SSC CHSL 2020 Official Paper 34 (Held on: 12 Aug 2021 Shift 1) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2020 • 100 questions • 60 minutes • Answer key and solutions

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ENGLISH LANGUAGE

Q1. Directions: Each of the following questions has underlined idioms/phrases. Each sentence is followed by four options. Choose the option that best describes the meaning of the underlined idiom/phrase.

Their marriage wasn't working but they kept up appearances.

(a) kept throwing parties
(b) maintained an expression of well being
(c) maintained peace and harmony
(d) revealed the truth

Q2. Select the most appropriate meaning of the given idiom.

Full of beans

(a) Being foolish
(b) Have crazy ideas
(c) Happy and energetic
(d) Sad and dull

Q3. Select the most appropriate ANTONYM of the given word.

AVOID

(a) Bypass
(b) Dodge
(c) Avert
(d) Meet

Q4. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution'.

The interview will be conducted by 9 a.m. till 11 a.m.

(a) from 9 a.m. until 11 a.m
(b) during 9 a.m. till 11 a.m.
(c) from 9 a.m. to 11 a.m
(d) No substitution

Q5. Select the most appropriate word to fill in the blank in the given sentence.

Unable to check her _____, Alice ran after the rabbit down the rabbit hole.

(a) curiosity
(b) Pleasure
(c) nervousness
(d) wisdom

Q6. Select the most appropriate synonym of the given word.

ANTICIPATE

(a) Expect
(b) Accept
(c) Prefer
(d) Doubt

Q7. Select the misspelt word.

(a) propel
(b) Several
(c) Fulfil
(d) Strugle

Q8. Select the most appropriate synonym of the given word.

JEOPARDY

(a) destiny
(b) fortune
(c) peril
(d) safety

Q9. Select the INCORRECTLY spelt word.

(a) Education
(b) Meditation
(c) Location
(d) Avertion

Q10. Select the correct passive form of the given sentence.

Mary Kom has won numerous boxing championships.

(a) Numerous boxing championships were won by Mary Kom.
(b) Numerous boxing championships are being won by Mary Kom.
(c) Numerous boxing championships have been won by Mary Kom
(d) Numerous boxing championships had been won by Mary Kom.

Q11. Select the correct indirect form of the given sentence.

My brother said to me, "Have you read the newspaper today?"

(a) My brother asked me if I had read the newspaper that day.
(b) My brother asked me if you have read the newspaper today.
(c) My brother asked me have you read the newspaper today.
(d) My brother asked me if I had read the newspaper today.

Q12. Select the most appropriate one-word substitution for the given words.

One who investigates and solves crimes

(a) lawyer
(b) journalist
(c) criminal
(d) detective

Q13. Select the word which means the same as the group of words given.

An institution for the care of people who are mentally ill

(a) Dormitory
(b) Infirmary
(c) Asylum
(d) Sanatorium

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Q14. Given below are four sentences in jumbled order. Select the option that gives their correct order.

A. He seemed to remain that high for nearly two years.

B. Kari, the elephant was five months old when he was given to me to take care of.

C. We grew together, that is probably why I never found out just how tall he was.

D. I was nine years old and I could reach his back if I stood on tiptoe.

(a) BDAC
(b) ADCB
(c) DBCA
(d) BCAD

Q15. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No improvement'.

Did you do what I telling you to do yesterday?

(a) what I have told you
(b) No improvement
(c) what I told you
(d) that I am telling you

Q16. Fill in the blank with most appropriate word.

Thunder and lightning was _____ with heavy rain.

(a) accorded
(b) accustomed
(c) accrued
(d) accompanied

Q17. In the given sentence, identify the segment which contains a grammatical error.

Please refrain to going out without a face mask.

(a) going out
(b) without a
(c) face mask
(d) Please refrain to

Q18. Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

A. The town of Lustenau in Austria claims to have built a world record-breaking bonfire.

B. The structure took three months to build but collapsed in less than half an hour last Saturday evening.

C. Embers from the big fire fell onto nearby market traders, but local fire crews were on hand to make sure that everyone was safe.

D. According to the organizers, the pyre reached as high as 60 meters.

(a) ADBC
(b) ACBD
(c) ABCD
(d) ABDC

Q19. Select the most appropriate antonym of the given word.

MORBID

(a) Cruel
(b) horrid
(c) cheerful
(d) gloomy

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Q20. In the given sentence identify the segment which contains the grammatical error.

Vincent Jonson, a musician, are going to lead an 80-man naval band in the Republic Day Parade this year.

(a) Vincent Jonson, a musician
(b) are going to lead
(c) in the Republic Day Parade this year
(d) an 80-man naval band

Directions

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

Seventy-year-old Bapak Gilang sat in his favourite rocking chair in his (1) ____ villa. He was staring at the evening sky (2) __ the open window. It was already (3) __ and it was very windy. He (4) __ the dark clouds and felt a little (5) ____ today. He reflected that like the dusk sky, his days were also wrapped in clouds of loneliness.

Q21. Select the most appropriate option to fill in the blank no. 1.

(a) spacious
(b) specific
(c) spiral
(d) spreading

Q22. Select the most appropriate option to fill in the blank no. 2.

(a) through
(b) among
(c) between
(d) with

Q23. Select the most appropriate option to fill in the blank no. 3.

(a) dawn
(b) noon
(c) morning
(d) dusk

Q24. Select the most appropriate option to fill in the blank no. 4.

(a) glanced
(b) observed
(c) stared
(d) peered

Q25. Select the most appropriate option to fill in the blank no. 5.

(a) innocent
(b) pensive
(c) attentive
(d) delighted

GENERAL INTELLIGENCE

Q26. Select the option figure which is embedded in figure X as its part (rotation is NOT allowed).

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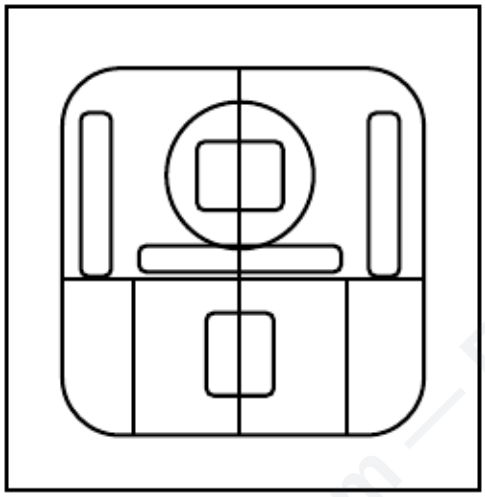
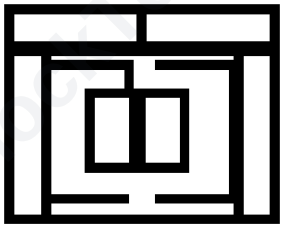
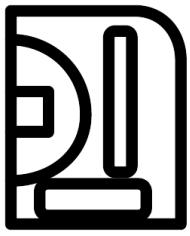


Figure X

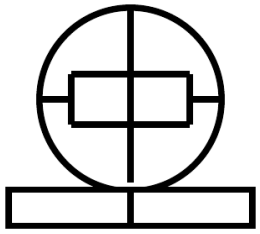
(a)



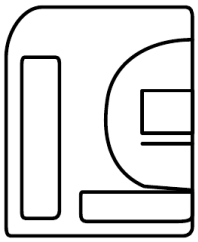
(b)



(c)



(d)



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Q27. Ranjan in his ODI Cricket career, scored 15 runs on an average in 10 matches. If he scored 14 runs on an average in the first 4 matches and 12 runs on an average in the last 4 matches, then find the average of the runs scored by him in the remaining 2 matches.

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

Q28. Select the option in which the words share the same relationship as that shared by the given pair of words.

Sheep : Lamb

(a) Leopard : Larva
(b) Cow : Calf
(c) Crow : Cub
(d) Panda : Infant

Q29. Select the correct water image of the given letter-cluster



(a)



(b)



(c)



(d)



Q30. Which two numbers should be interchanged to make the given equation correct?

64 + 36 ÷ 3 × 9 - 32 = 44

(a) 64 and 36
(b) 9 and 64
(c) 3 and 9
(d) 32 and 36

Q31. Introducing a boy, Leela said to Ana, "He is the only son of my grandparents' only child". How is the boy related to Leela?

(a) Uncle
(b) Brother
(c) Father

(d) Cousin

Q32. Select the number that can replace the question mark (?) in the following series.

46, 47, 94, 97, 388, ?

(a) 398
(b) 393
(c) 419
(d) 411

Q33. In a certain code language, GATHER is coded as 107 and HONOUR is coded as 74. How will HEAVEN be coded in that language?

(a) 131
(b) 101
(c) 113
(d) 110

Q34. Select the option that is related to the third term in the same way as the second term is related to the first term.

Healthy Diet : Tiredness :: Carefulness : ?

(a) Accident
(b) Satisfied
(c) Activeness
(d) Sucessful

Q35. Select the option in which the numbers share the same relationship as that shared by the numbers of the given set.

(277, 14, 9)

(a) (364, 11, 12)
(b) (313, 12, 13)
(c) (123, 17, 8)
(d) (198, 15, 8)

Q36. Three of the following four words are alike in a certain way and one is different. Select the odd one.

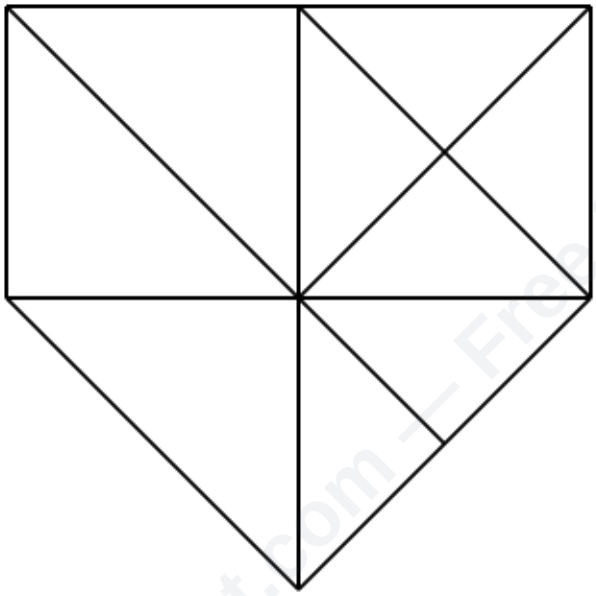
(a) Book
(b) Newspaper
(c) Magazine
(d) Publisher

Q37. In a code language, LANCER is written as NALREC. How will NORWAY be written in that language?

(a) YAWNOR
(b) RNOYAW
(c) RONYAW
(d) YAWRON

Q38. Find the number of triangles in the given figure.

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(a) 13
(b) 19
(c) 15
(d) 17

Q39. Select the correct option that indicates the arrangement of the given words in the order in which they appear in an English dictionary.

1. Indiscipline
2. Indetermination
3. Indelicate
4. Indictable
5. Independent

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

Q40. Four numbers have been given, out of which three are alike in some manner and one is different. Select the number that is different.

(a) 1587
(b) 3462
(c) 1273
(d) 5789

Q41. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.

(a) CHSN
(b) WBYT
(c) YDWR
(d) MRGB

Q42. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

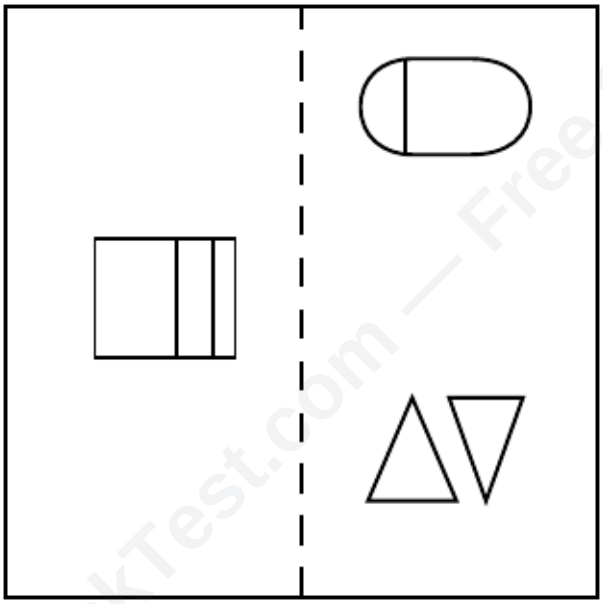
_ k l _ l j _ j k j _ l _ l j

(a) k j l l k
(b) l k l j k
(c) j k l k k

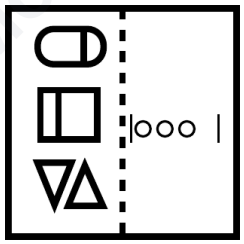
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(d) j l k l k

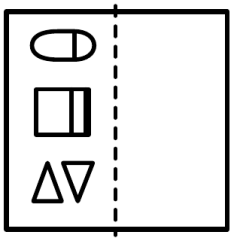
Q43. A transparent sheet with a pattern is depicted in the given figure. Study the figure carefully and select the option that shows how the pattern would appear when the transparent sheet is folded at the dotted line.



