SSC CHSL Tier-1 2024: Official Paper (Held On: 10 Jul, 2024 Shift 2) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2024 • 100 questions • 60 minutes • Answer key and solutions

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ENGLISH LANGUAGE

Q1. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

Since childhood, Monty / ate his food / fast and he / will not change.

(a) Since childhood, Monty
(b) fast and he
(c) will not change
(d) ate his food

Q2. The following sentence has been divided into four segments. Identify the segment that contains a grammatical error.

After your insistence, / my sister / checked / a mailbox again.

(a) a mailbox again.
(b) After your insistence,
(c) my sister
(d) checked

Q3. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

In order to connect / these themes to a wider / historical context, Rahul go / beyond aesthetic analysis.

(a) these themes to a wider
(b) historical context, Rahul go
(c) In order to connect
(d) beyond aesthetic analysis

Q4. The following sentence has been divided into four parts. Identify the part that contains an error.

(A) It is sad / (B) that you / (C) are believing / (D) in superstitious rituals.

(a) D
(b) B
(c) C
(d) A

Directions

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

There is nothing more (1)_____ than when you sit down at your table to study with the most sincere of intentions and instead of being able to finish the task at hand you find your thoughts (2)_____. However, there are certain techniques that you can use to (3)__ your concentration. To begin with, one should (4)__ to create the physical environment that is conducive to (5)___ thought.

Q5. Select the most appropriate option to fill in blank no. 1

(a) frustrating
(b) exciting
(c) interesting
(d) surprising

Q6. Select the most appropriate option to fill in blank no. 2.

(a) wandering
(b) interesting
(c) tiring
(d) worrying

Q7. Select the most appropriate option to fill in blank no. 3.

(a) enhance
(b) commit
(c) discover
(d) convince

Q8. Select the most appropriate option to fill in blank no. 4.

(a) attempt
(b) imagine
(c) announce
(d) lead

Q9. Select the most appropriate option to fill in blank no. 5.

(a) focussed
(b) joyful
(c) cautious
(d) dazzling

Q10. Select the most appropriate idiom to fill the blank in the given situation.

They were waiting for their family members who were returning from a pilgrimage. Therefore, they were _____ on the platform.

(a) playing a joke
(b) rolling up their sleeves
(c) running behind time
(d) pacing up and down

Q11. Select the most appropriate synonym of the underlined word.

The removal of petty. restrictions has made life easier.

(a) Big
(b) Large
(c) Consequential
(d) Small

Q12. Select the correct spelling of the underlined word in the given sentence.

She decided to file a complaint with HR after being harrasad by her supervisor for several weeks.

(a) harased
(b) harassed
(c) harrased
(d) harrassd

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Q13. Select the most appropriate option that can substitute the underlined words in the given sentence.

This newly arisen evidence could have proved to finally put the culprit behind bars.

(a) is proof
(b) can be proven
(c) could have been proven
(d) can proof

Q14. Select the most appropriate option to fill in the blank.

I am doubtful about his story, though you seem to be _____.

(a) pleasant
(b) convinced
(c) regretting
(d) uncertain

Q15. Select the most appropriate option that can substitute the underlined segment in the given sentence.

We shall rehearse thrice before the final performance at least we make errors in the dialogues.

(a) can we make errors
(b) lest we make errors
(c) but we make errors
(d) for we make errors

Q16. Select the most appropriate ANTONYM of the underlined word.

The government is planning to abolish child care leave for female employees.

(a) Eradicate
(b) Ensure
(c) Establish
(d) Encourage

Q17. Select the INCORRECTLY spelt word.

(a) Genuine
(b) Appraisal
(c) Definate
(d) Stretch

Q18. Select the most appropriate option to fill in the blank.

Seema has a dominating nature, so she wants to _____ of everything in her life.

(a) keep record
(b) keep touch
(c) keep calm
(d) keep control

Q19. Select the most appropriate meaning of the underlined idiom in the following sentence.

Manish told Rounak time and again of the ill consequences of his habit of being late to the college.

(a) Hardly ever
(b) At intervals
(c) Repeatedly
(d) Not often

Q20. Select the most appropriate option that can substitute the underlined word in the following sentence.

They studied during three hours.

(a) for
(b) from
(c) by
(d) at

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Q21. Select the most appropriate ANTONYM of the given word.

Powerful

(a) Impotent
(b) Wild
(c) Strong
(d) Manly

Q22. Select the most appropriate ANTONYM for the underlined word in the given sentence.

Because the politician made a candid speech, he earned the respect of the voters.

(a) Deceitful
(b) Reckless
(c) Reticent
(d) Prudent

Q23. Select the most appropriate synonym of the given word.

Estimate

(a) Profit
(b) Appropriate
(c) Verify
(d) Evaluate

Q24. Select the most appropriate ANTONYM of the given word.

Innovate

(a) Solve
(b) Invent
(c) Copy
(d) Finance

Q25. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select ‘No substitution required’.

If you give away smoking, your health will improve.

(a) give off
(b) give out
(c) No substitution required
(d) give up

GENERAL INTELLIGENCE

Q26. If 20 March 2011 was Sunday, then what was the day of the week on 20 March 2019?

(a) Monday
(b) Saturday
(c) Friday
(d) Wednesday

Q27. In a certain code language, 'PBI' is coded as '27' and 'ZEBRA' is coded as '125'. What is the code for 'BIRD' in the given code language?

(a) 37
(b) 25
(c) 49
(d) 64

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Q28. Select the correct mirror image of the given combination when the mirror is placed at MN as shown below.



(a)



(b)



(c)



(d)



Q29. Choose the alternative which closely resembles the mirror image of the given combination.



(a)



(b)



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(c)



(d)



Q30. What should come in place of ? in the given series based on the English alphabetical order?

JMP UZE FMT QZI ?

(a) LNP
(b) XHN
(c) SLP
(d) BMX

Q31. Three statements are followed by conclusions numbered I, II. You have to consider these statements to be true, even if they seem to be at variance with commonly known facts. Decide which of the given conclusions logically follow/s from the given statement.

Statements:

All water is earth.

All earth is fire.

Some fire is air.

Conclusion (I): Some air is earth.

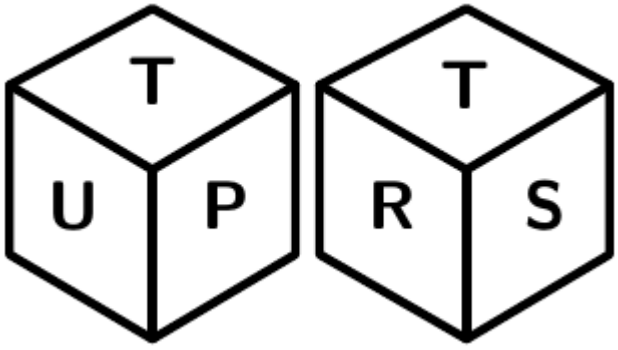
Conclusion (II): Some fire is water.

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

Q32. Three of the following four letter-clusters are alike in a certain way and thus form a group. Select the letter-cluster that does NOT belong to that group (Note: The odd one out is not based on the number of consonants/vowels or their position in the letter cluster)

(a) FJN
(b) LHJ
(c) QUY
(d) XBF

Q33. Six letters N, P, R, S, T and U are written on different faces of a dice. Two positions of this dice are shown in the figure. Which is the letter on the face opposite to the face containing U?



(a) S
(b) N

(c) R
(d) P

Q34. What should come in place of the question mark (?) in the given series?

13, 17, 26, ?, 67, 103, 152

(a) 42
(b) 33
(c) 47
(d) 59

Q35. What should come in place of the question mark (?) in the given series?

268, 259, 250, 241, 232, ?

(a) 220
(b) 223
(c) 221
(d) 224

Q36. 72 is related to 8 following a certain logic. Following the same logic, 198 is related to 22. To which of the following is 351 related following the same logic?

