.1 = Rs. 33/kg

=> Using the Alligation ratio: 8 / (x − 8) = (45 − 33) / (33 − x)

=> 8 / (x − 8) = 12 / (33 − x)

=> 2 / (x − 8) = 3 / (33 − x)

=> 2 × (33 − x) = 3 × (x − 8)

=> 66 − 2x = 3x − 24

=> 5x = 90

=> x = 18

=> Quantity sold at Rs. 45/kg = 18 − 8 = 10 kg

Therefore The correct answer is 10 kg.

Additional Information

Mixtures & Alligation Rule

It allows finding the ratio in which two ingredients at given prices must be mixed to produce a mixture of a desired price: Quantity 1 / Quantity 2 = (Price 2 − Mean Price) / (Mean Price − Price 1).

Profit and Loss Basics

Selling Price (SP) is calculated as CP × (100 + Profit%) ÷ 100. When multiple parts are sold at different prices, the overall SP is the weighted average of the individual SPs.

Replacement Method

When a quantity 'y' is replaced 'n' times from a total mixture 'x', the remaining quantity of the original substance is given by $x \times (1 - y/x)^n$.

Q62. Answer: (d) 22 hours 30 minutes

Shortcut Trick

Distance x = Speed after repair × Time = 108 × 3 = 324 km.

New distance to cover = 5x = 5 × 324 = 1620 km.

Time before repair = New Distance ÷ Speed before repair = 1620 ÷ 72.

Time = 22.5 hours = 22 hr 30 min.

Therefore The correct answer is 22 hr 30 min.

Alternate Method

Given:

Speed of car after repair = 108 km/hr

Speed of car before repair = 72 km/hr

Time taken to cover distance x (after repair) = 3 hr

Formula Used:

Distance = Speed × Time

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Time = Distance ÷ Speed
Calculations:
=> First, calculate the distance x using the speed after repair:
=> x = 108 km/hr × 3 hr = 324 km
=> Now, calculate the new distance to be covered before repairing (5x):
=> 5x = 5 × 324 = 1620 km
=> Calculate the time taken to cover 1620 km at the speed of 72 km/hr (before repair):
=> Time = 1620 ÷ 72
=> Time = 22.5 hours
=> Since 0.5 hours = 0.5 × 60 minutes = 30 minutes,
=> Time = 22 hr 30 min
Therefore The correct answer is 22 hr 30 min.
Additional Information
Speed-Time Proportionality
For a constant distance, Speed is inversely proportional to Time (S1/S2 = T2/T1).
Unit Conversion
To convert speed from km/hr to m/s, multiply the value by 5/18. To convert from m/s to km/hr, multiply by 18/5.
Average Speed Formula
Average Speed = Total Distance ÷ Total Time. If a car covers equal distances at speeds u and v, then Average Speed = 2uv ÷ (u + v).

Q63. Answer: (b) Rs. 52800

Given:
The ratio of incomes of P and Q is 1:2
The ratio of income of Q and R is 3:2
One-third of P's income is Rs. 4400 less than half of P's income.
Calculation:
P's income = x
Q's income = 2x (since the ratio of P's income to Q's income is 1:2)
According to the given information:
One-third of P's income is Rs. 4400 less than half of P's income.
(1/3)x = (1/2)× x - 4400
To simplify the equation, we can multiply both sides by 6 to get rid of the fractions:
x/2 - x/3 = 4400
x/6 = 4400
x = 26400
So
Q's income = 2x = 2 × 26400 = 52800
Therefore Option 2 is the correct answer.

Q64. Answer: (b) (2^(256)-1)/3

Calculation:
(22 + 1) (24 + 1) (28 + 1) (216 + 1) ..... (2128 + 1)
Divide by (22 - 1) in numerator and denominator
1/(22 - 1)[(22 - 1)(22 + 1) (24 + 1) (28 + 1) (216 + 1) ..... (2128 + 1)]
1/(22 - 1)[(2^4 - 1) (24 + 1) (28 + 1) (216 + 1) ..... (2128 + 1)]
1/(22 - 1)[(2^8 - 1) (28 + 1) (216 + 1) ..... (2128 + 1)]
1/(22 - 1)[(2^(16) - 1) (216 + 1) ..... (2128 + 1)]
1/(22 - 1)(2^(256) - 1)
(2256 - 1)/3
Therefore Option 2 is the correct answer.