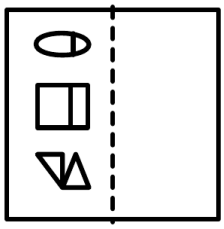
(a)



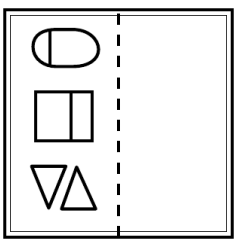
(b)



(c)



(d)



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Q44. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

PLMO : PNMQ : : UDMS : ?

(a) TNCA
(b) TNEV
(c) TQFV
(d) RNEJ

Q45. Two statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:

All roads are cycles.

No cycle is a car.

Conclusions:

I. Some cycles are roads.

II. No road is a car.

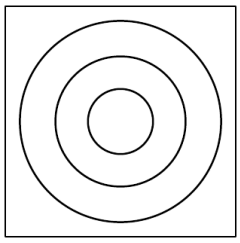
III. No car is a cycle.

(a) Only conclusions II and III follow
(b) Only conclusions I and II follow
(c) All the conclusions follow
(d) Only conclusions I and III follow

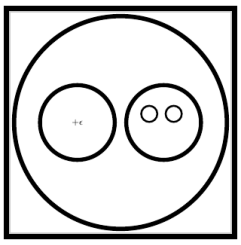
Q46. Select the Venn diagram that best represents the relationship between the following classes.

Ridge Gourd, Vegetables, Turnip

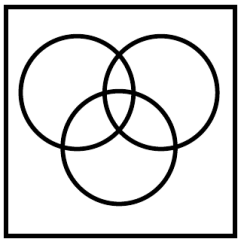
(a)



(b)

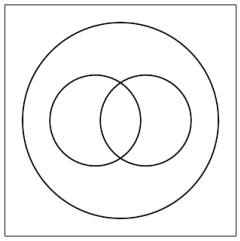


(c)

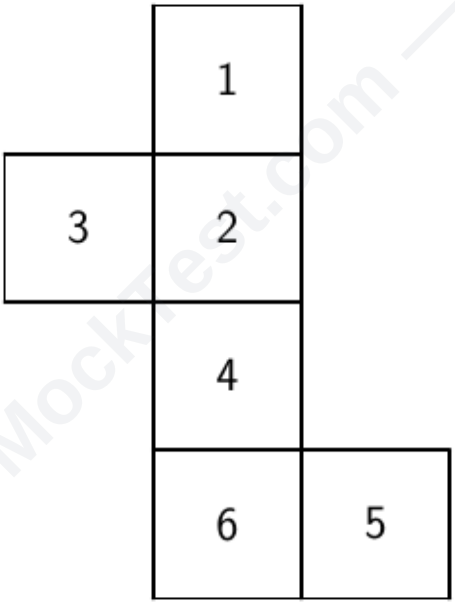


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(d)

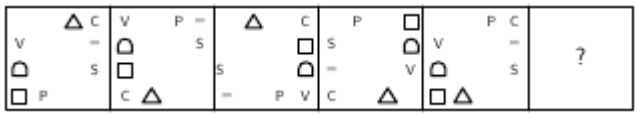


Q47. A cube is made by folding the given sheet. In the cube so formed, which of the following pairs of numbers will be on opposite sides?

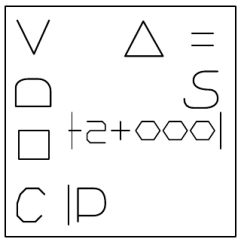


(a) 1 and 6
(b) 2 and 3
(c) 3 and 5
(d) 1 and 2

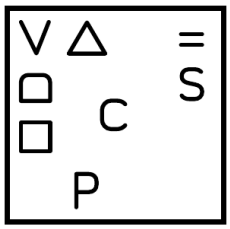
Q48. Select the figure from among the given options that can replace the question mark (?) in the following series.



(a)

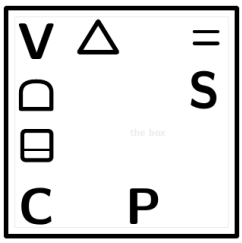


(b)

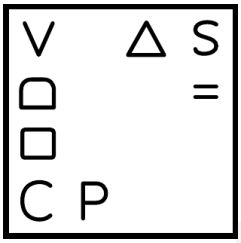


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(c)



(d)



Q49. Select the option that is related to the third number in the same way as the second number is related to the first number.

364 : 183 :: 462 : ?

(a) 279
(b) 223
(c) 297
(d) 232

Q50. Study the given pattern carefully and select the number that can replace the question mark (?) in it.

12	15	11
14	5	17
16	?	19

(a) 3
(b) 9
(c) 5
(d) 7

QUANTITATIVE APTITUDE

Q51. In Δ ABC, D and E are points on AB and BC, respectively, such that DE is parallel to AC. If DE = 3 cm, AC = 5 cm and the area of trapezium ACED = 32 cm^2, then what will be the area of Δ BDE?

(a) 18 cm^2
(b) 48/5 cm^2
(c) 16 cm^2
(d) 144/17 cm^2

Q52. In Δ ABC, AD is the bisector of angle A meeting BC at D. If AB = 15 cm, BC = 10 cm and the length of BD is 2 cm less than that of DC, then the length of AC is:

(a) 18.5 cm
(b) 18 cm
(c) 22.5 cm
(d) 16 cm

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Q53. If √x+1/(√x)=2√3, then what will be the value of x^4+1/(x^4) ?

(a) 10402
(b) 9606
(c) 10406
(d) 9602

Q54. Renu spends 68% of her income. When her income increases by 40%, she increases her expenditure by 30%, Her savings are increased by:

(a) 62.5%
(b) 51.6%
(c) 37.98%
(d) 61.25%

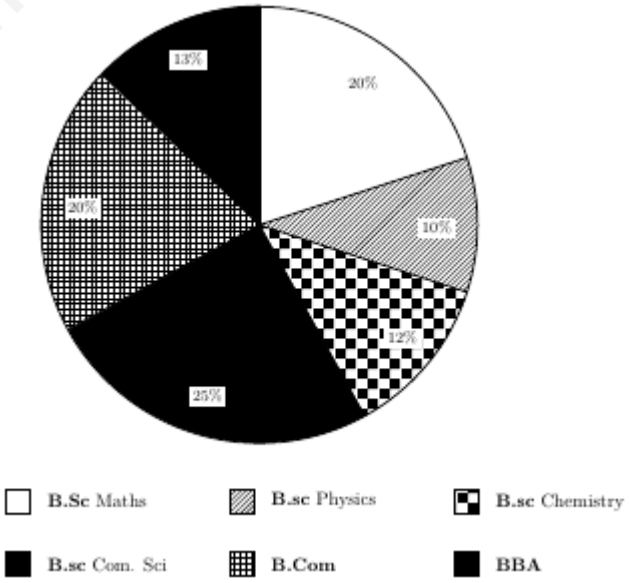
Q55. The average of 40 numbers is 48.2. The average of the first 15 numbers is 45 and that of the next 22 numbers is 50.5. The 38^(th) number is 1 more than the 39^(th) number, and the 39^(th) number is 3 less than the 40^(th) number. What is the average of the 39^(th) and 40^(th) numbers?

(a) 49
(b) 48
(c) 48.5
(d) 47.5

Q56. Study the given pie chart and answer the question that follows.

The total number of students admitted to a college = 700.

Distribution of the percentage of students in various courses.



Percentage-wise distribution of the number of boys.

Course	Number of boys
B.Sc. Maths	40%
B.Sc. Physics	68%
B.Sc. Chemistry	58%
B.Sc. Computer Science	80%
B.Com.	75%
BBA	65%

The ratio of the total number of girls admitted in B.Sc. Maths to the total number of students admitted in B.Sc. Maths is:

(a) 2 : 5

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(b) 3 : 7
(c) 4 : 7
(d) 3 : 5

Q57. By selling an article for Rs. 3,150, a shopkeeper earns 5% profit. For how much money should he sell the article in order to gain 8%?
(a) Rs. 3,250
(b) Rs. 3,240
(c) Rs. 3,200
(d) Rs. 3,180

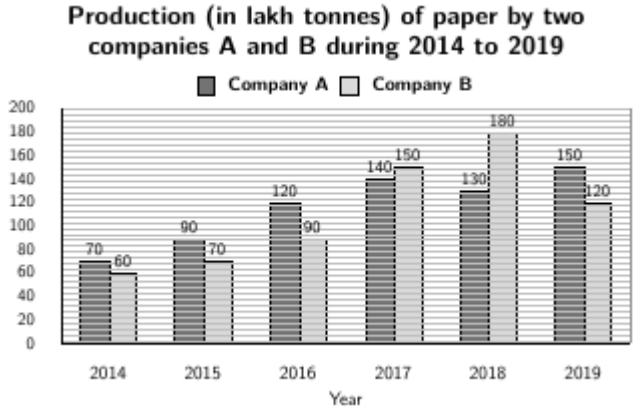
Q58. A tap can fill a tank in 4 hours. Another tap can fill the same tank in 6 hours. If both the taps are opened at the same time, then in how much time will the empty tank be filled completely?
(a) 3 h
(b) 2 h 30 min
(c) 2 h
(d) 2 h 24 min

Q59. If tan 3θ = sin 45°. cos 45° + cos 60° and 3 θ is an acute angle, then what will be the value of sin 4θ?
(a) √3/2
(b) 1
(c) 1/√2
(d) 1/2

Q60. Simplify the following expression.
(137/9÷2/3 of 1/3+2/3×3)/(7/5 of 325-20+7)
(a) 40/1989
(b) 32/221
(c) 33/217
(d) 31/2210

Q61. If tan θ + cot θ = 3, then what will be the value of $\tan^2 \theta + \cot^2 \theta$?
(a) 7
(b) -1
(c) 1
(d) 11

Q62. Study the given graph and answer the question that follows.



The total production of paper by company B in 2015 and 2017 to 2019 was what percentage less than 90% of the total production of paper by company A in 2014 to 2019 (correct to one decimal place)?
(a) 22.4%
(b) 17.5%
(c) 21.2%

(d) 19.6%

Q63. A sum of Rs. x is divided among A, B and C such that the ratio of the shares of A and C is 8 : 7 and that of B and C is 3 : 2. If the difference between the shares of A and B is Rs. 240, then what is the value of x ?

(a) 2448
(b) 2490
(c) 2544
(d) 2580

Q64. If the five-digit number 457ab is divisible by 3, 7 and 11, then what is the value of $a^2 + b^2 - ab$?

(a) 49
(b) 24
(c) 36
(d) 33

Q65. If a pair of shoes marked at Rs. 350 is offered at Rs. 308, then what will be the discount percentage?

(a) 42%
(b) 12%
(c) 13.6%
(d) 14%

Q66. A boat can go 15 km downstream and 8 km upstream in 2 h. It can go 20 km downstream and 12 km upstream in 2 h 50 min. What is the speed (in km/h) of the boat while going downstream?

(a) 15
(b) 18
(c) 20
(d) 16

Q67. The value of $\text{cosec}(58° + \theta) - \sec(32° - \theta) + \sin 15° \sin 35° \sec 55° \sin 30° \sec 75°$ is:

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

Q68. What is the compound interest (in Rs.) on a sum of Rs. 46,000 for 22/5 years at 15% per annum, interest being compounded annually (nearest to a Rs.)?