(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 /deleting /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) 41
(b) 37
(c) 39
(d) 43

Q37. Which of the following letter-clusters will replace the question mark (?) in the given series?

PAZ, REV, TIR, VOL, ?

(a) XUE
(b) XUF
(c) XVF
(d) XVG

Q38. What will come in the place of the question mark (?) in the following equation, if '+' and '-' are interchanged and '×' and '÷' are interchanged?

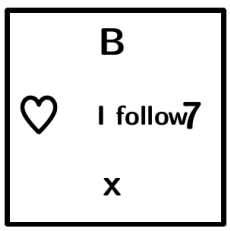
204 × 4 - 9 ÷ 2 + 6 = ?

(a) 61
(b) 64
(c) 62
(d) 63

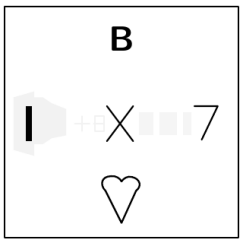
Q39. Identify the figure given in the options that when put in place of the question mark (?) will logically complete the series.



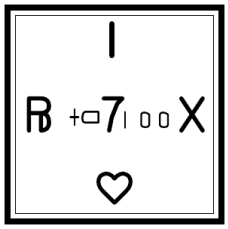
(a)



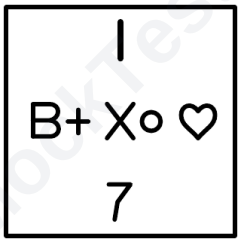
(b)



(c)



(d)



Q40. In a certain code language, 'cooler is hot' is written as 'tp rc dl' and 'hot weather comes' is written as 'rc dn nz'. How is 'hot' written in the given language?

(a) dn
(b) dl
(c) nz
(d) rc

Q41. What will come in the place of '?' in the following equation if '×' and '–' are interchanged and '+' and '÷' are interchanged?

36 + 18 × 9 ÷ 13 – 19 = ?

(a) 246
(b) 234
(c) 280
(d) 240

Q42. Select the correct mirror image of the given combination when the mirror is placed at MN as shown below.



(a)



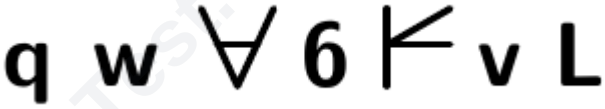
(b)



(c)



(d)



Q43. Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below.

(The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)

Strong : Robust

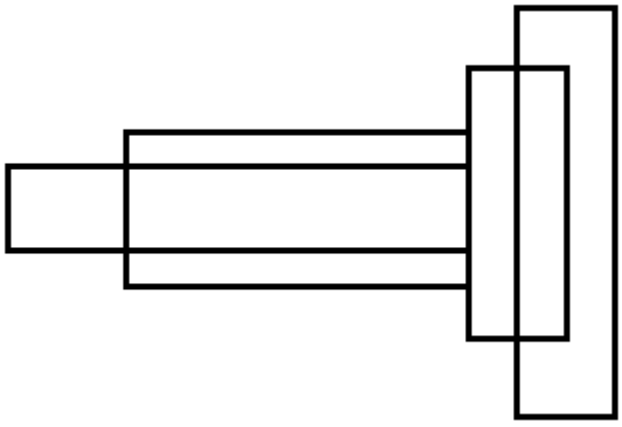
(a) Kind : Generous
(b) Brave : Fearful
(c) Knowledge : Ignorance
(d) Create : Destroy

Q44. If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-', what will come in place of the question mark (?) in the following equation?

82 B 6 D 114 A 2 C 35 = ?

(a) 470
(b) 480
(c) 450
(d) 460

Q45. How many rectangles are there in the given figure?



(a) 7
(b) 6

(c) 8
(d) 5

Q46. The position of how many letters will remain unchanged if each of the letters in the word DETAIL is arranged in the alphabetical order?

(a) One
(b) Two
(c) Three
(d) None

Q47. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

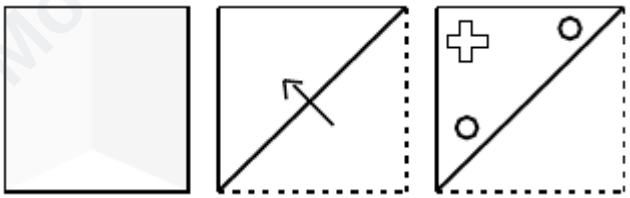
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g., 13 – Operations on 13 such as adding/deleting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3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

(6, 12, 48)

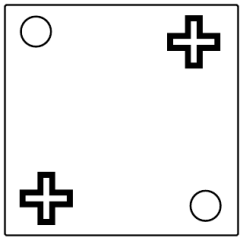
(8, 16, 64)

(a) (14, 28, 112)
(b) (12, 28, 112)
(c) (14, 28, 110)
(d) (14, 24, 112)

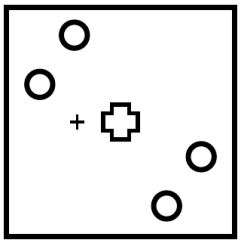
Q48. A paper is folded and cut as shown below. How will it appear when unfolded?



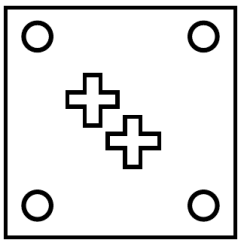
(a)



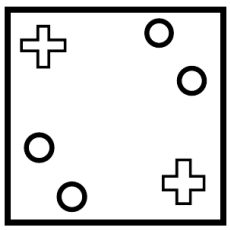
(b)



(c)



(d)



Q49. Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)

Dawn - Sunrise

(a) Easy - Simple
(b) Touch - Toes
(c) Old - New
(d) Joy - Sad

Q50. In a certain code language,

'M & N' means 'M is the wife of N',

'M @ N' means 'M is the brother of N',

'M $ N' means 'M is the daughter of N',

'M # N' means 'M is the son of N'.

Based on the above, how is Q related to N if 'N # M @ O $ P & Q'?

(a) Brother
(b) Father
(c) Mother's father
(d) Father's father

QUANTITATIVE APTITUDE

Q51. P got married 15 years ago. Today her age is 13/5 times her age at the time of her marriage. At present her son's age is 1/5 of her age. What was her son's age 4 years ago as a fraction of P's age at that time?

(a) 1/9
(b) 1/8
(c) 1/10
(d) 5/9

Q52. A cube of edge 4 cm is cut into cubes each of edge of 2 cm. The ratio of the total surface area of one of the small cubes to that of the large cube is equal to:

(a) 1 : 64
(b) 1 : 8
(c) 1 : 16
(d) 1 : 4

Q53. The length (in cm) of a direct common tangent to two circles of radii 14 cm and 5 cm whose centres are separated by a distance of 40 cm is:

(a) 41 cm
(b) √1539 cm
(c) √1519 cm
(d) 40 cm

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Q54. The curved surface area of a right circular cone is 20π cm². If its radius is 4 cm, then find the volume of cone.

(a) 20 π cm³
(b) 16 π cm3
(c) 18 π cm3
(d) 21 π cm3

Q55. When 12 is subtracted from a number, it reduces to its 40%. Two-fifth of that number is:

(a) 8
(b) 20
(c) 12
(d) 50

Q56. A vendor buys 20 dozen bananas for Rs. 1,200 and sells 5 dozen for Rs. 350, then his gain percentage is:

(a) 15 1/3%
(b) 21 1/3 %
(c) 16 2/3 %
(d) 13 2/3 %

Q57. The volume of the hemisphere (to the nearest integer) with a radius of 5.5cm is (use $\pi = 3.14$):

(a) 325 cm3
(b) 362 cm3
(c) 378 cm3
(d) 348 cm3

Q58. In an isosceles triangle ABC, AB=AC. D is a point inside the triangle such that angle BAD = 20° = angle DCB, angle CAD = 80°. The value of angle ABC is:

(a) 25°
(b) 20°
(c) 15°
(d) 40°

Q59. Ratna buys 10 kg of rice for Rs. 88 per kg and another 20 kg of rice for Rs. 187 per kg. What is the per kg cost (in Rs.) of the total mixture of rice for her?