Q65. Answer: (c) 200

Shortcut Trick

Student's scored percentage = Passing percentage − Failing gap percentage

Scored percentage = 40% − 20% = 20%

Since 20% of the maximum marks corresponds to the 40 marks obtained:

Maximum marks = (40 ÷ 20) × 100 = 200

Therefore The correct answer is 200 marks.

Alternate Method

Given:

Marks obtained by the student = 40 marks

Failing gap = 20% of maximum marks

Passing percentage = 40% of maximum marks

Formula Used:

Passing Marks = Obtained Marks + Shortfall Marks

0%

20%

40% (Pass)

100%

Scored

Failed by

40 Marks

20% Gap

Max Marks = 100% = 200 Marks

Calculations:

Let the maximum marks be x.

=> Passing marks = 40% of x = 0.4x

=> Shortfall (Failed by) marks = 20% of x = 0.2x

=> Obtained marks + Shortfall marks = Passing marks

=> 40 + 0.2x = 0.4x

=> 0.4x − 0.2x = 40

=> 0.2x = 40

=> x = 40 ÷ 0.2

=> x = 200

Therefore The correct answer is 200 marks.

Additional Information

Concept of Passing Marks

If a student scores 'M' marks and fails by 'X' marks, then Passing Marks = M + X. If they score 'N' marks and get 'Y' marks above passing, then Passing Marks = N − Y.

Fraction Equivalent Strategy

Converting percentages to fractions speeds up calculations. 20% = 1/5 and 40% = 2/5. Here, (2/5)x − (1/5)x = 40 => (1/5)x = 40 => x = 200.

Percentage Base Rule

Whenever a percentage is mentioned (like 20% failed marks), it is always calculated on the Total/Maximum Marks of the exam unless specified otherwise.

Q66. Answer: (b) 21 cm

Given:

Circum-radius = 14 cm

Formula used:

Circum-radius, r = a/√3

Length of median = Height of equailateral triangle = √3a/2

where, a = side of equailateral triangle

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Calculation:

=> r = a/√3

=> a = 14√3

Now, Length of median = √3a/2

=> (√3 × 14√3)/2 = 21 cm

Therefore Option 2 is the correct answer.

Q67. Answer: (c) -300

Calculation:

The given expression alternates between adding and subtracting the numbers 1, 7, 2, 8, 3, 9, 4, 10, and so on.

We can observe that the numbers being added increase by 1 each time, while the numbers being subtracted also increase by 1 each time.

To find the value of the expression to 100 terms, we can group the terms into pairs.

Each pair consists of a positive number and its negative counterpart.

The sum of each pair is always -6 because (-7 + 1 = -6, -8 + 2 = -6, -9 + 3 = -6, and so on).

Since we have 100 terms in total, we can form 50 pairs.

Each pair sums up to -6, so the sum of the 100 terms is:

50 pairs × (-6) = -300

Therefore, the value of the expression 1 - 7 + 2 - 8 + 3 - 9 + 4 - 10 + ... to 100 terms is -300.

Therefore Option 3 is the correct answer.

Q68. Answer: (b) √40

Calculation:

-sin θ + cosec θ = 6

=> -sin θ + 1/sin θ = 6

=> 1 - $\sin^2 \theta$ = 6 sin θ

=> sin2 θ + 6 sin θ - 1 = 0

Apply quadratic roots formula,

x = (-b ± √b^2 - 4ac)/2a

Here x = sinθ, a = 1, b = 6, c = -1

=> sinθ = (-6 ± √6^2 - 4 × (-1))/2

=> sinθ = (-6 ± √40)/2

=> sinθ = (-3 ± √10)

=> sin θ + cosec θ = sin θ + 6 + sin θ (cosec θ = 6 + sin θ)

=> 2sin θ + 6

=> 2(-3 ± √10) + 6

=> -6 ± 2√10 + 6

=> ± 2√10

=> √40

Therefore Option 2 is the correct answer.