(a) 19,458
(b) 19,485
(c) 18,458
(d) 18,485

Q69. Chords AB and CD of a circle meet at point P (outside the circle), when produced. If AB = 9 cm, PB = 1/3 AB and CD = 5 cm, then the length of PD (in cm) is:

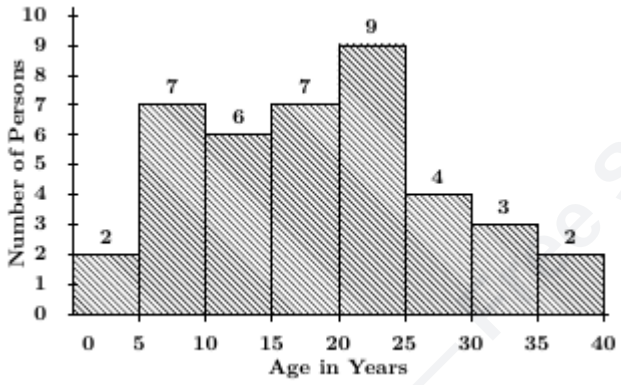
(a) 6
(b) 5
(c) 7
(d) 4

Q70. Given that $3\sqrt{3}x^3 - 8y^3 = (\sqrt{3}x + Ay)(3x^2 + By^2 + Cxy)$, the value of $(A^2 + B^2 - C^2)$ is:

(a) 0
(b) 8
(c) 12
(d) 4

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Q71. Some persons went on an outstation tour. The histogram shows their ages.



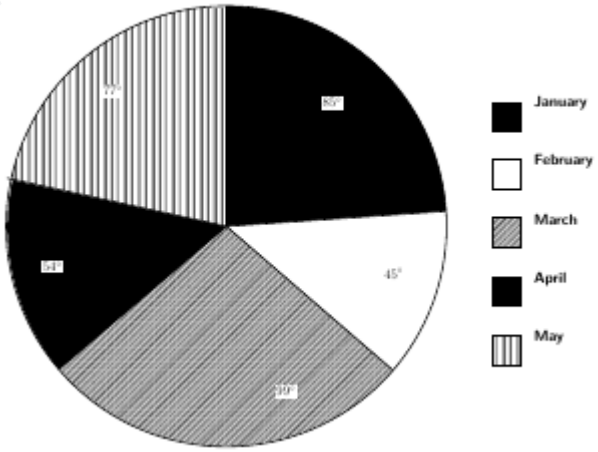
How many persons are less than 20 years of age?

(a) 31
(b) 25
(c) 22
(d) 18

Q72. Study the given pie chart and answer the question that follows.

The pie chart shows the distribution (degree wise) of the number of computers sold by a shopkeeper during five months.

Total Number of computers Sold = 5400



If the difference between the number of computers sold in May and the number of computers sold in February is x, then the value of x will be:

(a) 450
(b) 420
(c) 540
(d) 480

Q73. A solid metallic sphere of radius 12 cm is melted and recast in the form of small spheres of radius 2 cm. How many small spheres are formed?

(a) 96
(b) 864
(c) 24
(d) 216

Q74. If $3x - 2y + 3 = 0$, then what will be the value of $27x^3 + 54xy + 30 - 8y^3$?

(a) 3
(b) 57
(c) -27

(d) -57

Q75. In a circle with centre O and radius 6.5 cm, a chord AB is at a distance 2.5 cm from the centre. If tangents at A and B intersect at P, then find the distance of P from the centre.

(a) 16.9 cm
(b) 15 cm
(c) 17 cm
(d) 18 cm

GENERAL AWARENESS

Q76. In which of the following years PM-KISAN (Pradhan Mantri Kisan Samman Nidhi) was formally launched?

(a) 2019
(b) 2015
(c) 2014
(d) 2017

Q77. Kalbelia folk songs and dance forms are an expression of the Kalbelia community's traditional way of life. It is associated with which of the following states?

(a) Haryana
(b) Rajasthan
(c) Punjab
(d) Maharashtra

Q78. Coringa is a beautiful _____ forest where the Godavari joins the backwaters of Bay of Bengal.

(a) mangrove
(b) coniferous
(c) deciduous
(d) evergreen

Q79. Who among the following had authored 'Buddha Gaya: The Hermitage of Sakya Muni' in 1878?

(a) Rajendralala Mitra
(b) John Marshall
(c) Alexander Cunningham
(d) HH Cole

Q80. Who is the second Indian footballer to play 100 international games?

(a) Udanta Singh
(b) Gurpreet Singh Sandhu
(c) Bhaichung Bhutia
(d) Sunil Chhetri

Q81. Which Indian state is divided into Majha, Doaba and Malwa regions?

(a) Assam
(b) Karnataka
(c) Punjab
(d) Madhya Pradesh

Q82. Colonel (retd) Narendra Kumar, an Indian soldier and _____, passed away in December 2020.

(a) mountaineer
(b) boxer
(c) wrestler
(d) singer

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Q83. Rain is liquid _____.

(a) condensation
(b) sedimentation
(c) precipitation
(d) decantation

Q84. Who among the following was the first Indian to win the Miss World beauty pageant?

(a) Priyanka Chopra
(b) Diana Hayden
(c) Aishwarya Rai
(d) Reita Faria

Q85. NTPC and _____ have signed an MoU to set up a joint venture for 'renewable energy business'.

(a) Coal India
(b) ONGC
(c) Reliance Petroleum
(d) NHPC Limited

Q86. Chambal is a tributary of which of the following rivers?

(a) Brahmaputra
(b) Narmada
(c) Yamuna
(d) Ganga

Q87. What is the pH value of acidic substances?

(a) Below 1.0
(b) Below 2.0
(c) Below 7.0
(d) Below 4.0

Q88. Which amendment of the Constitution of India incorporated Goa, Daman and Diu as the eighth union territory of India, by amending the First Schedule to the Constitution?

(a) 10^(th)
(b) 18^(th)
(c) 12^(th)
(d) 13^(th)

Q89. Who among the following has received the Female Sportsperson of the Year Award at the FICCI India Sports Award in December 2020?

(a) Elavenil Valarivan
(b) Manu Bhakhar
(c) Deepika Kumari
(d) Saina Nehwal

Q90. _____ is an interpreted, high-level and general-purpose programming language.

(a) Penguin
(b) Cookie
(c) Spider
(d) Python

Q91. When is the National Consumer Rights Day observed in India every year?

(a) 24 November
(b) 13 March
(c) 2 October
(d) 24 December

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Q92. Arthunkal Feast and Vettukad Festival are church festivals from the state of _____.

(a) Nagaland
(b) Sikkim
(c) Kerala
(d) Goa

Q93. The Indian Mutiny of 1857 effectively ended in the city of _____.

(a) Amritsar
(b) Lucknow
(c) Gwalior
(d) Vadodara

Q94. Who among the following became the first Indian-Kiwi woman to become a minister in New Zealand in 2020?

(a) Manisha Singh
(b) Priyanca Radhakrishnan
(c) Anita Anand
(d) Seema Verma

Q95. Who among the following cricketers is the brand ambassador of a fantasy sports gaming platform, Paytm First Games?

(a) Sachin Tendulkar
(b) Virat Kohli
(c) Yuvraj Singh
(d) Rohit Sharma

Q96. In which state will you find Mayurbhanj district, the last among the princely states, that merged with the state?

(a) Kerala
(b) Odisha
(c) Chattisgarh
(d) Jharkhand

Q97. Which of the following is a method of describing computer algorithms using a combination of natural language and programming language?

(a) Array
(b) Node
(c) Pseudocode
(d) Flowchart

Q98. _____ is a process of forming a thick oxide layer of aluminium.

(a) Ductility
(b) Galvanisation
(c) Anodising
(d) Corrosion

Q99. In which of the following years did the Indian National Congress make the demand for a Constituent Assembly?

(a) 1934
(b) 1939
(c) 1928
(d) 1919

Q100. For the residents of which of the following union territories PM Narendra Modi has launched Ayushman Bharat - Pradhan Mantri Jan Arogya Yojna (AB - PMJAY) ‘Sehat Scheme’ in December 2020?

(a) Chandigarh
(b) Ladakh
(c) Jammu and Kashmir

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(d) Puducherry

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) maintained an expression of well being

The solution is in Hindi. Read it online.

Q2. Answer: (c) Happy and energetic

The solution is in Hindi. Read it online.

Q3. Answer: (d) Meet

The solution is in Hindi. Read it online.

Q4. Answer: (c) from 9 a.m. to 11 a.m

The solution is in Hindi. Read it online.

Q5. Answer: (a) curiosity

The solution is in Hindi. Read it online.

Q6. Answer: (a) Expect

The solution is in Hindi. Read it online.

Q7. Answer: (d) Strugle

The solution is in Hindi. Read it online.

Q8. Answer: (c) peril

The solution is in Hindi. Read it online.

Q9. Answer: (d) Avertion

The solution is in Hindi. Read it online.

Q10. Answer: (c) Numerous boxing championships have been won by Mary Kom

The solution is in Hindi. Read it online.

Q11. Answer: (a) My brother asked me if I had read the newspaper that day.

The solution is in Hindi. Read it online.

Q12. Answer: (d) detective

The solution is in Hindi. Read it online.

Q13. Answer: (c) Asylum

The solution is in Hindi. Read it online.

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Q14. Answer: (a) BDAC

The correct answer is 'BDAC'.

Key Points

• The given question is an example of a Para Jumble.

• We know that the first statement of a para jumbled question is usually an independent general statement, a noun, a universal fact, starting off a story, starting of an incident or an event, or it starts with 'most' or 'once'.

• Sentence B will be the starting line because it contains the main idea of the para jumble i.e. Kari, the elephant.

• However, Sentence D states that the narrator was nine years old when the elephant was given to him to take care of. He could reach his back if he stood on tiptoe.

• So, D will follow B.

• Sentence A will be next because it mentions 'that high' which corresponds to the height of the elephant mentioned in sentence D.

• So, C will follow A because it tells why the narrator never found out how tall Kari was.

• Thus, the correct sequence is:

• B: Kari, the elephant was five months old when he was given to me to take care of.

• D: I was nine years old and I could reach his back if I stood on tiptoe.

• A: He seemed to remain that high for nearly two years.

• C: We grew together, that is probably why I never found out just how tall he was.

Correct Sequence: Kari, the elephant was five months old when he was given to me to take care of. I was nine years old and I could reach his back if I stood on tiptoe. He seemed to remain that high for nearly two years. We grew together, that is probably why I never found out just how tall he was.

Q15. Answer: (c) what I told you

The solution is in Hindi. Read it online.

Q16. Answer: (d) accompanied

The solution is in Hindi. Read it online.

Q17. Answer: (d) Please refrain to

The solution is in Hindi. Read it online.

Q18. Answer: (a) ADBC

The correct answer is 'ADBC'.

Key Points

• The given question is an example of a Para Jumble.

• We know that the first statement of a para jumbled question is usually an independent general statement, a noun, a universal fact, starting of an incident, or it starts with 'most' or 'once'.

• Sentence A will be the starting line because it contains the main idea of the para jumble i.e.the town of Lustenau that built a world record-breaking bonfire.

• However, Sentence D states that the pyre reached as high as 60 meters. So, D will follow A.

• Let's look at the meaning of Pyre:-

• Pyre - a heap of combustible material, especially one for burning a corpse as part of a funeral ceremony.

• Further, Sentence B states that the structure took three months to build but collapsed in less than half an hour & Sentence C states that Embers from the big fire fell onto nearby market traders. So, C will follow B.

• Let's look at the meaning of Embers:-

• Embers - a small piece of burning or glowing coal or wood in a dying fire.

• Thus, the correct sequence:

• A. The town of Lustenau in Austria claims to have built a world record-breaking bonfire.

• D. According to the organizers, the pyre reached as high as 60 meters.

• B. The structure took three months to build but collapsed in less than half an hour last Saturday evening.

• C. Embers from the big fire fell onto nearby market traders, but local fire crews were on hand to make sure that everyone was safe.

Correct Sequence: The town of Lustenau in Austria claims to have built a world record-breaking bonfire. According to the organizers, the pyre reached as high as 60 meters. The structure took three months to build but collapsed in less than half an hour last Saturday evening. Embers from the big fire fell onto nearby market traders, but local fire crews were on hand to make sure that everyone was safe.

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Q19. Answer: (c) cheerful

The solution is in Hindi. Read it online.

Q20. Answer: (b) are going to lead

The solution is in Hindi. Read it online.

Q21. Answer: (a) spacious

The solution is in Hindi. Read it online.

Q22. Answer: (a) through

The solution is in Hindi. Read it online.

Q23. Answer: (d) dusk

The solution is in Hindi. Read it online.

Q24. Answer: (b) observed

The solution is in Hindi. Read it online.