(a) 150
(b) 148
(c) 154
(d) 158

Q60. P and Q can do a work in 12 days and 9 days, respectively. They both worked together and earned Rs. 63,000. The share of P (in Rs.) is:

(a) 36,000
(b) 21,000
(c) 9,000
(d) 27,000

Q61. A policeman was asked to chase a thief. Before the policeman started the chase, he realised that the thief was 200 metres ahead of him and was running at a speed of 16 km/h. The policeman started the chase at a speed of 20 km/h. How far will the thief run before he is overtaken by the policeman?

(a) 600 m
(b) 800 m
(c) 1000 m
(d) 700 m

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Q62. Shopkeeper A marks up his price for an item at 25% and offers a discount of 15%. The same item is marked at 20% by another shopkeeper B and sold at a discount of 12%. Who gets a better deal in terms of % profit and by what profit percentage he sells that item?

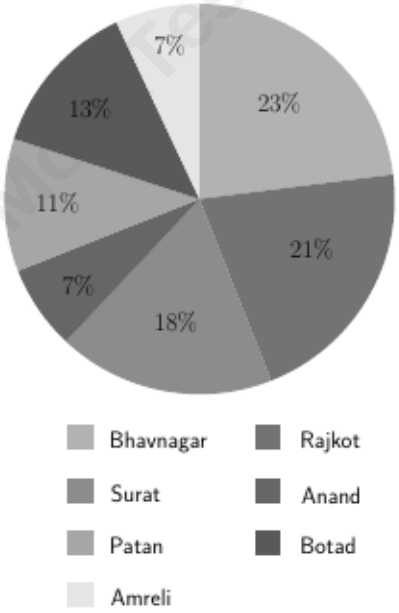
(a) B by 5.6%
(b) B by 0.65%
(c) A by 0.55%
(d) A by 6.25%

Q63. If A = 9/16 ÷ 25/36, B = 9 ÷ [(16 ÷ 25) ÷ 36], C = [9 ÷ (16 ÷ 25)] ÷ 36, D = (9 ÷ 16) ÷ (25 ÷ 36), then which of the following is true?

(a) C and D are equal.
(b) A and D are equal.
(c) B and D are equal.
(d) A and B are equal.

Q64. The given pie chart shows the total number of passengers (in percentage) travelling from Ahmedabad junction to various districts. Study the pie chart and answer the question that follows.

Total number of passengers travelling from Ahmedabad junction to various districts = 8,000



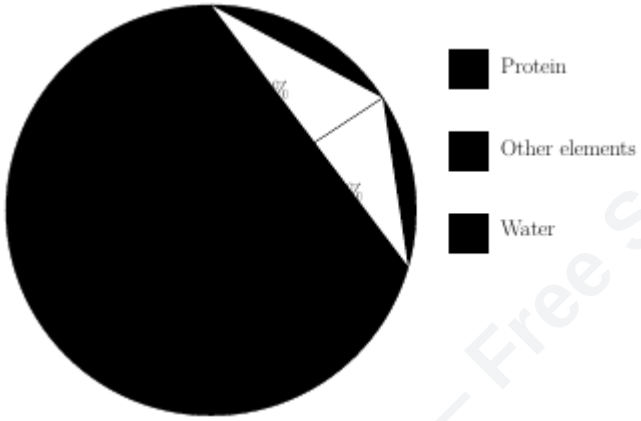
What is the average number of passengers travelling from Ahmedabad to Surat, Botad and Bhavanagar together?

(a) 1360
(b) 1440
(c) 1510
(d) 1220

Q65. After an increase of 9% in salary, a person received Rs. 6,300. What was his salary before the increase (consider integral part only)?

(a) Rs. 5,779
(b) Rs. 5,000
(c) Rs. 4,000
(d) Rs. 3,879

Q66. The following pie chart gives the distribution of constituents in the human body.



What is the central angle of the sector showing the distribution of protein and other constituents?

(a) 34°
(b) 45°
(c) 120°
(d) 108°

Q67. The following table shows the production of food grains in a country over five years.

Year	Production (in ten lakh tonnes)			
Wheat	Rice	Maize	Other grains	
2016-17	650	250	200	450
2017-18	800	440	240	400
2018-19	680	390	220	500
2019-20	700	400	260	480
2020-21	640	440	300	520

What was the percentage increase in the production of rice in 2020-21 in comparison to the previous year?

(a) 10%
(b) 20%
(c) 40%
(d) 25%

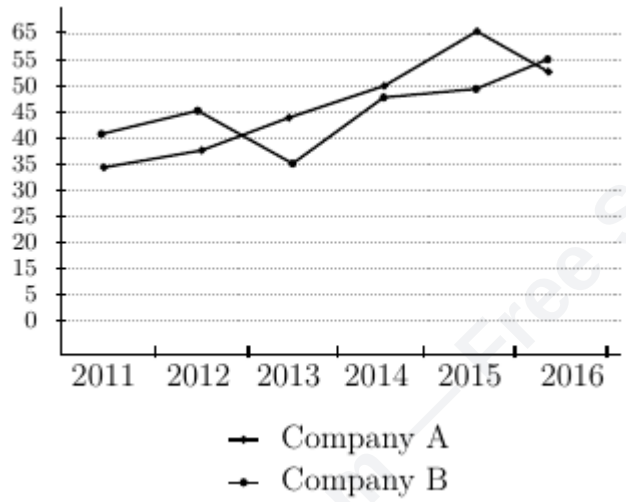
Q68. If A = 60[6/25 ÷(16/15 of 3/8)+5-(1-2 1/12)], then the sum of the digits of A is:

(a) 3
(b) 5
(c) 7
(d) 6

Q69. Study the given graph and answer the question that follows.

The graph shows the profit percentage earned by two companies - A and B over a period of six years.

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If the income of the company A in the year 2012 was Rs. 6.425 lakh, what was its expenditure in that year?

(a) Rs. 4.43 lakh
(b) Rs. 4.7 lakh
(c) Rs. 5.2 lakh
(d) Rs. 4.5 lakh

Q70. The ratio of the outer and the inner circumference of a circular path is 7 : 6. If the path is 45 m wide, then what is the radius (in m) of the inner circle?

(a) 270
(b) 240
(c) 150
(d) 120

Q71. In an election there were three candidates. The first candidate got 40% votes and second candidate got 35% votes. If the total votes in the election are 50,000, find the number of votes got by the third candidate.

(a) 13,500
(b) 1250
(c) 12000
(d) 12500

Q72. If x : y = 5 : 6, then 2x + 3y : 3x + 5y is:

(a) 18 : 45
(b) 18 : 35
(c) 28 : 48
(d) 28 : 45

Q73. A certain sum of money is lent out at simple interest. If that money becomes Rs. 24,000 in 2 years and Rs. 32,000 in 4 years, the annual rate of interest is:

(a) 25%
(b) 20%
(c) 16%
(d) 30%

Q74. If f(p) = sin^(p + 2)x + cos^(p + 2)x, then the value of 6f(2) - 4f(4) + 10f(0) is:

(a) 14
(b) 12
(c) 11
(d) 10

Q75. A line from point A is drawn that is tangent to the circle at point B. A secant is also drawn from point A to the circle intersecting it at points C and D. If AB = 42 cm and AC = 21 cm, then what is the ratio between AB and CD?

(a) 2 : 3
(b) 2 : 5
(c) 3 : 2
(d) 3 : 4

GENERAL AWARENESS

Q76. The Gulf of Khambhat, the Gulf of Kutch and Gangetic delta provide ideal conditions for utilising _____energy.

(a) geo thermal
(b) atomic
(c) tidal
(d) solar

Q77. The founder of the Pala empire was:

(a) Gopala
(b) Dharmapala
(c) Rayala
(d) Devapala

Q78. As of 2022, which among of the following is the leading tidal energy generation site of India?