Q69. Answer: (c) 15

Calculation:

Let's solve the given equation $a^3 + 3a^2 + 3a = 63$ and find the value of $a^2 + 2a$

We can factor the left side of the equation by recognizing it as a cube of a binomial:

$(a + 1)^3 = a^3 + 3a^2 + 3a + 1$

Comparing this with the given equation, we have:

$(a + 1)^3 = 63 + 1$

Taking the cube root of both sides, we get:

a + 1 = cbrt(64)

Simplifying further, we have:

a + 1 = 4

Subtracting 1 from both sides:

a = 4 - 1

a = 3

Now we can find the value of $a^2 + 2a$:

$a^2 + 2a = 3^2 + 2(3) = 9 + 6 = 15$

Therefore, the value of $a^2 + 2a$ is 15.

Therefore Option 3 is the correct answer.

Q70. Answer: (c) 150

Calculation:

Average income of C and D together = (600 + 400)/2 = 500

Saving of C = 600 - 200 = 400

Saving of D = 400 - 100 = 300

Average saving of C and D together = (400 + 300)/2 = 350

The difference between the average income and average savings in year C and D together is = 500 - 350 = 150

Therefore Option 3 is the correct answer.

Q71. Answer: (a) 7 : 22

Calculation:

The average number of students studying science in the given years = (78 + 69 + 83 + 55 + 65)/5

=> 350/5 = 70

The total strength of students studying in the year 2022 = (76 + 65 + 48 + 31) = 220

Ratio of the average number of students studying science in the given years to the total strength of students studying in the year 2022 = 70 : 220

=> 7 : 22

Therefore Option 1 is the correct answer.

Q72. Answer: (c) 5

Shortcut Trick

List all odd numbers between 100 and 120: 101, 103, 105, 107, 109, 111, 113, 115, 117, 119.

Remove multiples of 3 (sum of digits): 111 (1+1+1=3) and 117 (1+1+7=9).

Remove multiples of 5: 105 and 115.

Remove multiples of 7: 119 (7 × 17).

Remaining prime numbers: 101, 103, 107, 109, 113.

Therefore The correct answer is 5.

Alternate Method

Given: Range between 100 and 120.

Formula: A number is prime if it is not divisible by any prime number less than or equal to its square root (√n). For n < 121, √n < 11. We only need to check divisibility by 2, 3, 5, and 7.

=> Divisibility test for 111: 1 + 1 + 1 = 3 (Divisible by 3)

=> Divisibility test for 117: 1 + 1 + 7 = 9 (Divisible by 3 and 9)

=> Divisibility test for 119: 119 ÷ 7 = 17 (Divisible by 7)

=> Count of primes = 101, 103, 107, 109, 113 = 5 prime numbers.

Therefore The correct answer is 5.

Additional Information

Prime Numbers (1 to 100)

There are exactly 25 prime numbers between 1 and 100. The smallest is 2, which is also the only even prime number.

Divisibility Rule for 3

A number is divisible by 3 if the sum of its digits is a multiple of 3.

Testing for Primality

To check if a number n is prime, test divisibility by all primes up to √n. If none divide n, then n is prime.

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Q73. Answer: (a) 38.83

Shortcut Trick

Original average of 16 numbers = 35

Net deviation of removed numbers (18, 17, 24, 35) = (−17) + (−18) + (−11) + 0 = −46

Removing numbers with a negative net deviation increases the average of the remaining values.

Increase in average = 46 ÷ 12 = 3.83

New average = 35 + 3.83 = 38.83

Therefore The correct answer is 38.83.

Alternate Method

Given:

Average of 16 numbers = 35

Removed numbers = 18, 17, 24 and 35

Formula Used:

Average = Sum of numbers ÷ Total numbers

4 removed

12 remaining

Sum = 94

Sum = 466

New Avg = 38.83

Total: 16 numbers, Avg = 35, Sum = 560

Calculations:

=> Total sum of 16 numbers = 16 × 35 = 560

=> Sum of removed numbers = 18 + 17 + 24 + 35 = 94

=> Total sum of remaining 12 numbers = 560 − 94 = 466

=> New average = 466 ÷ 12

=> New average = 233 ÷ 6 = 38.83

Therefore The correct answer is 38.83.

Additional Information

Average Basic Concept

The average of a set of numbers is the sum of the values divided by the total count of numbers.

Net Deviation Method

Removing items with a net negative deviation from the overall average increases the average of the remaining items. Similarly, removing positive deviations decreases the average.