Q25. Answer: (b) pensive

The solution is in Hindi. Read it online.

Q26. Answer: (d) [figure]

• • Hence, the correct answer is "Option 4".

Q27. Answer: (b) 23

• Average runs in total 10 matches = 15

Therefore sum of runs in total 10 matches = 15 × 10 = 150.

• Average runs in first 4 matches = 14

Therefore sum of runs in first 4 matches = 14 × 4 = 56.

• Average runs in last 4 matches = 12

Therefore sum of runs in last 4 matches = 12 × 4 = 48.

• Sum of runs in the remaining 2 matches = total runs in 10 matches - (sum of runs in first 4 matches + sum of runs in last 4 matches)

Therefore sum of runs in remaining 2 matches = 150 - (56 + 48) = 150 - 104 = 46.

=> average of runs in remaining 2 matches = 46 ÷ 2 = 23

Hence, the correct answer is "23".

Q28. Answer: (b) Cow : Calf

The logic follows here is :-

Sheep: Lamb → A baby sheep is called a lamb

Similarly,

Cow: Calf → A baby cow is called a calf.

Hence, the correct answer is "Cow : Calf".

Additional Information

Animal	Baby name
Leopard	cub
Crow	chick
Panda	cub

Q29. Answer: (c) [figure]

• Option 1:

• the water image of A is incorrect

• Option 2:

• the water image of M is incorrect

• Option 3:

• this is correct.
• Option 4:
• the water image of E is incorrect
Hence, the correct answer is "Option 3".

Q30. Answer: (c) 3 and 9

BODMAS RULE:
Option 1) : 64 and 36
Given equation: 64 + 36 ÷ 3 × 9 - 32 = 44
By interchanging 64 and 36 in the given equation.
Interchanged equation is :36 + 64 ÷ 3 × 9 - 32 = 44
=> 36 + 21.333 × 9 - 32 = 44
=> 36 + 191.997 - 32 = 44
=> 227.997 - 32 = 44
=> 195.997 ≠ 44
=> LHS ≠ RHS
Option 2) : 9 and 64
Given equation : 64 + 36 ÷ 3 × 9 - 32 = 44
By interchanging 9 and 64 in given equation.
Interchanged equation is: 9 + 36 ÷ 3 × 64 - 32 = 44
=> 9 + 12 × 64 - 32 = 44
=> 9 + 768 - 32 = 44
=> 777 - 32 = 44
=> 745 ≠ 44
=> LHS ≠ RHS
Option 3) : 3 and 9
Given equation : 64 + 36 ÷ 3 × 9 - 32 = 44
By interchanging 3 and 9 in given equation.
Interchanged equation is: 64 + 36 ÷ 9 × 3 - 32 = 44
=> 64 + 4 × 3 - 32 = 44
=> 64 + 12 - 32 = 44
=> 76 - 32 = 44
=> 44 = 44
=> LHS = RHS
Option 4) : 32 and 36
Given equation : 64 + 36 ÷ 3 × 9 - 32 = 44
By interchanging 32 and 36 in given equation.
Interchanged equation is: 64 + 32 ÷ 3 × 9 - 36 = 44
=> 64 + 10.66 × 9 - 36 = 44
=> 64 + 95.94 - 36 = 44
=> 159.94 - 36 = 44
=> 123.94 ≠ 44
=> LHS ≠ RHS
Thus, the correct answer is "3 and 9".

Q31. Answer: (b) Brother

Family chart :
Family diagram :
• Case (i) :
• Case (ii) :
Case (i) → Here Boy introduced by Leela to Ana is 'Himself'.
Case (ii) → Here Boy introduced by Leela to Ana is 'Leela's brother'.

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• There is no option provided Himself/Leela.

Therefore We go with case (ii).

Thus, the boy introduced by Leela to Ana is 'Leela's brother'.

Hence, the correct answer is "Brother".

Additional Information

• Leela's grandparents could be Leela's father's or mother's parents

Q32. Answer: (b) 393

The pattern followed here is:

Hence, the correct answer is "393".

Q33. Answer: (d) 110

The logic followed here is:

• Code = sum of positional values of opposite letters in the word + no. of consonants in the word

• GATHER is coded as 107:

• No. of consonants in GATHER = 4 (G, T, H, R)

• G + A + T + H + E + R <=> (T + Z + G + S + V + I) + 4 = (20 + 26 + 7 + 19 + 22 + 9) + 4 = 103 + 4 = 107

• HONOUR is coded as 74

• No. of consonants in HONOUR = 3 (H, N, R)

• H + O + N + O + U + R <=> (S + L + M + L + F + I) + 3 = (19 + 12 + 13 + 12 + 6 + 9) + 3 = 71 + 3 = 74

• Similarly, HEAVEN will be coded as 110.

• No. of consonants in HEAVEN = 3 (H, V, N)

• H + E + A + V + E + N <=> (S + V + Z + E + V + M) + 3 = (19 + 22 + 26 + 5 + 22 + 13) + 3 = 107 + 3 = 110

Hence, 110 is the correct answer.

Q34. Answer: (a) Accident

The logic followed here is:

• Healthy Diet : Tiredness → Healthy diet can help us avoid tiredness

Similarly,

• Carefulness : ? → Carefulness can help us avoid accidents.

Hence, the correct answer is "Accident".

Q35. Answer: (b) (313, 12, 13)

The logic followed here is :-

First number = (second number)² + (third number)²

• (277, 14, 9) → $14^2 + 9^2$ → 196 + 81 = 277

Similarly,

• (313, 12, 13) → $12^2 + 13^2$ → 144 + 169 = 313

Hence, the correct answer is "(313, 12, 13)".

Q36. Answer: (d) Publisher

The logic followed here is:

1. Book - reading material

2. Newspaper - reading material

3. Magazine - reading material

4. Publisher - a person or company that publishes books, magazines, etc.

Hence, the correct answer is "Publisher".

Q37. Answer: (c) RONYAW

The logic followed here is:

• LANCER is written as NALREC and NORWAY will be written as :

Similarly,

Hence, the correct answer is "RONYAW".

Q38. Answer: (d) 17

The number of triangles in given figure is as shown below :

Therefore There are 17 triangles in given figure.

Hence, the correct answer is "17".

Q39. Answer: (b) 3, 5, 2, 4, 1

Important Points

• The first three letters are common to each word: I, N, D.

• So, we will compare the words from the fourth letter.

Given order: Indiscipline < Indetermination < Indelicate < Indictable < Independent.

Dictionary order: Indelicate < Independent < Indetermination < Indictable < Indiscipline

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

Q40. Answer: (b) 3462

The logic follows here is :-

1587, 1273, 5789 are odd numbers

but 3462 is an even number.

Hence, 3462 is different from three alternatives.

Thus, the correct answer is "3462".

Q41. Answer: (d) MRGB

• The logic followed here is:

• Option 1) : CHSN

• Option 2) : WBYT

• Option 3) : YDWR

• Option 4) : MRGB

• Hence, MRGB is different from the other three alternatives.

Thus, the correct answer is "MRGB".

Q42. Answer: (c) j k l k k

Given :- _ k l _ l j _ j k j _ l _ l j

By checking options and substituting accordingly.

1) k j l l k → k k l - j l j - l j k - j l l - k l j

2) l k l j k → l k l - k l j - l j k - j j l - k l j

3) j k l k k → j k l - k l j - l j k - j k l - k l j

4) j l k l k → j k l - l l j - k j k - j l l - k l j

• Option (3) gives a cyclic pattern of jkl - 'klj' - ljk - jkl - 'klj'

Hence, the correct answer is "j k l k k".

Q43. Answer: (c) [figure]

• Here, after folding, we get the mirror images of

and

.

• There will be no change in

.

Option 1:

• -

has changed.

Option 2:

• • mirror image of

is not given

Option 3:

• Option 4:

• • mirror image of
is not given.
Hence, the correct answer is "Option 3".

Q44. Answer: (b) TNEV

• The logic followed here is:
• PLMO : PNMQ
Similarly,
• UDMS : ?
• Hence, UDMS is written as 'TNEV'.
Thus, the correct answer is "TNEV".

Q45. Answer: (c) All the conclusions follow

The least possible Venn diagram for given statements is as follows :
Conclusions:
I. Some cycles are roads → Follows (As shown in the Venn diagram, a part of the cycle is road)
II. No road is a car → Follows (As shown in the Venn diagram, no road is a car because all roads are cycles and no cycle is a car.)
III. No car is a cycle → Follows (Because no cycle is a car, no car is a cycle.)
Hence, the correct answer is "All the conclusions follow".

Q46. Answer: (b) [figure]

The least possible Venn diagram for the given relation is as shown below :
• Ridge Gourd is a vegetable which belongs to cucumber family
• Turnip is a root vegetable
• Both Ridge Gourd and Turnip are vegetables.
Thus, the correct answer is "Option 2".

Q47. Answer: (c) 3 and 5

The logic follows here is :-
The opposite faces of given cube is :
Thus, the correct answer is "3 and 5".

Q48. Answer: (a) [figure]

The logic followed here is:
• Figure 1 to figure 2 => (V, ?,
) moves 1 step clockwise; C moves to the bottom left corner; (P, triangle) only interchange their positions
• Figure 2 to figure 3 => (V, ?,
) moves 6 steps clockwise; C moves to the top right corner
• Figure 3 to figure 4 => (V, ?,
) moves 1 step anticlockwise; C moves to the bottom left corner; (P, triangle) only interchange their positions
• Figure 4 to figure 5 => (V, ?,
) moves 6 steps anticlockwise; C moves to the top right corner;
• Figure 5 to figure 6 => (V, ?,
) moves 1 step clockwise; C moves to the bottom left corner; (P, triangle) only interchange their positions
Thus, the correct answer is "Option 1".

Q49. Answer: (d) 232

The logic followed here is :-
First number = (Second number × 2) - 2
• 364 : 183 → (183 × 2) - 2 = 366 - 2 = 364
Similarly,
• 462 : 232 → (232 × 2) - 2 = 464 - 2 = 462
Thus, the correct answer is "232".

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Q50. Answer: (d) 7

The pattern followed here is:

In a column:

(1st number + 2nd number) - (1st number - 2) = 3rd number.

Column 1: (12 + 14) - (12 - 2) = 26 - 10 = 16

Column 3: (11 + 17) - (11 - 2) = 28 - 9 = 19

Similarly,

Column 2: (15 + 5) - (15 - 2) = 20 - 13 = 7

Hence, 7 is the correct answer.

Q51. Answer: (a) 18 cm²

Given:

AC = 5 cm

DE = 3 cm

Area of trapezium ACED = 32 cm2

Concept used:

Area of a trapezium = 1/2 × (Sum of the parallel sides) × Height (Perpendicular distance between two parallel lines)

Area of a triangle = 1/2 × Base × Height

Calculation:

Considering the trapezium ACED, the area of ACED = 1/2 × (DE + AC) × GF

According to the question,

1/2 × (DE + AC) × GF = 32

=> 1/2 × 8 × GF = 32

=> GF = 8

Let BG be P cm.

Area of ΔABC

=> 1/2 × AC × BF

=> 1/2 × 5 × BF

=> 2.5 × (BG + GF)

=> 2.5 × (P + 8)

Area of ΔBDE

=> 1/2 × DE × BG

=> 1.5 × P

According to the question,

ΔABC = ΔBDE + Area of trapezium ACED

=> 2.5 × (P + 8) = 1.5 × P + 32

=> P = 12

Hence, ΔBED = 1.5 × 12 = 18 cm²

Therefore The area of ΔBED is 18 cm2.

Q52. Answer: (c) 22.5 cm

Given:

AB = 15 cm

BC = 10 cm

Concept used:

In geometry, the angle bisector theorem is concerned with the relative lengths of the two segments that a triangle's side is divided into by a line that bisects the opposite angle.

Calculation:

Let CD = P cm.

So, BD = (P - 2) cm

According to the question,

P + P - 2 = 10

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=> P = 6

So, CD = 6 cm and BD = 4 cm.

Since AD is the angular bisector of angle A, we can conclude

AB/AC = BD/CD

=> 15/AC = 4/6

=> AC = 22.5

Therefore The length of AC is 22.5 cm.