(a) Gulf of Kutch
(b) Gulf of Mannar
(c) Seashore of Maharashtra
(d) Sunderbans

Q79. What is the minimum number of football players required in a team for a match to start?

(a) 10
(b) 8
(c) 7
(d) 11

Q80. In the year 2021, the Department of Public Enterprises has now been made part of the _____ Ministry, to speed up the privatisation process and exercise greater financial control over the state-run-enterprises.

(a) Heavy Industries and Public Enterprises
(b) Finance
(c) Commerce and Industry
(d) Micro, Small and Medium Enterprises

Q81. Which of the following muscles regulates the exit of food from the stomach into the small intestine?

(a) Rectus
(b) Pectoralis
(c) Gastrocnemius
(d) Sphincter

Q82. Bharatanatyam dance form is associated with:

(a) Haryana
(b) Tamil Nadu
(c) Karnataka
(d) Himachal Pradesh

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Q83. What function does the public key serve in digital signature verification?

(a) To decrypt the digital signature
(b) To encrypt the digital signature
(c) To calculate the hash value of the message or file content
(d) To ensure confidentiality during transmission

Q84. How many basic talams are there in Indian Classical Carnatic music?

(a) 37
(b) 7
(c) 21
(d) 11

Q85. 'Tamu Lochar' is one of the traditional festivals of the _____ of Sikkim. It is celebrated to mark the beginning of their new year, which falls on the 15^(th) day of Pusa, according to the Hindu calendar Vikram Samvat and 30^(th) December in the English calendar.

(a) Lepcha community
(b) Gurung community
(c) Mangar community
(d) Bhutia community

Q86. Which of the following is an example of multi-factor authentication for PC security?

(a) Antivirus software
(b) Fingerprint scan
(c) OS protection
(d) Firewall protection

Q87. Which of the following is the official language of Afghanistan?

(a) Dari
(b) Turkmen
(c) Dhivehi
(d) Uzbek

Q88. Which of the following awards is presented for lifetime achievement in sports and games? It was instituted to honour those sportspersons who have contributed to sports by their performance and continue to contribute to the promotion of sports even after their retirement from an active sporting career.

(a) Arjuna Award
(b) Major Dhyan Chand Khel Ratna
(c) Dronacharya Award
(d) Dhyanchand Award

Q89. With which Gharana is the famous Tarana singer, Pandit Rattan Mohan Sharma associated?

(a) Agra Gharana
(b) Talwandi Gharana
(c) Mewati Gharana
(d) Patiala Gharana

Q90. Match the items in List I with those in List II.

List I	List II		
i.	Balanced Growth Theory	a.	Rosenstein Rodan
ii.	Big Push Theory	b.	Feldman-Mahalanobis
iii.	Secular Deterioration	c.	Ragnar Nurkse
iv.	Capital Goods and Heavy Industry	d.	Prebisch-Singer

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(a) i - a, ii - b, iii - d, iv - c
(b) i - c, ii - a, iii - d, iv - b
(c) i - d, ii - a, iii - b, iv - c
(d) i - c, ii - d, iii - a, iv - b

Q91. Which of the following is a feature of Directive Principles of State Policy, and also distinguishes it from Fundamental Rights?

(a) It is non-justiciable.
(b) It is justiciable.
(c) It is prohibitive in nature.
(d) It protects the interest of the individual.

Q92. Which was the first socio-religious organisation established in Bombay in 1840 to work for the annihilation of caste?

(a) Dharma Sabha
(b) Vishwa Jain Sangathan
(c) Satyashodhak Samaj
(d) Paramhans Mandali

Q93. The catchphrase of which census is ‘Our census, our future’?

(a) 2011
(b) 2001
(c) 1981
(d) 1991

Q94. Which of the following is NOT applicable to force?

(a) Force may make an object move
(b) Force may change the direction of a moving object
(c) Force may change the shape of an object
(d) Force may increase the mass of the object

Q95. ‘Reservation in promotion’ comes under which Article of the Constitution?

(a) Article 14 (4A)
(b) Article 15 (3B)
(c) Article 16 (4A)
(d) Article 19 (2)

Q96. Who took oath as the Chief Minister of Karnataka, in May 2023?

(a) MK Stalin
(b) Siddaramaiah
(c) DK Sivakumar
(d) Mallikarjun Kharge

Q97. How many times has India hosted the ICC Men’s T-20 Cricket World Cup as of 2023?

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

Q98. Which planet is the second largest planet in our solar system and also has the biggest and brightest rings around it?

(a) Earth
(b) Jupiter
(c) Saturn
(d) Uranus

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Q99. Competitive behaviour and competitive market structure are _____ related.

(a) inversely
(b) directly
(c) not
(d) proportionately

Q100. Which of the following is NOT a condition for acquiring the citizenship of India?

(a) Domicile
(b) Holding property
(c) Descent
(d) Registration

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) ate his food

The correct answer is Option 4)

Key Points

• The verb tense in the fourth part of the sentence, 'ate his food', is incorrect.
• The sentence describes an ongoing characteristic from childhood to the present, so the present perfect tense should be used.
• The correct form should be 'has eaten his food' to indicate the action started in the past and continues to the present.
• Hence, the correct answer is option 4)

Correct sentence: Since childhood, Monty has eaten his food fast and he will not change.

Additional Information

• When describing actions or states that began in the past and continue to the present, the present perfect tense is used.
• Example: She has lived in New York since 2010.
• The present perfect is formed using 'has/have + past participle' of the verb.
• Example: They have finished their homework.

Q2. Answer: (a) a mailbox again.

The correct answer is Option 1)

Key Points

• The phrase "a mailbox again" should be corrected to "the mailbox again" to make the sentence grammatically correct.
• The word "a" suggests any mailbox, whereas "the" specifies a particular mailbox that is already known to the speaker and listener.
• Therefore, the correct phrase should be "the mailbox again".
• Hence, the correct answer is option 1.

Correct sentence: After your insistence, my sister checked the mailbox again.

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Additional Information

• In English grammar, definite and indefinite articles ("the" and "a" or "an") are used to indicate specificity or generality respectively.

• "The" is used when referring to something specific or previously mentioned.

• "A" or "an" is used when referring to something in a general sense or when it is mentioned for the first time.

Q3. Answer: (b) historical context, Rahul go

The correct answer is Option 2)

Key Points

• In the third part of the given sentence, the singular form of the verb 'go' is incorrect.

• In the given sentence, the subject Rahul is singular.

• The verb should agree in number with the subject. Since Rahul is singular, the verb should be goes.

• Example: Rahul goes to the market every Sunday.

• Therefore, the singular form of the verb 'goes' should be used in place of the plural form 'go'.

• Hence, the correct answer is option 2.

Correct sentence: In order to connect these themes to a wider historical context, Rahul goes beyond aesthetic analysis.

Q4. Answer: (c) C

The correct answer is Option 3.

Key Points

• The verb "are believing" is incorrect because "believe" is a stative verb and is typically not used in continuous forms.

• The correct form should be "believe."

• Thus, the error is located in part C of the sentence.

Therefore, the correct answer is C.

Correct Sentence: "It is sad that you believe in superstitious rituals."

Additional Information

• A: "It is sad" – This part of the sentence is grammatically correct and does not require any changes.

• B: "that you" – This part of the sentence is grammatically correct and does not require any changes.

• D: "in superstitious rituals." – This part of the sentence is grammatically correct and does not require any changes.

• No error – This would be the correct option if there were no mistakes in the sentence, but there is an error in part C.

Q5. Answer: (a) frustrating

The correct answer is Option 1)

Key Points

• Context of Difficulty: The passage discusses the frustration of trying to concentrate but being unable to, which implies a negative, challenging situation.

• Sincere Intentions: The phrase "with the most sincere of intentions" suggests that the person is making a genuine effort to focus, only to be thwarted.

• Common Emotion: Frustration is a common emotion experienced when one’s efforts are continually disrupted or when expected results are not achieved.