Weighted Average

When combining two groups, the combined average is calculated as (n1A1 + n2A2) ÷ (n1 + n2).

Q74. Answer: (c) 4.88 percent

Given:

Annual interest rate = 10%

Compounding frequency = half-yearly

Formula Used:

a + b +ab/100

Calculation:

x% is compounded half-yearly

a + b +ab/100 using this,

$x + x + x^2/100$

2x + x2/100

According to the question:

10 = 2x + x2/100

1000 = x(200 + x)

x = 4.88 percent

Please note that this type of calculation is not possible in the exam, so it is better to use the option method after this.

Just put values from options.

Please note that here x is the rate of interest for half year, not per annum. Please go through the question carefully.

Q75. Answer: (b) 8 cm

Shortcut Trick

For a cyclic quadrilateral where sides are produced to meet at point Z, the secant-secant property states: ZK × ZJ = ZL × ZM.

Total length ZJ = ZK + JK = 12 + 10 = 22 cm.

Applying the formula: 12 × 22 = ZL × 33

=> 264 = 33 × ZL

=> ZL = 264 ÷ 33 = 8 cm.

Therefore The correct answer is 8 cm.

Alternate Method

Given:

JK = 10 cm, KZ = 12 cm, MZ = 33 cm

JKLM is a cyclic quadrilateral.

Formula Used:

Intersecting Secant Theorem: When two secant lines intersect at an external point Z, the product of the external segment and the whole secant is equal for both lines: ZK × ZJ = ZL × ZM.

Calculations:

=> Total length of secant ZJ = ZK + JK

=> ZJ = 12 + 10 = 22 cm

=> According to theorem, ZK × ZJ = ZL × ZM

=> 12 × 22 = ZL × 33

=> 264 = 33 × ZL

=> ZL = 264 ÷ 33

=> ZL = 8 cm

Therefore The correct answer is 8 cm.

Additional Information

Cyclic Quadrilateral Properties

In a cyclic quadrilateral, the sum of opposite angles is 180°. Also, the exterior angle at any vertex is equal to the interior opposite angle.

Power of a Point Theorem

For an external point Z, the product of segments of any secant line is constant (ZK × ZJ = ZL × ZM = Constant), which is also equal to the square of the tangent length from that point.

Similar Triangles

When sides of a cyclic quadrilateral are produced, the triangle formed by the intersection point and the nearer vertices is similar to the triangle formed with the farther vertices (triangle ZKL ~ triangle ZMJ).

Q76. Answer: (d) the universe other objects

Here the correct answer is Option 4.

Key Points

• The error in the sentence lies in the phrase "the universe other objects."

• Here's a breakdown of the sentence:

• "Scientists have a few tricks up" - This fragment is grammatically correct and establishes the subject "Scientists" and their possession of "a few tricks."

• "their sleeves for dealing with" - This fragment is also grammatically correct. It indicates that the tricks are kept "up their sleeves" (a figurative expression meaning to keep something secret or hidden) and are used for "dealing with" various situations.

• "No error" - This option is incorrect because there is indeed an error in the sentence.

• "the universe other objects" - This fragment contains the error. "the universe" should be separated from "other objects" with the conjunction "and" to clearly indicate that the tricks are used for both the universe and other objects.

Corrected sentence: "Scientists have a few tricks up their sleeves for dealing with the universe and other objects."

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Q77. Answer: (a) Mollifying

The solution is in Hindi. Read it online.

Q78. Answer: (a) Frightful

The correct answer is (1) Frightful.

Key Points

• The word "ferocious" is an adjective that describes something or someone extremely fierce, savage, or violent.

• Example sentence: "The tiger's ferocious roar echoed through the jungle, sending shivers down their spines."

• Option 1) Frightful: This word means causing fear or terror, and it is synonymous with "ferocious."

• Example sentence: "The storm brought forth frightful winds and lightning, causing widespread panic."

• Option 2) Mild: This word means gentle or not severe, which is the opposite of "ferocious."

• Example sentence: "The puppy had a mild temperament and showed no signs of being ferocious."

• Option 3) Conscientious: This word means diligent, thorough, or attentive to detail. It does not have a direct synonym for "ferocious."

• Example sentence: "She was a conscientious worker, always completing her tasks with great care."

• Option 4) Tame: This word means (of an animal) not dangerous or frightened of people; domesticated.