Q53. Answer: (d) 9602

Given:

√x+1/(√ x)=2√3

Concept used:

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

Calculation:

√x+1/(√ x)=2√3

=> x + 1/x + 2 = 12

=> x2 + 1/x2 = 10

=> x2 + 1/x2 + 2 = 100

=> x2 + 1/x2 = 98

=> x4 + 1/x4 + 2 = 9604

=> x4 + 1/x4 = 9602

Therefore The required value of x4 + 1/x4 is 9602.

Shortcut TrickIf $x + 1/x = a$, then $x^2 + 1/(x^2) = a^2 - 2$

So, √x+1/(√ x)=2√3, then $x + 1/x = (2√3)^2 - 2 = 10$

Again, $x + 1/x = 10$, then $x^2 + 1/(x^2) = 10^2 - 2 = 98$

Also, $x^2 + 1/(x^2) = 98$, then $x^4 + 1/(x^4) = 98^2 - 2 = 9602$

Q54. Answer: (d) 61.25%

Shortcut Trick

Using the Income = Expenditure + Savings relation.

Let Income = 100, then Expenditure = 68 and Savings = 32.

Change in Income (40% of 100) = +40.

Change in Expenditure (30% of 68) = +20.4.

Change in Savings = 40 − 20.4 = 19.6.

Savings increase % = (19.6 ÷ 32) × 100 = 61.25%.

Therefore The correct answer is 61.25%.

Alternate Method

Given: Initial spending = 68% of income, Income increase = 40%, Expenditure increase = 30%.

Formula Used: Income = Expenditure + Savings; Percentage change = (Change ÷ Original) × 100

=> Initial Income = 100, Expenditure = 68, Savings = 100 − 68 = 32

=> New Income = 100 + 40% of 100 = 140

=> New Expenditure = 68 + 30% of 68 = 68 + 20.4 = 88.4

=> New Savings = 140 − 88.4 = 51.6

=> Increase in Savings = 51.6 − 32 = 19.6

=> Percentage Increase = (19.6 ÷ 32) × 100 = 0.6125 × 100 = 61.25%

Therefore The correct answer is 61.25%.

Additional Information

Base Change Rule

When comparing percentage increases, always divide the absolute change by the original base value (initial savings in this case).

Successive Percentage

If a value increases by a% and then by b%, the net increase is given by [a + b + (a × b)/100]%, though linear equations are better for Income-Exp-Savings problems.

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Weighted Average/Alligation

Income % change is the weighted average of Expenditure % change and Savings % change based on their initial values.

Q55. Answer: (d) 47.5

Given:

The average of 40 numbers is 48.2.

The average of the first 15 numbers is 45 and that of the next 22 numbers is 50.5.

The 38th number is 1 more than the 39th number, and the 39th number is 3 less than the 40th number.

Concept used:

Sum (Total) = Average × Number of elements

Calculation:

The sum of first (15 + 22) = 37 numbers

=> (15 × 45) + (22 × 50.5)

=> 1786

Let the 39th number be P.

Hence, the 38th & 40th numbers are (P + 1) and (P + 3) respectively.

According to the question,

1786 + (P + 1) + P + (P + 3) = 40 × 48.2

=> 3P = 138

=> P = 46

=> P + 3 = 49

Average of the 39th and 40th numbers = (46 + 49) ÷ 2 = 47.5

Therefore 47.5 is the average of the 39th and 40th numbers.

Q56. Answer: (d) 3 : 5

Calculation:

Total students in B.Sc Maths = 700 × 20% = 140

Total number of girls in B.Sc Maths = 140 - (140 × 40%) = 84

Ratio = 84 : 140 = 3 : 5

Therefore The ratio of the total number of girls admitted in B.Sc. Maths to the total number of students admitted in B.Sc. Maths is 3 : 5.

Q57. Answer: (b) Rs. 3,240

Given:

Selling price = Rs. 3150

Profit made = 5%

Desired profit = 8%

Concept used:

Selling price = Cost price + Cost price × Profit%

Calculation:

Let the cost price be Rs. CP.

According to the question,

=> CP + CP × 5% = 3150

=> CP = 3000

To gain 8%, he should sell the article at = 3000 + 3000 × 8% = Rs. 3240

Therefore He should sell the article at Rs. 3240 in order to gain 8%.

Shortcut TrickTo make 8% gain,

He should sell the article at = (3150 ÷ 1.05) × 1.08 = Rs. 3240

Therefore He should sell the article at Rs. 3240 in order to gain 8%.

Q58. Answer: (d) 2 h 24 min

Given:

A tap can fill a tank in 4 hours. Another tap can fill the same tank in 6 hours.

Concept used:
Entire work = Work done hourly × Total time taken (In hours)
Calculation:
LCM (4,6) = 12
Let us consider the capacity of the tank as the LCM of 4 and 6.
So, the capacity of the tank = 12 Units
Hourly filled,
By Tap A = 12 ÷ 4 = 3 units
By Tap B = 12 ÷ 6 = 2 units
Time taken to completely fill the tank when both A & B are opened
=> 12 ÷ (3 + 2)
=> 2.4 hours = 2 hours 24 minutes
Therefore If both the taps are opened at the same time, 2 hours 24 minutes will take the empty tank to be filled completely.

Q59. Answer: (a) √3/2

Given:
tan 3θ = sin 45°. cos 45° + cos 60°
3θ is an acute angle
Concept used:
Calculation:
tan 3θ = sin 45°. cos 45° + cos 60°
=> tan 3θ = 1/√2 × 1/√2 + 1/2
=> tan 3θ = 1
=> tan 3θ = tan 45°
=> 3θ = 45°
=> θ = 15°
=> 4θ = 60°
=> Sin 4θ = Sin 60°
=> Sin 4θ = √3/2
Therefore The value of Sin 4θ is √3/2.

Q60. Answer: (b) 32/221

Given:
(137/9÷2/3 of 1/3+2/3×3)/(7/5 of 325-20+7)
Concept used:
Calculation:
(137/9÷2/3 of 1/3+2/3×3)/(7/5 of 325-20+7)
=> (124/9 ÷ 2/9 + 2)/(455 - 20 + 7)
=> (62 + 2)/442
=> 64/442
=> 32/221
Therefore The required value of (137/9÷2/3 of 1/3+2/3×3)/(7/5 of 325-20+7) is 32/221.

Q61. Answer: (a) 7

Shortcut Trick
For any expression of the form $x + (1/x) = k$, the value of $x^2 + (1/x^2)$ is always $k^2 - 2$.
Since cot θ = 1/tan θ, we have tan θ + (1/tan θ) = 3.
Value = $3^2 - 2 = 9 - 2 = 7$.
Therefore The correct answer is 7.
Alternate Method
Given: tan θ + cot θ = 3
Formula Used: $(a + b)^2 = a^2 + b^2 + 2ab$
=> $(\tan \theta + \cot \theta)^2 = 3^2$

=> $\tan^2\theta + \cot^2\theta + 2(\tan\theta)(\cot\theta) = 9$

=> $\tan^2\theta + \cot^2\theta + 2(1) = 9$

=> $\tan^2\theta + \cot^2\theta = 9 - 2$

=> $\tan^2\theta + \cot^2\theta = 7$

Therefore The correct answer is 7.

Additional Information

Reciprocal Identities

Trigonometric pairs that are reciprocals: $\tan\theta \times \cot\theta = 1$, $\sin\theta \times \operatorname{cosec}\theta = 1$, and $\cos\theta \times \sec\theta = 1$.

Higher Powers Shortcut

If $x + 1/x = k$, then $x^3 + 1/x^3 = k^3 - 3k$ and $x^4 + 1/x^4 = (k^2 - 2)^2 - 2$.

Pythagorean Identities

Key formulas include $\sec^2\theta - \tan^2\theta = 1$ and $\operatorname{cosec}^2\theta - \cot^2\theta = 1$.

Q62. Answer: (b) 17.5%

Calculation:

Total production of Company B in 2015 and 2017 to 2019

=> 70 + 150 + 180 + 120 = 520 lakh tonnes

Total production of Company A in 2014 to 2019

=> 70 + 90 + 120 + 140 + 130 + 150 = 700 lakh tonnes

90% of the total production of Company A

=> 700 × 90% = 630 lakh tonnes

% = (630 - 520)/630 × 100% ≈ 17.5%

Therefore The total production of paper by company B in 2015 and 2017 to 2019 was 17.5% less than 90% of the total production of paper by company A in 2014 to 2019.

Q63. Answer: (a) 2448

Given:

The ratio of the shares of A and C is 8 : 7 and that of B and C is 3 : 2.

The difference between the shares of A and B is Rs. 240.

Concept used:

Ratio Proportion

Calculation:

A : C = 8 : 7 = 16 : 14

B : C = 3 : 2 = 21 : 14

A : B : C = 16 : 21 : 14

Let P be the common ratio.

According to the question,

21P - 16P = 240

=> P = 48

=> (16 + 21 + 14)P = 2448

Therefore The value of x is Rs. 2448.

Q64. Answer: (a) 49

Given:

The five-digit number 457ab is divisible by 3, 7, and 11.

Concept used:

LCM defines the least number which is exactly divisible by two or more numbers.

Calculation:

LCM (3, 7, 11) = 231

Let us consider the lowest possible values of a,b.

Suppose the given number = 45700 (Where a = b = 0)

Now, when 45700 is divided by 231, the approximate quotient = 45700 ÷ 231 ≈ 197

So, taking the next integer quotient, we will get a multiple of 231.

Hence, the required number = (197 + 1) × 231 = 45738

So, a = 3, b = 8.

a2 + b2 - ab

=> 9 + 64 - 24

=> 49

Therefore The value of a2 + b2 - ab is 49.

Q65. Answer: (b) 12%

Given:

Marked Price = Rs. 350

Selling price = Rs. 308

Concept used:

Discount = Marked Price - Selling Price

Discount % = Discount/Marked Price × 100%

Calculation:

Discount given = 350 - 308 = Rs. 42

Discount % = 42/350 × 100% = 12%

Therefore Discount percentage will be 12%.

Q66. Answer: (a) 15

Shortcut Trick

Let Downstream speed be D and Upstream speed be U.

Equation 1: 15/D + 8/U = 2

Equation 2: 20/D + 12/U = 17/6 (as 2 h 50 min = 17/6 h)

Multiply Eq 1 by 3 and Eq 2 by 2 to equate U terms: 45/D + 24/U = 6 and 40/D + 24/U = 17/3

Subtracting gives: 5/D = 6 − 17/3 => 5/D = 1/3 => D = 15 km/h.

Therefore The correct answer is 15 km/h.

Alternate Method

Given:

Case 1: Distance Downstream = 15 km, Distance Upstream = 8 km, Total Time = 2 h.

Case 2: Distance Downstream = 20 km, Distance Upstream = 12 km, Total Time = 2 h 50 min = 17/6 h.

Formula Used:

Time = Distance ÷ Speed

Calculations:

=> Let 1/D = x and 1/U = y

=> 15x + 8y = 2 ... (i)

=> 20x + 12y = 17/6 ... (ii)

=> Multiply (i) by 3: 45x + 24y = 6

=> Multiply (ii) by 2: 40x + 24y = 17/3

=> Subtracting: (45x − 40x) = 6 − 17/3

=> 5x = 1/3

=> x = 1/15

=> Since x = 1/D, D = 15 km/h.

Therefore The correct answer is 15 km/h.

Additional Information

Downstream and Upstream Speed

Downstream speed (D) = Speed of boat (u) + Speed of stream (v). Upstream speed (U) = Speed of boat (u) − Speed of stream (v).

Speed of Boat in Still Water

Speed of boat in still water (u) = (D + U) ÷ 2. This is the average of the two directional speeds.

Speed of Current

Speed of current/stream (v) = (D − U) ÷ 2. It represents the rate of flow of the water body.

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Q67. Answer: (a) 1/2

Given:

cosec (58° + θ) - sec (32° - θ) + sin 15° sin 35° sec 55° sin 30° sec 75°

Concept used:

Sec (90° - α) = Cosec α

Sin α × Cosec α = 1

Calculation:

cosec (58° + θ) - sec (32° - θ) + sin 15° sin 35° sec 55° sin 30° sec 75°

=> sec (90° - 58° - θ) - sec (32° - θ) + sin 15° sin 35° sec (90 - 35)° sin 30° sec (90 - 15)°

=> sec (32° - θ) - sec (32° - θ) + sin 15° sin 35° cosec 35° sin 30° cosec 15°

=> sin 15° cosec 15° sin 35° cosec 35° sin 30°

=> 1 × 1 × 1/2

=> 1/2

Therefore The required value of cosec (58° + θ) - sec (32° - θ) + sin 15° sin 35° sec 55° sin 30° sec 75° is 1/2.