• Relevance to the Situation: The context of being unable to complete a task due to wandering thoughts clearly indicates a negative emotional response, making "frustrating" the apt choice.

• Logical Flow: The word "frustrating" logically completes the sentence, maintaining the continuity of the discussion about challenges in concentration.

• Opposite Outcomes: The other options like "exciting", "interesting", and "surprising" convey positive or neutral emotions, which do not align with the difficulty expressed in the passage.

Therefore, the correct answer is 'Option 1'.

Additional Information

• Exciting: This would imply a positive feeling, which is not fitting in a context describing a challenge.

• Interesting: While this suggests engagement, it fails to capture the negative aspect of being unable to concentrate.

• Surprising: Indicates an unexpected outcome, which does not convey the emotional difficulty described.

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Q6. Answer: (a) wandering

The correct answer is Option 1)

Key Points

• Context of Distraction: The passage describes a scenario where one is unable to concentrate on studying, and their thoughts are not focused.

• Logical Continuation: The word "wandering" logically follows the context of being unable to complete the task due to distractions.

• Appropriate Description: "Wandering" accurately describes thoughts that are unfocused and moving aimlessly, which fits the situation of interrupted concentration.

• Consistency with Initial Sentence: The earlier mention of "sincere intentions" contrasts well with thoughts that are "wandering," emphasizing the struggle to maintain focus.

• Relevance to Techniques: The passage later discusses techniques to improve concentration, which aligns with the need to address "wandering" thoughts.

• Common Expression: The phrase "wandering thoughts" is a commonly used expression to describe a lack of focus, making it a familiar and understandable choice.

Therefore, the correct answer is 'Option 1'.

Additional Information

• Interesting: Would imply engagement and curiosity, which do not fit the context of interrupted concentration.

• Tiring: Suggests fatigue, which is not directly related to the inability to focus.

• Worrying: Indicates a state of anxiety or concern, which is different from the mere distraction of thoughts.

Q7. Answer: (a) enhance

The correct answer is Option 1)

Key Points

• Context of Improvement: The passage discusses techniques to improve the state of concentration, indicating a need to elevate or increase focus.

• Appropriate Action: The word "enhance" means to improve the quality, value, or extent of something, which fits the goal of increasing concentration.

• Logical Fit: "Enhance" logically completes the sentence by suggesting that concentration is something that can be made better through specific techniques.

• Related to Techniques: The use of the word "enhance" aligns well with the actionable methods or practices that can be used to boost concentration.

• Conducive Environment: The passage later mentions creating an environment conducive to thought, which supports the idea of enhancing one's ability to concentrate.

• Common Usage: "Enhance concentration" is a commonly used phrase in educational and cognitive contexts, making it an easily understood and appropriate choice.

Therefore, the correct answer is 'Option 1'.

Additional Information

• Commit: Implies a promise or dedication, which does not directly relate to the act of improving concentration.

• Discover: Means to find something that was not known before, which is unrelated to increasing the level of concentration.

• Convince: Means to persuade someone to do something, which does not align with the idea of improving one's own concentration.

Q8. Answer: (a) attempt

The solution is in Hindi. Read it online.

Q9. Answer: (a) focussed

The correct answer is Option 1)

Key Points

• Context of Study Environment: The passage discusses creating an environment that supports concentration, implying a need for focused thought.

• Consistency with Goal: The goal is to enhance concentration, and a focused environment aligns perfectly with this objective by eliminating distractions.

• Logical Continuation: "Focused thought" logically follows the context of trying to complete a task with concentration; it indicates clarity and concentration in one's thinking process.

• Conducive Environment: A physical environment that promotes "focused thought" is critical for studying or any cognitive task, making this the appropriate complement.

• Common Usage: The term "focused thought" is commonly used in educational and productivity contexts, making it a recognizable and relevant choice.

• Alignment with Techniques: Techniques to improve concentration would naturally lead to creating an environment that supports focused thought.

Therefore, the correct answer is 'Option 1'.

Additional Information

• Joyful: Suggests an environment that promotes happiness, which is not directly related to promoting focus and concentration.

• Cautious: Implies being careful or wary, which does not align with the context of concentrating or focused thinking.

• Dazzling: Conveys something that is extremely bright or impressive, which could actually distract rather than promote concentration.

Q10. Answer: (d) pacing up and down

The correct answer is Option 4)

Key Points

• The idiom pacing up and down suits the situation where someone is waiting anxiously or impatiently.

• Hence, the correct sentence is "They were waiting for their family members who were returning from a pilgrimage. Therefore, they were pacing up and down on the platform."

Additional Information

• The other idioms provided do not fit contextually:

• Playing a joke: This is not relevant to waiting anxiously.

• Rolling up their sleeves: This implies preparing for work or a challenge, not waiting.

• Running behind time: This suggests being late, which is not the same as waiting for someone else's arrival.

Q11. Answer: (d) Small

The solution is in Hindi. Read it online.

Q12. Answer: (b) harassed

The solution is in Hindi. Read it online.

Q13. Answer: (a) is proof

The correct answer is Option 1)

Key Points

• In the given sentence, the phrase 'newly arisen evidence could have proved' is incorrect.

• The word 'evidence' is a singular noun and it should be followed by a singular verb.

• The correct phrase should be 'is proof' as it correctly matches the singular noun 'evidence'.

• Therefore, the correct phrase should be 'This newly arisen evidence is proof to finally put the culprit behind bars.'.

• Hence, the correct answer is option 1.

Correct sentence: This newly arisen evidence is proof to finally put the culprit behind bars.

Additional Information

• The word 'proof' is a noun and should be used correctly in sentences to match the context and grammatical structure.

• Ensure that the verb form matches the noun it refers to in terms of singularity or plurality.

• For example, 'The documents are proof of his innocence.' Here, 'documents' is plural and matches the plural verb 'are'.

Q14. Answer: (b) convinced

The correct answer is Option 2)

Key Points

• In the given sentence, there is a contrast between the speaker's doubt and the listener's certainty.

• The idiom convinced fits well here to express certainty about the story.

• Hence, the correct statement is: I am doubtful about his story, though you seem to be convinced.

Additional Information

• The other options do not appropriately complete the contrast:

• Pleasant: Refers to being agreeable or enjoyable, does not fit the context of belief or doubt.

• Regretting: Refers to feeling remorse, not relevant to the contrast in belief.

• Uncertain: Would imply both parties are doubtful, which does not match the context given.

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Q15. Answer: (b) lest we make errors

The correct answer is Option 2)

Key Points

• The phrase lest means "to avoid the risk of" or "for fear that," making it the correct choice in this context.

• The correct statement should read "We shall rehearse thrice before the final performance lest we make errors in the dialogues."

Additional Information

• The other options do not fit the contextually correct intention of preventing errors:

• Can we make errors: This does not fit logically or grammatically.

• But we make errors: This indicates a contrast, not prevention of errors.

• For we make errors: This indicates a reason, not prevention.

Q16. Answer: (c) Establish

The solution is in Hindi. Read it online.

Q17. Answer: (c) Definate

The solution is in Hindi. Read it online.

Q18. Answer: (d) keep control

The correct answer is Option 4)

Key Points

• Seema has a dominating nature, so she wants to keep control of everything in her life.

• The phrase 'keep control' is the most appropriate option because it implies exerting influence or authority over something.

• Other options like 'keep record', 'keep touch', and 'keep calm' do not fit the context of dominating nature.

• Hence, the correct answer is option 4.

Correct sentence: Seema has a dominating nature, so she wants to keep control of everything in her life.

Additional Information

• In English, certain phrases fit specific contexts better. For instance, 'keep control' is used when exerting authority or influence is implied.

• Other phrases like 'keep record' mean to maintain records, 'keep touch' means to stay in contact, and 'keep calm' means to stay composed.

Q19. Answer: (c) Repeatedly

The correct answer is Option 3)

Key Points

• Definition: The idiom "time and again" means doing something on multiple occasions, which aligns directly with the meaning of "repeatedly."