• Example sentence: "The fish are so tame you have to push them away."

Q79. Answer: (d) exile

The solution is in Hindi. Read it online.

Q80. Answer: (a) Guilde

The incorrectly spelled word is: Guilde.

Key Points

• The correct spelling is "Guild."

• A guild is an organization or association of individuals who come together for a common purpose or interest, such as a guild of craftsmen or a guild of gamers.

• Here's an example sentence: "The blacksmith joined the local guild to network with other skilled artisans."

• In summary, the incorrect spelling is "Guilde," and the correct spelling is "Guild."

Additional Information

• Now let's look at the other options:

• Build - This is the correct spelling. "Build" is a verb that means to construct or assemble something.

• For example, "The construction workers will build a new house."

• Shield - This is the correct spelling. A shield is a protective device or barrier used for defense.

• For instance, "The knight raised his shield to block the enemy's attack."

• Field - This is the correct spelling. "Field" has multiple meanings, including an area of land used for a specific purpose, such as a sports field, or a particular branch of study or work, like the field of medicine.

• Here's an example sentence: "The soccer match took place on the field behind the school."

Q81. Answer: (b) ADVANCE

The solution is in Hindi. Read it online.

Q82. Answer: (a) decamped with valuables

The correct answer is: Decamped with valuables.

Key Points

• The sentence contains a grammatical error in the underlined part.

• The correct verb form to use in this context is "decamped" (past tense), not "decamp" (present tense).

• Additionally, the word "valuables" should be used instead of "valuable" to indicate multiple valuable items.

• Therefore, option 1 is the correct choice as it corrects both the verb form and the noun form.

• The verb "decamp" means to leave quickly or secretly, often with the intention to escape or evade capture. In this context, it indicates that the thieves left the house after entering it.

• Using the past tense form "decamped" is appropriate because it indicates an action that has already happened in the past. The phrase "with valuables" indicates that the thieves took multiple valuable items from the house.

• This sentence uses the correct verb form and plural noun form, making it grammatically accurate and conveying the intended meaning of the thieves leaving the house with multiple valuable items.

Correct Sentence: "The thieves entered a house at night and decamped with valuables worth Rs. 50,000."

Q83. Answer: (c) very proud

The correct answer is: very proud.

Key Points

• The original sentence "His father was few proud of his power over the horse" contains an error.

• The word "few" is incorrect in this context. It should be replaced with the word "very" to convey a strong sense of pride.

• "Very" is an adverb that intensifies the adjective "proud" and emphasizes the degree of pride.

• In this corrected sentence, "very proud" accurately describes the level of pride the father feels towards his power over the horse.

• The adverb "very" modifies the adjective "proud," emphasizing the intensity of the emotion.

• Thus, the correct answer is Option 3.

Correct Sentence: "His father was very proud of his power over the horse."

Q84. Answer: (d) They were irresponsible in performing their duties.

The correct sentence is: They were irresponsible in performing their duties.

Key Points

• Option 4 is the correct sentence because it has no spelling errors. All the words are spelled correctly, and the sentence is grammatically correct.

• Let's go through the incorrect options and provide the correct spellings and meanings of the misspelled words:

• They were iresponsible in performing their dutes.

• Correct spelling: irresponsible, duties

• Irresponsible means lacking a sense of responsibility or not reliable.

• Duties refer to tasks or responsibilities assigned to someone.

• They were irresponcible in perfroming their duties.

• Correct spelling: irresponsible, performing

• They were irresponsible in performing ther dutys.

• Correct spelling: their, duties

• Their is a possessive pronoun indicating ownership or belonging.

• Options 1, 2, and 3 are incorrect because they contain spelling errors, resulting in incorrect spellings of "irresponsible," "performing," "their," and "duties."

• Option 4 is the correct choice as it has the correct spellings of all the words and forms a grammatically coherent sentence.

Q85. Answer: (c) QPRS

Here the correct answer is QPRS.

Key Points

• In this arrangement, the sentence starts with the introduction of the problems of collective action being popularized. This provides the context for the subsequent parts.

• Q. "The problems of collective action were popularized by the"

• P. "American political economist Mancur Olson, who wrote in 1965"

• These two parts go together as they establish who popularized the problems of collective action and when it happened. Mancur Olson, an American political economist, is mentioned as the individual responsible for bringing attention to these problems through his writing in 1965.