Q68. Answer: (d) 18,485

Given:

Principal amount (P) = Rs. 46000

Rate (R) = 15%

Time (N) = 22/5 years

Concept used:

Compound interest, CI = P(1 + R/100)n - P

where

P = Principal amount

R = Rate of interest per year

N = Time in years

Calculation:

The principal amount becomes

=> 46000 × $(1 + 15/100)^2$ = Rs. 60835

Now, for 2/5 years, the rate of interest becomes = 15% × 2/5 = 6%

Hence, the principal amount becomes

=> 60835 × $(1 + 6/100)^1$ = Rs. 64485.1

So, the interest accrued = 64485.1 - 46000 ≈ Rs. 18485

Therefore Rs. 18485 is the compound interest on a sum of Rs. 46,000 for 22/5 years at 15% per annum, interest being compounded annually.

Shortcut Trick

For the first two years, the rate of interest is 15%

Then, for the next 2/5 years, the rate of interest becomes

=> 15% × 2/5 = 6%

So, calculating the successive percentage of 15%, 15% and 6%, we get

=> {(15 + 15 + 6) + (15 × 15 + 15 × 6 + 15 × 6)/100 + (15 × 15 × 6)/(100 × 100)}%

=> 40.185%

So, the interest accrued = 46000 × 40.185% ≈ Rs. 18485

Therefore Rs. 18485 is the compound interest on a sum of Rs. 46,000 for years at 15% per annum, interest being compounded annually.

Q69. Answer: (d) 4

Shortcut Trick

By the secant intersection theorem, PA × PB = PC × PD.

Given PB = 1/3 × AB = 1/3 × 9 = 3 cm, so PA = 9 + 3 = 12 cm.

Let PD = x cm, meaning PC = x + 5 cm.

12 × 3 = (x + 5) × x => $x^2 + 5x - 36 = 0$

On factorising, (x + 9)(x − 4) = 0 => x = 4 cm (ignoring negative value).

Therefore The correct answer is 4 cm.

Alternate Method

Given:

Length of chord AB = 9 cm

Length of chord CD = 5 cm

PB = 1/3 × AB = 1/3 × 9 = 3 cm

Formula Used:

When two secants of a circle intersect at an exterior point, the product of the entire secant segment and its external part is equal for both secants.

=> PA × PB = PC × PD

P

B

A

D

C

3

9

x

5

Calculations:

=> Total length PA = PB + AB = 3 cm + 9 cm = 12 cm

Let the length of PD be x cm.

=> Total length PC = PD + CD = (x + 5) cm

Applying the secant intersection theorem:

=> 12 × 3 = (x + 5) × x

=> 36 = x^2 + 5x

=> x^2 + 5x − 36 = 0

Factorising the quadratic equation:

=> x^2 + 9x − 4x − 36 = 0

=> x(x + 9) − 4(x + 9) = 0

=> (x − 4)(x + 9) = 0

=> x = 4 or x = −9

Since the length of a line segment cannot be negative, we discard x = −9.

=> PD = 4 cm

Therefore The correct answer is 4 cm.

Additional Information

Secant Intersection Theorem

When two secants intersect outside a circle, the product of the total length of one secant and its external segment equals the product of the total length of the other secant and its external segment (PA × PB = PC × PD).

Intersecting Chords Theorem

When two chords intersect inside a circle, the product of the segments of one chord equals the product of the segments of the other chord (PA × PB = PC × PD where P is the internal intersection point).

Tangent-Secant Theorem

If a tangent segment and a secant segment are drawn to a circle from an exterior point, the square of the length of the tangent segment equals the product of the total secant length and its external segment (PT^2 = PA × PB).

Q70. Answer: (b) 8

Given:

3√3x3 - 8y3 = (√3x + Ay)(3x2 + By2 + Cxy)

Concept used:

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

Calculation:

$3\sqrt{3}x3 - 8y3 = (\sqrt{3}x + Ay)(3x2 + By2 + Cxy)$

$\Rightarrow (\sqrt{3}x)3 - (2y)^3 = (\sqrt{3}x + Ay)(3x2 + By2 + Cxy)$

$\Rightarrow (\sqrt{3}x - 2y)\ (3x^2 + 4y^2 + 2\sqrt{3}\ xy) = (\sqrt{3}x + Ay)(3x2 + By2 + Cxy)$

Comparing both side we get,

A = -2

B = +4

$C = +2\sqrt{3}$

Hence,

(A2 + B2 - C2)

$\Rightarrow 4 + 16 - 12$

$\Rightarrow 8$

Therefore The required (A2 + B2 - C2) is 8.

Q71. Answer: (c) 22

Calculation:

Number of persons that are less than 20 years of age = 7 + 6 + 7 + 2 = 22

Therefore 22 persons are less than 20 years of age.

Q72. Answer: (d) 480

Calculation:

Difference in angles between May and February = 77° - 45° = 32°

Here, 1° represents = 5400 ÷ 360 = 15 computers

Hence, the difference between the number of computers sold in May and the number of computers sold in February = 32 × 15 = 480

So, x = 480

Therefore The value of x is 480.

Q73. Answer: (d) 216

Shortcut Trick

When a large sphere is melted to form small spheres, the number of spheres (n) is determined by the cube of the ratio of their radii.

$n = (\text{Radius of large sphere} / \text{Radius of small sphere})^3$

$n = (12 / 2)^3 = 6^3 = 216$

Therefore The correct answer is 216.

Alternate Method

Given:

Radius of the solid metallic sphere (R) = 12 cm

Radius of each small sphere (r) = 2 cm

Formula Used:

Volume of a sphere = $(4/3) \times \pi \times r^3$

Calculations:

=> Let 'n' be the number of small spheres formed.

=> Volume of large sphere = n × Volume of one small sphere

$\Rightarrow (4/3) \times \pi \times (12)^3 = n \times (4/3) \times \pi \times (2)^3$

$\Rightarrow 12 \times 12 \times 12 = n \times 2 \times 2 \times 2$

$\Rightarrow 1728 = n \times 8$

$\Rightarrow n = 1728 \div 8$

$\Rightarrow n = 216$

Therefore The correct answer is 216.

Additional Information

Volume Conservation

When one solid object is melted and recast into another shape or multiple shapes, the total volume remains constant.

Surface Area of Sphere

The total surface area of a sphere with radius 'r' is given by $4 \times \pi \times r^2$.

Hemisphere Properties

For a hemisphere of radius 'r', the volume is $(2/3) \times \pi \times r^3$ and the total surface area is $3 \times \pi \times r^2$.

Q74. Answer: (a) 3

Given:

$3x - 2y + 3 = 0$

Concept used:

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

Calculation:

$3x - 2y + 3 = 0$

$\Rightarrow 3x - 2y = -3$ ....(1)

$\Rightarrow (3x - 2y)^3 = -(3)^3$

$\Rightarrow 27x^3 - 54x^2y + 36xy^2 - 8y^3 = -27$

$\Rightarrow 27x3 - 18xy (3x - 2y) - 8y3 + 27 = 0$

$\Rightarrow 27x3 - 18xy \times (-3) - 8y3 + 27 = 0$ (From 1)

$\Rightarrow 27x3 + 54xy - 8y3 + 27 = 0$

$\Rightarrow 27x3 + 54xy - 8y3 + 30 = 3$

Therefore The required value of $(27x3 + 54xy + 30 - 8y3)$ is 3.

Q75. Answer: (a) 16.9 cm

Shortcut Trick

When tangents from an external point P intersect a circle, and the chord of contact is at a distance d from the centre:

Distance of P from centre OP = $(\text{Radius})^2 \div d$

$\Rightarrow OP = 6.5^2 \div 2.5$

$\Rightarrow OP = 42.25 \div 2.5 = 16.9$ cm

Therefore The correct answer is 16.9 cm.

Alternate Method

Given:

Radius of the circle, OA = 6.5 cm

Distance of chord from the centre, OM = 2.5 cm

Formula Used:

$\text{Hypotenuse}^2 = \text{Perpendicular}^2 + \text{Base}^2$

Calculations:

O A B P M 6.5 2.5 OP = 16.9 cm

$\Rightarrow$ In right ΔOMA, by Pythagoras theorem:

$\Rightarrow AM = \sqrt{(OA^2 - OM^2)}$

$\Rightarrow AM = \sqrt{(6.5^2 - 2.5^2)} = \sqrt{(42.25 - 6.25)} = \sqrt{36} = 6$ cm

$\Rightarrow$ Tangent PA is perpendicular to radius OA, so angle $OAP = 90°$.

$\Rightarrow$ In right ΔOAP, AM is the altitude from the right angle to hypotenuse OP.

$\Rightarrow$ By the geometric mean property of right triangles: $OA^2 = OM \times OP$

$\Rightarrow 6.5^2 = 2.5 \times OP$

$\Rightarrow 42.25 = 2.5 \times OP$

$\Rightarrow OP = 42.25 \div 2.5 = 16.9$ cm

Therefore The correct answer is 16.9 cm.

Additional Information

Tangent to a Circle

A tangent at any point of a circle is perpendicular to the radius through the point of contact.

Chord of Contact

The line joining the points of contact of two tangents drawn from an external point to a circle is called the chord of contact.

Right-Angled Triangle Properties

In a right ΔABC right angled at A, if AD perpendicular to BC, then $AB^2 = BD \times BC$ and $AC^2 = CD \times BC$.

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Q76. Answer: (a) 2019

The correct answer is 2019.

• PM-KISAN (Pradhan Mantri Kisan Samman Nidhi) is a central sector scheme under the Government of India that provides income support to farmers and their families.

• Under this scheme, the Center transfers Rs 6,000 per year, in three equal installments, directly to the bank accounts of all landholder farmers, irrespective of the size of their landholdings.

• It was launched in February 2019.

Key Points

• The main objectives of the PM-KISAN scheme are given below:

• The objective of the scheme is to meet the financial nee ds of Small and Marginal Farmers (SMFs) by ensuring proper crop health and proper yields and in procuring various inputs commensurate with the anticipated farm income at the end of each crop cycle.

• It is a central sector scheme with 100% funding from the Government of India.

• It is being implemented by the Ministry of Agriculture and Fa rmers Welfare.

Q77. Answer: (b) Rajasthan

The correct answer is Rajasthan.

• Kalbelia dance is an expression of the lifestyle of the Kalbelia community as a snake charmer.

• Kalbelias are now found mainly in Jodhpur, Jaisalmer, Jalore, and Barmer districts of western Rajasthan and the cities of Jaipur and Pushkar in eastern Rajasthan.

• Women in flowing skirts dance to the beat of the 'khanjari', a percussion instrument, and the 'pungi', a wind instrument.

Additional Information

State	Folk Dances
Haryana	Jhumar, Phag, Daph, Dhamal, Loor, Gugga, Khor.
Maharashtra	Lavani, Nakata, Koli, Lezim, Gafa, Dahikala Dasavtar
Punjab	Bhangra, Giddha, Daff, Dhaman, Bhand
Rajasthan	Ghumar, Chakri, Ganagor, Jhulan Leela, Jhuma, Suisini, Ghapal

Important Points

The list of classical dances in India is given below:

Classical dances	State
Bharatnatyam	Tamil Nadu
Kathak	Uttar Pradesh
Kuchipudi	Andhra Pradesh
Odissi	Odisha
Kathakali	Kerala
Sattriya	Assam
Manipuri	Manipur
Mohiniyattam	Kerala

Q78. Answer: (a) mangrove

The correct answer is mangrove.

• Coringa is a beautiful mangrove forest where the Godavari joins the backwaters of Bay of Bengal.

Key Points

• Coringa Wildlife Sanctuary is a wildlife sanctuary and estuary located near Kakinada in Andhra Pradesh, India.

• It is the third-largest stretch of mangrove forests in India with 24 mangrove tree species and over 120 bird species.

• It is home to the critically endangered white-backed vulture and the long-billed vulture.