• Context of Use: In the sentence, Manish warned Rounak multiple times about the consequences, indicating a repetitive action.

• Synonym Fit: "Repeatedly" is a synonym for "time and again," meaning the same action is performed over and over.

• Frequency Implication: The idiom implies a sense of persistent effort or action, which is captured well by the word "repeatedly."

• Consistency: Using "repeatedly" maintains the sentence's original intent of emphasizing the numerous warnings given by Manish.

• Common Recognition: "Repeatedly" is a familiar and commonly understood word that accurately conveys the intended meaning of the idiom.

Therefore, the correct answer is 'Option 3'.

Additional Information

• Hardly ever: Means very rarely, which contradicts the repeated nature of the idiom.

• At intervals: Implies occasional actions at specific times, which does not capture the repetitive frequency.

• Not often: Indicating infrequent actions, which is opposite to the frequent actions implied by the idiom.

Q20. Answer: (a) for

The correct answer is Option 1)

Key Points

• In the given sentence, the preposition 'during' is incorrect.

• The preposition 'for' is used to indicate a period of time.

• Therefore, the correct preposition 'for' should be used in place of 'during'.

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• Hence, the correct answer is option 1.

Correct sentence: They studied for three hours.

Additional Information

• The preposition 'during' is used to indicate a period of time within which an action happens, but it is not used to indicate the duration of an action.

• Example: She read a book during the flight.

• The preposition 'for' is used to indicate the length of time an action continues.

• Example: She read a book for two hours.

Q21. Answer: (a) Impotent

The solution is in Hindi. Read it online.

Q22. Answer: (a) Deceitful

The solution is in Hindi. Read it online.

Q23. Answer: (d) Evaluate

The solution is in Hindi. Read it online.

Q24. Answer: (c) Copy

The solution is in Hindi. Read it online.

Q25. Answer: (d) give up

The correct answer is Option 4)

Key Points

• The phrase 'give away' is incorrect in this context.

• The correct phrasal verb to use is 'give up', which means to quit or stop doing something.

• The phrasal verbs 'give off' and 'give out' do not fit the context of quitting smoking.

• Example: If you give up smoking, your health will improve.

• Therefore, the correct phrase to be used is 'give up' in place of 'give away'.

• Hence, the correct answer is option 4.

Correct sentence: If you give up smoking, your health will improve.

Additional Information

• The phrasal verb 'give off' means to emit or release something.

• Example: The flowers give off a pleasant fragrance.

• The phrasal verb 'give out' means to distribute something.

• Example: The teacher gave out the test papers to the students.

Q26. Answer: (d) Wednesday

Given: 20 March 2011 was Sunday.

Now,

2011 to 2019 = 8 Years (6 Ordinary Year and 2 Leap Year).

And, In 8 Years = 2 Leap years and 6 Ordinary Year.

So, 2 Leap Year has 4 odd days,

And, 6 Ordinary Year has 6 odd days.

Total odd days = 4 + 6 = 10.

10 odd days → 10/7 = 1 week and 3 odd days.

then, 20 March 2019 will be Sunday + 3 = Wednesday.

Hence, the correct answer is "Option 4".

Q27. Answer: (d) 64

The logic followed here is:

Logic: (Number of letters in the word)^3 = Code.

Now,

'PBI' is coded as '27'

PBI has 3 letters, so → $3^3 = 27$.

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'ZEBRA' is coded as '125'

ZEBRA has 5 letters, so → 53 = 125.

Similarly, for 'BIRD'

BIRD has 4 letters, so → 43 = 64.

'BIRD' will be coded as '64'.

Hence, the correct answer is "Option 4".

Q28. Answer: (b) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 2".

Q29. Answer: (d) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 4".

Q30. Answer: (d) BMX

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q31. Answer: (a) Only conclusion (II) follows.

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

Conclusions:

I. Some air is earth → Does not follow (As all earth is fire and some fire is air. So it is possible but not definite.)

II. Some fire is water → Follow (As all water is earth. So whole water comes in earth which whole comes in fire, therefore, some fire is earth is true.)

Therefore Here, Only conclusion (II) follows.

Hence, the correct answer is "Only conclusion (II) follows"

Q32. Answer: (b) LHJ

The logic followed here is:

So,

Option - 1) FJN

Option - 2) LHJ

Option - 3) QUY

Option - 4) XBF

Thus, out of all options "LHJ" is the odd one out.

Hence, "Option 2" is the correct answer.

Q33. Answer: (c) R

The logic followed here is :-

From the given two different cubes the adjacent sides are as shown below :

As T is common on both the dice, it is clear that U, P, R, and S are adjacent to it, and the remaining i.e., N will be opposite to it.

Opposite pairs:

P → S

U → R

T → N

So, the opposite side of "R" will be side "U".

Hence, the correct answer is "R".

Q34. Answer: (a) 42

The logic followed here is:

Hence, "42" is the correct answer.

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Q35. Answer: (b) 223

The logic followed here is:

Hence, "223" is the correct answer.

Q36. Answer: (c) 39

The logic followed here is:

Logic: 1st number ÷ 9 = 2nd number.

Now,

For, 72 : 8

=> 72 ÷ 9 = 8.

For, 198 : 22

=> 198 ÷ 9 = 22.

Similarly, for 351 : ?

=> 351 ÷ 9 = 39.

Hence, the correct answer is "Option 3".

Q37. Answer: (b) XUF

The logic followed here is:

Hence, "Option 2" is the correct answer.

Q38. Answer: (d) 63

Given : 204 × 4 - 9 ÷ 2 + 6 = ?

According to the question, after replacing the signs :

‘+’ and ‘-’ are interchanged

‘×’ and ‘÷’ are interchanged

So,

204 ÷ 4 + 9 × 2 - 6 = ?

51 + 9 × 2 - 6 = ?

51 + 18 - 6 = ?

69 - 6 = ?

63 = ?

Hence, "63" is the correct answer.

Q39. Answer: (d) [figure]

The logic followed here is :

1) First box alternate series → First row and third column element interchange positions and the rest elements shift in the clockwise direction.

2) Second box alternate series → First column and third-row element interchange positions and the rest elements shift in the clockwise direction.

Thus, the final series is :

Hence, "Option 4" is the correct answer.

Q40. Answer: (d) rc

According to the given information,

Thus, according to the given codes 'rc' is the code for the word 'hot'.

Hence, the correct answer is "rc".

Q41. Answer: (d) 240

Given : 36 + 18 × 9 ÷ 13 – 19 = ?

According to the question, after replacing the signs :

‘+’ and ‘÷’ are interchanged

‘×’ and ‘-’ are interchanged

So,

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36 ÷ 18 - 9 + 13 × 19 = ?

2 - 9 + 13 × 19 = ?

2 + 247 - 9 = ?

249 - 9 = ?

240 = ?

Hence, "240" is the correct answer.

Q42. Answer: (c) [figure]

The correct mirror image of the given figure is:

Hence, the correct answer is "Option 3".

Q43. Answer: (a) Kind : Generous

The logic followed here is:

Logic: Synonyms - Words with similar meanings.

Here,

Strong : Robust → Strong and Robust are words with similar meanings (synonyms).

Similarly,

Kind : Generous → Kind and Generous are also words with similar meanings (synonyms).

Hence, the correct answer is "Option 1".

Q44. Answer: (a) 470

Given Equation: 82 B 6 D 114 A 2 C 35 = ?

BODMAS Rule:

Decoding the given information:

Alphabet	A	B	C	D
Meaning	÷	×	•	•

Now replacing the sign from left to right using BODMAS Rule, we get:

=> 82 × 6 - 114 ÷ 2 + 35 = ?

=> 82 × 6 - 57 + 35 = ?

=> 492 - 57 + 35 = ?

=> 527 - 57 = 470

Hence, the correct option is "Option 1".

Q45. Answer: (a) 7

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

Here, as marked there are a total of 7 rectangles.