• R. "that coercion or some other device must be present in order"

• S. "for a group of individuals to act in their common interest"

• The last two parts connect to form a logical explanation. It states that in order for a group of individuals to act in their common interest, coercion or some other mechanism is necessary. This concludes the sentence by providing a solution or conclusion related to the problems of collective action.

• By following the order QPRS, the sentence maintains a logical flow by introducing the problem, establishing the authority, and providing an explanation or solution.

Correct Arrangement: The problems of collective action were popularized by the American political economist Mancur Olson, who wrote in 1965 that coercion or some other device must be present in order for a group of individuals to act in their common interest.

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Q86. Answer: (c) lethargic

The solution is in Hindi. Read it online.

Q87. Answer: (c) woodpecker has a different

The correct answer is 3) "woodpecker has a different."

Key Points

• The error in the sentence is with subject-verb agreement.

• The subject of the sentence is "skull bones," which is plural.

• However, the verb "has" is in the singular form, which does not agree with the plural subject.

• To correct this error, the verb should be in the plural form "have" to match the subject "skull bones."

• In this revised sentence, the subject-verb agreement is corrected, with the plural subject "skull bones" now properly matched with the plural verb "have."

• Thus, the correct answer is Option 3.

Correct Sentence: "The skull bones of a woodpecker have a different chemical composition and density."

Q88. Answer: (d) General

The solution is in Hindi. Read it online.

Q89. Answer: (a) The bushes have been watered by the gardener.

The correct answer is 'The bushes have been watered by the gardener.'

Key Points

• The sentence is in the present perfect tense.

• In passive voice, the present perfect tense is formed by: "has/have been + past participle of the main verb".

• The structure of the passive voice in the present perfect tense is: Object + has/have been + past participle + by + subject

Therefore the correct sentence is: The bushes have been watered by the gardener.

Additional Information

• Let's look at the other options:

• "The bushes are being watered by the gardener." This sentence is in the present continuous tense, which is not the correct tense.

• "The bushes were being watered by the gardener." This sentence is in the past continuous tense, which is also not the correct tense.

• "The bushes has been watered by the gardener." This sentence is grammatically incorrect. When the subject is plural (like "bushes"), we should use "have" instead of "has".

Q90. Answer: (c) Rarely

The solution is in Hindi. Read it online.

Q91. Answer: (d) Pedantic

The solution is in Hindi. Read it online.

Q92. Answer: (d) that knew

The correct answer is 'Option 4' i.e. 'that knew'.

Key Points

• The phrase "that know" is incorrect and should be replaced with "that knew" to maintain proper tense agreement.

• This sentence suggests that the name possesses the quality of endurance or the ability to persist in challenging circumstances.

• The use of "knew" implies that the name had a historical understanding or reputation for endurance.

Therefore, the correct sentence is: "A name strong like the land, a name that knew how to endure."

Q93. Answer: (a) The lawyer said that my case was very complicated.

The correct sentence is 'Option 1'.

Key Points

• In indirect speech, when reporting or narrating someone else's words, we typically shift the tense back one step into the past.

• Therefore, the verb "is" in the original direct speech changes to "was" in the indirect form to maintain the past tense.

• The structure of indirect speech in this case is: Reporting verb (said) + that + subject + past tense of the verb (was) + rest of the sentence.

Therefore, the correct sentence is: The lawyer said that my case was very complicated.

Additional Information

• Option 2, "The lawyer reported that my case is very complicated," is not correct because it does not reflect the shift of tense required in indirect speech. It uses the present tense "is" instead of the past tense "was."

• Option 3, "The lawyer said that my case had been very complicated," is also not correct. It uses the past perfect tense ("had been") which is not necessary in this context, as the original sentence is already in the present tense.

• Option 4, "The lawyer warned that your case was very complicated," changes the meaning of the original sentence. It introduces the verb "warned" instead of "said," which alters the intention of the lawyer's statement.

Q94. Answer: (a) Gamble

The solution is in Hindi. Read it online.

Q95. Answer: (d) Having no relevance to any previous discussion or situation

The solution is in Hindi. Read it online.

Q96. Answer: (d) earlier

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

Key Points

• The sentence suggests that deserts existed to a significant extent during former periods of global arid climate.