Important Points

• Mangrove forests are home and sanctuaries for many aquatic bird species, including:

• Pulicat Lake Bird Sanctuary
• Mangalavanam Bird Sanctuary
• Salim Ali Bird Sanctuary
• Pichavaram
• Coringa Wildlife Sanctuary
• Sundarbans National Park

Additional Information

• Wildlife Sanctuaries in India

Name of Wildlife Sanctuaries	State
Bharatpur Bird Sanctuary	Rajasthan
Chilika Lake Bird Sanctuary	Odisha
Chinnar Wildlife Sanctuary	Kerala
Gir National Park and Wildlife Sanctuary	Gujarat
Govind Wildlife Sanctuary	Uttarakhand
Madumalai Sanctuary	Tamil Nadu
Periyar Wildlife Sanctuary	Kerala

Q79. Answer: (a) Rajendralala Mitra

The correct answer is Rajendralala Mitra.

• ‘Buddha Gaya: The Hermitage of Sakya Muni’ in 1878 was written by Rajendralala Mitra.

• His major works were "the antiquities of Orissa" (2 volumes, 1875–80), "Bodh Gaya" (1878), "Indo-Aryans" (2 volumes, 1881), and more.

• Bodh Gaya is one of the four holiest places in Buddhism. Here Buddha attained enlightenment after doing penance for 49 days under the Bodhi tree.

• Emperor Ashoka built a temple to mark this site of Buddha's enlightenment in the 3rd century BC.

• A later stone railing that surrounds this temple has remained from the period (1st century BC). Sanchi and Barhut depict the temple on several reliefs.

Additional Information

• Buddhism originated in India 2,600 years ago.

• The religion is based on the teachings, life experiences of its founder Siddhartha Gautama, born around 563 BCE.

• He was born into a royal family of the Shakya dynasty, who ruled from Kapilvastu in Lumbini.

• At the age of 29, Gautama left home and rejected his life of wealth, and adopted a lifestyle of Tapasya, or extreme self-discipline.

• After 49 consecutive days of meditation, Gautam attained Bodhi (wisdom) under a peepal tree in Bodh Gaya village, Bihar.

• Buddha gave his first sermon in Sarnath village near Banaras city of Uttar Pradesh. This phenomenon is known as dharma-chakra-pravartana (the turning of the wheel of law).

• He died at the age of 80 in 483 BC at a place called Kushinagar in Uttar Pradesh. This event is known as Mahaparinirvana.

Q80. Answer: (d) Sunil Chhetri

The correct answer is Sunil Chhetri.

• Sunil Chhetri became the second Indian footballer after Bhaichung Bhutia to play 100 international matches.

Important Points

• Awards and honors of Sunil Chhetri:

• 2011 − Arjuna Award, by the Government of India in recognition of his outstanding achievement in sports.

• 2019 − Padma Shri, India's fourth highest civilian award.

• 2021 – Khel Ratna Award, highest sporting honour of India.

Additional Information

• Udanta Singh is an Indian professional footballer who plays primarily as a forward for the Indian Super League club Bengaluru FC and the Indian national football team.

• Gurpreet Singh Sandhu is an Indian professional footballer who plays as a goalkeeper for the Indian Super League club Bengaluru and the India national team.

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• Bhaichung Bhutia is an Indian former professional footballer who played as a striker. He is often nicknamed the Sikkimese Sniper because of his shooting skills in football.

Q81. Answer: (c) Punjab

The correct answer is Punjab.

• Punjab is a state in the northwest region of India and is one of the most prosperous states.

• The name Punjab is made of two words Punj (Five) + Aab (Water) i.e. land of five rivers.

• These five rivers of Punjab are Sutlej, Beas, Ravi, Chenab, and Jhelum. Only Sutlej, Ravi and Beas rivers flow in today's Punjab.

• The other two rivers are now in the state of Punjab, situated in Pakistan.

• The Punjab State is divided into three regions: Majha, Doaba and Malwa.

Key Points

• Majha is a region located in the central parts of the historical Punjab region divided between India and Pakistan.

• It extends from the right bank of the Beas River to the north, and reaches as far north as the Jhelum River.

• Doaba is also known as Bist Doab, is the region of Punjab, India that lies between the Beas River and the Sutlej River.

• The dialect of Punjabi spoken in Doaba is called "Doabi".

• Malwa is a region of India in the south-east of the state of Punjab and parts of Haryana and Rajasthan, between the Sutlej and Yamuna rivers.

Q82. Answer: (a) mountaineer

The correct answer is Mountaineer.

• Ace mountaineer Colonel Narendra Kumar, who helped India secure the Siachen Glacier, passed away in December 2020.

• He was responsible for the success of Operation Meghdoot in 1984.

• He was the first Indian to climb the Nanda Devi mountain.

• He climbed Mount Everest, Mount Blanc (the highest peak in the Alps) in 1965, and later, Mount Kanchenchanga.

Important Points

• Bachendri Pal, an Indian mountaineer, is the first Indian woman to climb Mount Everest, the highest mountain peak in the world.

• She achieved this feat in 1984 and was later awarded the Padma Shri.

Q83. Answer: (c) precipitation

The correct answer is precipitation.

• In meteorology, precipitation is any product of the condensation of atmospheric water vapor under the gravitational pull from clouds.

• The main forms of precipitation include drizzle, rain, hail, snow, ice pellets, graupel, and hail.

• Precipitation occurs when a part of the atmosphere becomes saturated with water vapor (reaching 100% relative humidity), causing the water to condense and "precipitate" or fall off.

• Thus, fog and mist are not rain but colloid, because the water vapor is not condensed enough for precipitation.

Additional Information

• Condensation is the process in which water vapor becomes liquid.

• This is the reverse of evaporation, where liquid water becomes vapor.

• Condensation occurs in one of two ways: either the air cools to its dew point or it becomes so saturated with water vapor that it cannot hold any more water.

• Sedimentation is a physical water treatment process in which gravity is used to remove suspended solids from water.

• Solid particles trapped in a moving water disturbance can be naturally removed by sedimentation in the still waters of lakes and oceans.

• For example, in a mixture of sand and water, sand settles down at the bottom.

• Decantation is a process for the separation of mixtures of immiscible liquids or of a liquid and a solid mixture such as a suspension.

• Example: decantation of oil and vinegar.

Q84. Answer: (d) Reita Faria

The correct answer is Reita Faria.

• Reita Faria is an Indian physician, former model, and winner of the Miss World 1966 pageant.

• Reita Faria is a beauty pageant titleholder who won the Miss World title in 1966, making her the first Asian woman to win the event.

• Born in Bombay to Goan parents, she became the first Asian woman to win a beauty pageant.

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Additional Information

• List of Miss World winners from India

Year	Winner
2017	Manushi Chhillar
2000	Priyanka Chopra
1999	Yukta Mookhey
1997	Diana Hayden
1994	Aishwarya Rai
1966	Reita Faria

Important Points

• Karolina Bielawska from Poland has won the 70th edition of the Miss World pageant that took place in Puerto Rico. She was crowned Miss World 2021.

Q85. Answer: (b) ONGC

The correct answer is ONGC.

• NTPC Ltd. and Oil and Natural Gas Corporation Limited (ONGC) have signed a Memorandum of Understanding (MoU) to set up a Joint Venture Company for Renewable Energy business.

Additional Information

• Oil and Natural Gas Corporation (ONGC) is a crude oil and natural gas corporation owned by the Government of India.

• The operations are overseen by the Ministry of Petroleum and Natural Gas.

• Founded on 14 August 1956.

• NTPC Limited, formerly known as National Thermal Power Corporation Limited, is an Indian statutory corporation.

• It is a statutory corporation incorporated under the Companies Act 1956 and is owned by the Ministry of Power, Government of India.

• Founded on 7 November 1975.

• Reliance Petroleum is an Indian petroleum company specializing in oil and energy, owned by Mukesh Ambani of Reliance Industries Limited (RIL), one of India's largest private sector companies.

• RPL was merged with Reliance Industries Limited on 29 September 2009.

• Coal India Limited is a Government of India-owned Coal Mining and Refining Corporation.

• It is owned by the Ministry of Coal, Government of India headquartered in Kolkata, West Bengal, India.

Q86. Answer: (c) Yamuna

The correct answer is Yamuna.

• The Chambal River is a tributary of the Yamuna River in central and northern India and is thus part of the greater Ganges drainage system.

• The river flows north-northeast through Madhya Pradesh, runs briefly through Rajasthan, then turns southeast to join the Yamuna in the state of Uttar Pradesh between Rajasthan and Madhya Pradesh.

Key Points

• Yamuna:

• The most important tributary of the Ganga rises from the Yamunotri Glacier and joins the Ganga at Allahabad.

• Tributaries: Chambal, Sind, Betwa, Ken

• Cities – Delhi, Mathura, Agra, Allahabad

Additional Information

• Brahmaputra :

• Rises in the Chemayungdung Glacier in the Kailash Range and joins the Padma in Bangladesh.

• It is known as Tsangpo in Tibet.

• Forms the largest riverine island Majuli.

• Narmada :

• The longest west flowing river of the Indian Peninsula rises from the Amarkantak Plateau and empties into the Gulf of Khambhat.

• Flows between the Vindhyas and Satpura, through a rift valley.

• Dams – Sardar Sarovar, Omkareshwar, Maheshwar, Indira Sagar.

• Tributaries – Its principal tributaries are the Burhner, the Halon, the Heran, the Banjar, the Dudhi, the Shakkar, the Tawa, the Barna, the Kolar, the Ganjal, the Beda, the Goi, and the Orsang.

• Bhagirathi :

• The headstream of the Ganga rises from the Gangotri Glacier and meets the Alaknanda River at Devprayag.

• Alaknanda :

• The first major tributary of the Ganga found completely inside Uttarakhand.

• It rises near the Niti Pass, at the border with Tibet.

• It meets Bhagirathi River at Devprayag.

Q87. Answer: (c) Below 7.0

The correct answer is Below 7.0.

• The pH of a solution varies from 0 to 14.

• Solutions having a value of pH ranging 0 to 7 on the pH scale are termed as acidic and the value of pH ranging 7 to 14 on the pH scale are known as basic solutions.

• Solutions having the value of pH equal to 7 on the pH scale are known as neutral solutions.

Additional Information

Some important acids and their presence

Acid	Present in
Acetic Acid	Vinegar
Formic Acid	Red ants
Citric Acid	Citrus Fruits
Lactic Acid	Curd
Ascorbic Acid	Amla
Tartaric Acid	Grapes, Ripe Mangoes
Oxalic Acid	Spinach

Important Points

• pH in living systems

Compartment	pH
Gastric acid	1.5–3.5
Human skin	5.4 - 5.9
Urine	6.0
Blood (natural pH)	7.35–7.45

Q88. Answer: (c) 12^(th)

The correct answer is 12^(th).

• The Twelfth Amendment to the Constitution of India, officially known as the Constitution (Twelfth Amendment) Act, 1962, amended the First Schedule to the Constitution to include Goa, Daman, and Diu as the eighth union territory of India.

Additional Information

• Important Amendments to Indian Constitution:

Amendment	Year	Importance
7	1956	Reorganization of states on linguistic basis and abolition of Class A, B, C, and D states and introduction of Union Territories.
10	1961	Dadra, Nagar, and Haveli were included in Indian Union as a Union Territory on acquisition from Portugal.

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12	1961	Goa, Daman, and Diu were included in Indian Union as a Union Territory on acquisition from Portugal.
36	1975	Sikkim was included as an Indian state.
42	1976	Fundamental Duties prescribed, India became the Socialist Secular Republic.
44	1978	Right to Property deleted from the list of fundamental rights.
52	1985	Defection to another party after the election was made illegal.
61	1989	The voting age was reduced from 21 to 18.
73	1993	Introduction of Panchayati Raj, the addition of Part IX to the Constitution.
74	1993	Introduction of Municipalities.
86	2002	Free and compulsory education to children between 6 and 14 years.
101	2016	Introduction of Goods and Services Tax (GST)
102	2018	Establishment of National Commission for Backward Classes
103	2019	Reservation for economically weaker sections of the society

Q89. Answer: (a) Elavenil Valarivan

The correct answer is Elavenil Valarivan.

• FICCI India Sports Award:

• Female Sportsperson of the Year - Elavenil Valarivan (Shooting)

• Male Sportsperson of the Year - Bajrang Punia (Wrestling)

Additional Information

• Major Dhyan Chand Khel Ratna Award 2021

Recipient(s)	Discipline(s)
Neeraj Chopra	Javelin throw
Ravi Kumar Dahiya	Freestyle wrestling
Lovlina Borgohain	Boxing
P. R. Sreejesh	Hockey
Avani Lekhara	Paralympic shooting
Sumit Antil	Para-athletics
Pramod Bhagat	Para-badminton
Krishna Nagar	Para-badminton
Manish Narwal	Paralympic shooting
Mithali Raj	Cricket
Sunil Chhetri	Football
Manpreet Singh	Hockey

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Q90. Answer: (d) Python

The correct answer is Python.