Hence, "7" is the correct answer.

Q46. Answer: (d) None

Given word: 'DETAIL'

After arranged in alphabetical order:

Alphabets	D	E	T	A	I	L
Alphabetical order	A	D	E	I	L	T

Now,

there is no alphabet that will remain unchanged if each of the letters in the word 'DETAIL' is arranged in English alphabetical order.

Hence, the correct answer is "Option 4".

Q47. Answer: (a) (14, 28, 112)

The logic followed here is:

Logic: 1st number × 2 = 2nd number; 2nd number × 4 = 1st number.

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Now,
For, (6, 12, 48)
=> (6 × 2 = 12) and (12 × 4 = 48).
For, (8 : 16 : 64)
=> (8 × 2 = 16) and (16 × 4 = 64).
Similarly, For, (14 : 28 : 112)
=> (14 × 2 = 28) and (28 × 4 = 112).
Hence, the correct answer is "Option 1".

Q48. Answer: (d) [figure]

According to the given figure:
The figure will appear when it is opened as follows:
Hence, "Option 4" is the correct answer.

Q49. Answer: (a) Easy - Simple

html
The logic followed here is:
Logic: Synonymous Relationship.
Here,
Dawn : Sunrise → Dawn and Sunrise are synonymous because they both refer to the early morning time when the sun begins to rise.
Similarly,
Easy : Simple → Easy and Simple are synonymous because they both refer to something that is not difficult.
Hence, the correct answer is "Option 1".

Q50. Answer: (d) Father’s father

Decoding the Symbols:

Symbol	**&**	**@**	**$**	**#**
Meaning	Wife	Brother	Daughter	Son

Given: N # M @ O $ P & Q
N # M → N is the son of M.
M @ O → M is the brother of O.
O $ P → O is the daughter of P.

P & Q → P is the wife of Q.
Here, Q is the paternal grandfather or father's father of N.
Hence, the correct answer is "Option 4".

Q51. Answer: (a) 1/9

Shortcut Trick
Ratio of P's present age to age at marriage = 1(3/5) = 8 : 5.
Difference of 3 parts = 15 years => 1 part = 5 years.
P's present age = 8 × 5 = 40 years.
Son's present age = 40 × (1/5) = 8 years.
4 years ago, Son = 4 years and P = 36 years. Required fraction = 4 / 36 = 1/9.
Therefore The correct answer is 1/9.
Alternate Method
Given:
P's present age = 1(3/5) × (P's age 15 years ago) = 8/5 × (P's age 15 years ago)
Son's present age = 1/5 × (P's present age)
Age Timeline
Present Age

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P = 40 yrs

Son = 8 yrs

4 Years Ago

P = 36 yrs

Son = 4 yrs

− 4 years

Ratio = 4 / 36 = 1 / 9

Calculations:

=> Let P's present age be x.

=> Age of P 15 years ago = x − 15

=> x = (8/5) × (x − 15)

=> 5x = 8x − 120

=> 3x = 120

=> x = 40 years

=> P's present age = 40 years.

=> Present age of son = (1/5) × 40 = 8 years.

=> 4 years ago, P's age = 40 − 4 = 36 years.

=> 4 years ago, Son's age = 8 − 4 = 4 years.

=> Required fraction = 4 / 36 = 1 / 9.

Therefore The correct answer is 1/9.

Additional Information

Ratio of Ages

If the ratio of ages of two persons is a:b, their ages can be represented as ax and bx. The age difference between two persons always remains constant over time.

Fractional Relationships

A relationship given as 1(3/5) times means a multiplying factor of 8/5. Expressing conditions as fractions directly yields a simple linear equation.

Problems on Ages

It is highly recommended to always calculate the present ages first. This establishes a fixed reference point before finding any past or future ages.

Q52. Answer: (d) 1 : 4

Shortcut Trick

For any two similar figures, the ratio of their surface areas is strictly equal to the square of the ratio of their corresponding sides.

Ratio of surface areas = (Side of small cube ÷ Side of large cube)²

=> Ratio = (2 ÷ 4)² = (1 ÷ 2)² = 1 : 4

Therefore The correct answer is 1 : 4.

Alternate Method

4 cm

4 cm

2 cm

2 cm

Large Cube

Small Cube

Surface Area Ratio = $a^2 : A^2$

Given:

Edge of the large cube (A) = 4 cm

Edge of each small cube (a) = 2 cm

Formula Used:

Total Surface Area of a cube = 6 × (side)²

Calculations:

=> Total surface area of the large cube = 6 × (4)²

=> 6 × 16 = 96 cm²

=> Total surface area of one small cube = 6 × (2)²

=> 6 × 4 = 24 cm²

=> Ratio of total surface area of one small cube to large cube = 24 ÷ 96

=> Ratio = 1 ÷ 4 = 1 : 4

Therefore The correct answer is 1 : 4.

Additional Information

Volume of a Cube

The volume represents the total 3D space occupied by the cube. Formula: V = a³, where a is the side length.

Lateral Surface Area of a Cube

It is the sum of the areas of the 4 side vertical faces, excluding the top and bottom faces. Formula: LSA = 4 × a².

Body Diagonal of a Cube

The longest straight line segment that can be drawn inside the cube connecting two opposite corners. Formula: D = a × √3.

Number of Smaller Cubes Formed

When a larger solid cube is melted or cut into smaller equal cubes, the number of smaller cubes is: (Volume of Large Cube) ÷ (Volume of Small Cube).

Q53. Answer: (c) √1519 cm

Given:

Radius of the first circle (r1) = 14 cm

Radius of the second circle (r2) = 5 cm

Distance between the centers (d) = 40 cm

Formula Used:

Length of the direct common tangent = √(d² - (r1 - r2)²)

Calculation:

Substitute the given values into the formula:

Length of the direct common tangent = √(40² - (14 - 5)²)

=> Length = √(1600 - 9²)

=> Length = √(1600 - 81)

=> Length = √1519

The correct answer is √1519.

Q54. Answer: (b) 16 π cm3

Given:

Curved surface area (CSA) of the cone = 20π cm²

Radius (r) = 4 cm

Formula Used:

Curved surface area (CSA) = π × r × l

Volume of the cone = (1/3) × π × r² × h

where l is the slant height and h is the height of the cone.

Calculation:

From the CSA formula:

20π = π × 4 × l

=> 20 = 4 × l

=> l = 5 cm

Using Pythagoras' theorem in the cone:

l² = r² + h²

=> 5² = 4² + h²

=> 25 = 16 + h²

=> h² = 25 - 16

=> h² = 9

=> h = 3 cm

Volume of the cone:
Volume = (1/3) × π × 4^2 × 3
=> Volume = (1/3) × π × 16 × 3
=> Volume = 16π cm^3
The correct answer is 16π cm^3

Q55. Answer: (a) 8

Given:
When 12 is subtracted from a number, it reduces to its 40%.
Formula Used:
Let the number be x.
The equation is: x - 12 = 0.4 × x
Two-fifth of the number = (2/5) × x
Calculation:
From the equation:
x - 12 = 0.4 × x
=> x - 0.4 × x = 12
=> 0.6 × x = 12
=> x = 12 / 0.6
=> x = 20
Two-fifth of the number:
(2/5) × 20 = 8
The correct answer is 8.

Q56. Answer: (c) 16 2/3 %

Given:
Cost of 20 dozen bananas = Rs. 1,200
Selling price of 5 dozen bananas = Rs. 350
Formula Used:
Cost price (CP) per dozen = Total cost / Number of dozens
Selling price (SP) per dozen = Selling price of 5 dozen / 5
Gain percentage = [(Selling Price - Cost Price) / Cost Price] × 100
Calculation:
Cost price per dozen:
CP = 1,200 / 20 = Rs. 60
Selling price per dozen:
SP = 350 / 5 = Rs. 70
Gain per dozen:
Gain = SP - CP = 70 - 60 = Rs. 10
Gain percentage:
Gain percentage = (10 / 60) × 100
=> Gain percentage = (1/6) × 100
=> Gain percentage = 16 2/3 %
The correct answer is 16 2/3 %.