• The word "much" indicates a substantial occurrence of deserts.

• In this context, "earlier" is the appropriate word choice, indicating that deserts existed in earlier times or prior to other periods of global arid climate.

Therefore, the correct sentence is: Deserts probably existed much earlier, during former periods

Additional Information

• Option 1, "early," does not convey the comparative sense required in the sentence. It simply denotes an early time, without highlighting a comparison.

• Option 2, "earliest," implies the superlative form and does not fit the sentence structure. The sentence does not require comparing the deserts to other time periods.

• Option 3, "earnest," is unrelated to the context and does not make sense in the sentence.

Q97. Answer: (b) rain

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

Key Points

• The sentence mentions that deserts existed during former periods of global arid climate.

• In the context of deserts, one of the factors that contribute to their aridity is the lack of precipitation, particularly rain.

• The sentence suggests that deserts were sheltered from rain by mountain ranges, which played a role in creating an arid climate.

Therefore, the correct sentence is: global arid climate in the lee of mountain ranges that sheltered them from rain or in the centre of extensive continental regions

Additional Information

• Option 1, "brash," does not make sense in the given context. It refers to being bold, impulsive, or hasty, and is unrelated to the concept of rain.

• Option 3, "birds," does not fit the context of the sentence. Birds are not typically associated with sheltering deserts from rain.

• Option 4, "animals," is also not suitable in this context. Animals do not shield deserts from rain.

Q98. Answer: (c) characterised

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

Key Points

• The sentence states that angiosperms, which are seed-producing plants, evolved primarily after the existence of deserts during former periods of global arid climate.

• By using the word "characterised," it suggests that angiosperms possess the characteristic or quality of being seed producing plants.

• The sentence implies that angiosperms are known for this characteristic trait.

Therefore, the correct sentence is: However, this would have been primarily before the evolution of angiosperms which are characterised as seed producing plants.

Additional Information

• Option 1, "mandated," does not fit the context of the sentence. "Mandated" means to require or authorize something, which is

unrelated to the characteristic of angiosperms.

• Option 2, "summarized," does not accurately convey the meaning required in the context. It means to provide a brief summary or overview, which is not appropriate for describing the characteristic of angiosperms.

• Option 4, "presented," does not match the intended meaning in this sentence. "Presented" implies showing or introducing something, which does not accurately describe the characteristic of angiosperms.

Q99. Answer: (b) part

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

Key Points

• The sentence suggests that only a few primitive plants occur in present-day deserts, and these plants may have been a part of the ancient desert vegetation.

• The word "part" implies that these primitive plants formed a component or portion of the ancient desert vegetation.

Therefore, the correct sentence is: Only a few primitive plants, which may have been part of the ancient desert vegetation, occur in present day deserts.

Additional Information

• Option 1, "Slot," does not fit the context of the sentence. It refers to a narrow opening or space, which is unrelated to the discussion of plants in deserts.

• Option 3, "Task," does not accurately convey the meaning required in the context. "Task" refers to a specific job or assignment, which is not appropriate for describing the relationship between the primitive plants and the ancient desert vegetation.

• Option 4, "Bit," does not capture the intended meaning in this sentence. "Bit" refers to a small piece or portion, which aligns with the context of the sentence and the relationship between the primitive plants and the ancient desert vegetation.

Q100. Answer: (b) example

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

Key Points

• The sentence mentions that one bizarre conifer relative called tumboa occurs in the Namib Desert of southwestern Africa.

• By using the word "example," it suggests that tumboa is an instance or representative of the few primitive plants that exist in present-day deserts.

• It implies that tumboa serves as a specific example of the primitive plants found in deserts.

Therefore, the correct sentence is: One example is the bizarre conifer relative tumboa, in the Namib Desert of southwestern Africa.

Additional Information

• Option 1, "signal," does not fit the context of the sentence. "Signal" refers to a sign or indication, but it does not accurately describe tumboa as a specific plant example.

• Option 3, "instance," is synonymous with "example" and is also a valid choice. It implies a specific occurrence or case that represents a larger group or category. However, option 2, "example," is more commonly used in this context.

• Option 4, "sign," does not match the intended meaning in this sentence. "Sign" refers to an indication or symbol, which does not accurately describe tumboa as a plant species.

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