• Python is an interpreted, object-oriented, high-level programming language with dynamic semantics.

• Its high-level data structure, coupled with dynamic typing and dynamic binding, make it very attractive for rapid application development as well as for use as a scripting or glue language for linking existing components together.

• Python's simple, easy-to-learn syntax emphasizes readability and therefore reduces program maintenance costs.

• Python supports modules and packages, which encourage program modularity and code reuse.

Additional Information

• Different Types of Computer Language

• Machine Language

• The machine language is sometimes referred to as machine code or object code which is set of binary digits 0 and 1. These binary digits are understood and read by a computer system and interpret easily.

• It is considered a native language as it can be directly understood by a central processing unit (CPU).

• Assembly Language

• The assembly language is considered a low-level language for microprocessors and many other programmable devices.

• The assembly language is also considered a second-generation language.

• The first generation language is machine language.

• High-Level Language

• The development of high-level language was done when the programmers face the issue in writing programs as the older language has portability issues which means the code written in one machine cannot be transferred to other machines.

Q91. Answer: (d) 24 December

The correct answer is 24 December.

• National Consumer Rights Day is observed every year on December 24.

• On this day in 1986, the Consumer Protection Act 1986 received Presidential assent and thus came into force.

• The Act aims to provide consumers with effective safeguards against different types of exploitation, such as defective goods, deficiency in services, and unfair trade practices.

Additional Information

• List of Important Days in December

1-December	**World Aids Day**
4-December	Navy Day
5-December	International volunteer day for economic and social development
7-December	Armed Forces Flag Day, International civil aviation day
9-December	International Anti-Corruption Day
10-December	Human Rights Day
11-December	International Mountain day
14-December	International Energy day
18-December	International Migrants day
19-December	Goa’s liberation day
20-December	International Human solidarity
23-December	Kisan Divas (Farmer’s Day)

Q92. Answer: (c) Kerala

The correct answer is Kerela.

• Arthunkal Feast and Vettukad Festival are church festivals from the state of Kerala.

Key Points

• Arthunkal Perunnal (Perunnal means feast) is a ten-day annual feast at St. Sebastian's Church at Arthunkal, a coastal area in the Alappuzha district.

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• The procession carrying the statue of St. Sebastian from the church to the beach and back is an important event during the feast.

• Devotees express their gratitude for the favor received by crawling on their knees from the nearby beach to the church.

• This ritual is called Urulu Nercha.

• Vettukadu Perunal:

• The Madre de Deus Church, popularly known as Vettukad Church, is situated about 7 km from Thiruvananthapuram.

• This church is said to be over 500 years old.

• Every year the region comes alive to celebrate the annual 'Feast of Christ the King'.

• The image of Christ the King is taken out in a colourful procession, which is taken part by thousands of believers.

Additional Information

State	List of Indian Festivals
Goa	Sunburn festival, Ladain, Mando
Kerala	Onam, Vishu
Nagaland	Hornbill festival, Moatsu Festival
Sikkim	Saga Dawa, Losoong (New year festival)

Q93. Answer: (c) Gwalior

The correct answer is Gwalior.

• The Indian Mutiny of 1857 effectively ended in the city of Gwalior.

Key Points

• The Indian Mutiny of 1857 was a major revolt in India in 1857–58 against the rule of the British East India Company, which acted as a sovereign power on behalf of the British Crown.

• The rebellion began on 10 May 1857 as a mutiny by soldiers of the Company's army in the garrison town of Meerut.

• The rebellion posed a great threat to British power in that region and was only contained with the defeat of the rebels at Gwalior on 20 June 1858.

• Its name has been contested and has been described as the Sepoy Mutiny, the Indian Rebellion, the Great Rebellion, the Rebellion of 1857, the Indian Rebellion, and the First War of Independence.

Additional Information

Places of Revolt	Indian Leaders	British Officials who suppressed the revolt
Delhi	Bahadur Shah II	John Nicholson
Lucknow	Begum Hazrat Mahal	Henry Lawrence
Kanpur	Nana Saheb	Sir Colin Campbell
Jhansi & Gwalior	Lakshmi Bai & Tantia Tope	General Hugh Rose
Bareilly	Khan Bahadur Khan	Sir Colin Campbell
Allahabad and Banaras	Maulvi Liyakat Ali	Colonel Oncell
Bihar	Kunwar Singh	William Taylor

Q94. Answer: (b) Priyanca Radhakrishnan

The correct answer is Priyanca Radhakrishnan.

• On 2 November 2020, Priyanca Radhakrishnan was appointed as Minister for the Community and Voluntary Sector, Minister for Diversity, Inclusion and Ethnic Communities, Minister for Youth, and Associate Minister for Social Development and Employment, making her New Zealand's first Minister of Indian origin.

• In January 2021, Radhakrishnan was conferred a Pravasi Bharatiya Samman award for public service, by the Indian president in a virtual ceremony.

Additional Information

• Manisha Singh is an American attorney and government official who served as assistant secretary of state for economic and business affairs in the Trump administration until January 20, 2021.

• She previously also served as acting undersecretary of state for economic growth, energy, and the environment.

• Anita Anand is a Canadian lawyer and politician who has served as the minister of national defense since 2021.

• She has represented the riding of Oakville in the House of Commons since the 2019 federal election, sitting as a member of the Liberal Party.

• Anand previously served as minister of public services and procurement from 2019 to 2021.

• She is the first Hindu to become a federal minister in Canada.

• Seema Verma was a health policy consultant and former administrator of the Centers for Medicare & Medicaid Services in the Trump administration.

• She is the founder and previous CEO of SVC, Inc., a health policy consulting firm.

Q95. Answer: (a) Sachin Tendulkar

The correct answer is Sachin Tendulkar.

• Paytm First Games, a subsidiary of the digital financial service platform Paytm, signed cricketing legend Sachin Tendulkar as the brand ambassador for the platform, ahead of the 2020 edition of the Indian Premier League (IPL).

Additional Information

• Paytm was founded in August 2010 in Noida, Delhi NCR by its founder Vijay Shekhar Sharma with an initial investment of US$ 2 million.

• It started as a prepaid mobile and DTH recharge platform and later added data card, postpaid mobile, and landline bill payments in 2013.

Important Points

• Sachin Tendulkar received the Arjuna Award in 1994.

• India's highest sporting honor in 1997, and the Padma Shri and Padma Vibhushan awards, two of India's highest civilian awards, in 1999 and 2008 for his outstanding sporting achievements.

• In November 2013, the Prime Minister's Office announced the decision to confer on him the Bharat Ratna, India's highest civilian award.

• As of 2021, he is the youngest ever recipient and was the first player to receive the award.

• In 2012, Tendulkar was nominated to the Rajya Sabha, the upper house of the Parliament of India.

• Playing It My Way is an autobiography book by Sachin Tendulkar.

Q96. Answer: (b) Odisha

The correct answer is Odisha.

• After India's independence, Mayurbhanj State under Maharaja Pratap Chandra Bhanjdev joined the Indian Union on 1 January 1949 and was merged with Orissa Province, which later became Odisha State.

Additional Information

• Mayurbhanj:

• Merged into Orissa, Indian Union on 1st January 1949.

• Mayurbhanj was a native state in the Indian state of Orissa (Odisha).

• It was one of the largest states of the Eastern States Agency and one of the three states of the Bengal States Agency.

• The emblem of the state were two peacocks for according to legend the ancestors of the ancient rulers originated from a peafowl’s eyes.

• The capital of the state was the town of Baripada since the 15th century and Daspur was another important town.

• The ruins of the temples and palaces built then can be found at Haripur about 16 km southeast of Baripada. Among the ruins, the Rasikaraya temple and the Durbar hall of the Bhanj kings are the most significant.

Q97. Answer: (c) Pseudocode

The correct answer is Pseudocode.

• Pseudocode is a method of describing computer algorithms using a combination of natural language and programming language.

• It is essentially an intermittent step towards the development of the actual code.

• It allows the programmer to formulate their thoughts on the organization and sequence of a computer algorithm without the need for actually following the exact coding syntax.

Additional Information

• List of input, output devices of computer

• Input Devices: Graphics Tablets, Keyboard, Microphone, Mouse (pointing device), Scanner, Webcam, Microphone, OMR, OCR, Punch card reader, MICR (Magnetic Ink character reader), Magnetic Tape Drive

• Output Devices: LCD Projection Panels, Monitor, Printers, Plotters, Projector, Speaker(s), Visual Display Unit

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Q98. Answer: (c) Anodising

The correct answer is Anodising.

Key Points

• Anodising is the process of forming a thick oxide layer of aluminum.

• The process is called anodizing because the part to be treated forms the anode electrode of an electrolytic cell.

• This aluminum oxide coat makes it resistant to further corrosion.

• It is also useful in architectural finishing.

Additional Information

• Ductility is the ability of a material to be drawn or plastically deformed without fracture.

• The ductility of steel varies depending on the types and levels of alloying elements present.

• Galvanisation or galvanization (or galvanizing as it is most commonly called) is the process of applying a protective zinc coating to iron or steel, to prevent rusting.

• The most common method is hot-dip galvanizing, in which steel sections are submerged in a bath of molten zinc.

• Corrosion is a natural process that converts a refined metal into a more chemically stable form such as oxide, hydroxide, carbonate, or sulfide.

• It is the gradual destruction of materials (usually a metal) by chemical or electrochemical reactions with their environment.

Q99. Answer: (a) 1934

The correct answer is 1934.

Key Points

• An idea for a Constituent Assembly was proposed in 1934 by M. N. Roy, a pioneer of the Communist movement in India and an advocate of radical democracy.

• It became an official demand of the Indian National Congress in 1935, the Indian National Congress held its session at Lucknow in April 1936 presided by Pt. Jawahar Lal Nehru.

• With this, Congress added a new strand to its political engagement with the British on the future of India.

Additional Information

• The official demand for Constituent Assembly was raised and the Government of India Act, 1935 was rejected as it imposed the Constitution which was against the will of the Indians.

• C. Rajagopalachari voiced the demand for a Constituent Assembly on 15 November 1939 based on adult franchise and was accepted by the British in August 1940.

• On 8 August 1940, a statement was made by Viceroy Lord Linlithgow about the expansion of the Governor-General's Executive Council and the establishment of a War Advisory Council.

• This offer, known as the August Offer, included giving full weight to minority opinions and allowing Indians to draft their own constitution.

• Under the Cabinet Mission Plan of 1946, elections were held for the first time for the Constituent Assembly.

• The Constitution of India was drafted by the Constituent Assembly, and it was implemented under the Cabinet Mission Plan on 16 May 1946.

• The members of the Constituent Assembly were elected by the provincial assemblies by a single, transferable-vote system of proportional representation.

• The total membership of the Constituent Assembly was 389 of which 292 were representatives of the provinces, 93 represented the princely states and four were from the chief commissioner provinces of Delhi, Ajmer-Merwara, Coorg, and British Baluchistan.

Q100. Answer: (c) Jammu and Kashmir

The correct answer is Jammu and Kashmir.

• Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) SEHAT scheme:

• Prime Minister Narendra Modi launched the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) SEHAT scheme.

• The main aim behind the scheme is to extend health insurance coverage to all residents of Jammu and Kashmir.

Key Points

• About the AB-PMJAY Scheme

• SEHAT stands for Social, Endeavour for Health and Telemedicine. It is a health insurance scheme for the Union Territory.

• It provides free-of-cost insurance cover to all the residents of the UT of J&K.

• Benefits:

• It also provides financial cover up to Rs.5 Lakh per family on a floater basis to all residents of the UT of J&K and an operational extension of PM-JAY to 15 lakh (approximately) additional families.

Additional Information

• Important points about PM- JAY

• It is the world's largest health insurance/assurance scheme fully financed by the government, provides a cover of Rs 500,000 per family per year for secondary and tertiary care hospitalisation across public and private empanelled hospitals in India.

• The benefit of Rs 5,00,000 is on a family floater basis. This means that it can be used by one or all members of the family.

• It covers medical procedures including oncology, cardiology, nephrology, etc, and up to three days of pre-hospitalisation and 15 days post-hospitalisation expenses like diagnostics and medicines are also included in the scheme.

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