Q57. Answer: (d) 348 cm3

Given:
Radius of the hemisphere (r) = 5.5 cm
π = 3.14
Formula Used:
Volume of a hemisphere = (2/3) × π × r^3
Calculation:
Volume = (2/3) × 3.14 × $(5.5)^3$

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=> Volume = (2/3) × 3.14 × 166.375
=> Volume = 2.094 × 166.375
=> Volume ≈ 348.54
The volume of the hemisphere, to the nearest integer, is 348 cm^3

Q58. Answer: (d) 40°

Given:
In an isosceles triangle ABC, AB = AC.
angle BAD = 20°
angle DCB = 20°
angle CAD = 80°
Formula Used:
In an isosceles triangle, the angles opposite the equal sides are equal.
Sum of angles in a triangle = 180°
Calculation:
Since AB = AC, angle ABC = angle ACB.
In triangle ABD:
angle BAD + angle ADB + angle ABD = 180°
angle BAD = 20°
angle CAD = 80°, so angle BAC = 100° (since angle BAD + angle CAD = angle BAC)
In triangle ABC:
Since AB = AC, angle ABC = angle ACB
The sum of the angles in triangle ABC:
angle BAC + angle ABC + angle ACB = 180°
Substitute angle BAC = 100° and angle ABC = angle ACB:
100° + angle ABC + angle ACB = 180°
angle ABC + angle ACB = 80°
Since angle ABC = angle ACB:
2 × angle ABC = 80°
angle ABC = 40°
The value of angle ABC is 40°

Q59. Answer: (c) 154

Given:
Ratna buys:
10 kg of rice at Rs. 88 per kg
20 kg of rice at Rs. 187 per kg
Formula Used:
Cost of the mixture per kg = (Total cost of all rice) / (Total weight of all rice)
Calculation:
Cost of 10 kg rice at Rs. 88 per kg:
Total cost = 10 × 88 = Rs. 880
Cost of 20 kg rice at Rs. 187 per kg:
Total cost = 20 × 187 = Rs. 3740
Total cost of the mixture:
Total cost = 880 + 3740 = Rs. 4620
Total weight of the mixture:
Total weight = 10 kg + 20 kg = 30 kg
Cost per kg of the mixture:
Cost per kg = 4620 / 30
=> Cost per kg = 154
The per kg cost of the total mixture is Rs. 154

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Q60. Answer: (d) 27,000

Given:
P can complete the work in 12 days.
Q can complete the work in 9 days.
Total earnings for the work = Rs. 63,000
Formula Used:
Work done by P in one day = 1 / 12
Work done by Q in one day = 1 / 9
Combined work done by P and Q in one day = (1 / 12) + (1 / 9)
Share of P = (Work done by P) / (Total work) × Total earnings
Calculation:
Combined work done by P and Q in one day:
LCM of 12 and 9 = 36
Work done by P in one day = 3 / 36
Work done by Q in one day = 4 / 36
Combined work done in one day = (3 / 36) + (4 / 36) = 7 / 36
Ratio of work done by P and Q:
Ratio = Work done by P : Work done by Q = 3 : 4
Let the total work be divided into 7 parts (3 parts by P and 4 parts by Q).
Share of P = (3 / 7) × 63,000
=> Share of P = 27,000
The share of P is Rs. 27,000

Q61. Answer: (b) 800 m

Given:
A thief is spotted by a policeman at a distance of 200 m.
Speed of thief = 16 km/h
Speed of policeman = 20 km/h
Formula Used:
Distance = speed × time
Calculation:
Let the time taken by the policeman to catch the thief be T hours.
In this time:
Distance travelled by the thief = 16T km
Distance travelled by the policeman = 20T km
According to the question:
Distance travelled by the policeman = Distance travelled by the thief + 200 meters
Convert 200 meters to kilometers:
200 meters = 0.2 km
So:
20T = 16T + 0.2
=> 20T - 16T = 0.2
=> 4T = 0.2
=> T = 0.2 / 4
=> T = 0.05 hours
Distance travelled by the thief in this time:
Distance = 16 × 0.05
=> Distance = 0.8 km or 800m
The thief will run 800m before being overtaken by the policeman.

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Q62. Answer: (d) A by 6.25%

Given:
Shopkeeper A:
Markup = 25%
Discount = 15%
Shopkeeper B:
Markup = 20%
Discount = 12%
Formula Used:
Effective Selling Price = Marked Price × (1 - Discount)
Profit Percentage = [(Selling Price - Cost Price) / Cost Price] × 100
Calculation:
Let the Cost Price (CP) of the item be Rs. 100 for simplicity.
Shopkeeper A:
Marked Price (MP) = CP × (1 + Markup)
MP = 100 × (1 + 0.25)
MP = 125
Selling Price = MP × (1 - Discount)
Selling Price = 125 × (1 - 0.15)
Selling Price = 125 × 0.85
Selling Price = 106.25
Profit = Selling Price - CP
Profit = 106.25 - 100
Profit = 6.25
Profit Percentage = (6.25 / 100) × 100
Profit Percentage = 6.25%
Shopkeeper B:
Marked Price (MP) = CP × (1 + Markup)
MP = 100 × (1 + 0.20)
MP = 120
Selling Price = MP × (1 - Discount)
Selling Price = 120 × (1 - 0.12)
Selling Price = 120 × 0.88
Selling Price = 105.6
Profit = Selling Price - CP
Profit = 105.6 - 100
Profit = 5.6
Profit Percentage = (5.6 / 100) × 100
Profit Percentage = 5.6%
Comparison:
Shopkeeper A has a profit percentage of 6.25%.
Shopkeeper B has a profit percentage of 5.6%.
Shopkeeper A gets a better deal with a profit percentage of 6.25%, compared to Shopkeeper B's profit percentage of 5.6%.

Q63. Answer: (b) A and D are equal.

Given:
A = (9 / 16) ÷ (25 / 36)
B = 9 ÷ [(16 ÷ 25) ÷ 36]
C = [9 ÷ (16 ÷ 25)] ÷ 36
D = (9 ÷ 16) ÷ (25 ÷ 36)
Formula Used:
To divide fractions: (a / b) ÷ (c / d) = (a / b) × (d / c)

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Calculation:

A:

A = (9 / 16) ÷ (25 / 36)

A = (9 / 16) × (36 / 25)

A = (9 × 36) / (16 × 25)

A = 324 / 400

A = 81 / 100

B:

B = 9 ÷ [(16 ÷ 25) ÷ 36]

Calculate inside the brackets first:

16 ÷ 25 = 0.64

0.64 ÷ 36 = 0.0177778

B = 9 ÷ 0.0177778

B = 506.25

C:

C = [9 ÷ (16 ÷ 25)] ÷ 36

Calculate inside the brackets first:

16 ÷ 25 = 0.64

9 ÷ 0.64 = 14.0625

C = 14.0625 ÷ 36

C = 0.390625

D:

D = (9 ÷ 16) ÷ (25 ÷ 36)

D = (9 / 16) × (36 / 25)

D = (9 × 36) / (16 × 25)

D = 324 / 400

D = 81 / 100

Conclusion:

A = D = 81 / 100

B = 506.25

C = 0.390625

A and D are equal. B and C are different. So A and D are true and equal, while B and C are not equal.

Q64. Answer: (b) 1440

Given:

Total number of passengers travelling from Ahmedabad junction to various districts = 8,000

Calculation:

Average number of passengers travelling from Ahmedabad to Surat, Botad and Bhavanagar together = (18 + 13 + 23)% ÷ 3 = 54/3 = 18%

Now according to the question:

18% of 8000 = 1440.

Therefore The correct answer is 1440.

Q65. Answer: (a) Rs. 5,779

Given:

After a 9% increase in salary, a person received Rs. 6,300.

Formula Used:

New Salary = Original Salary × (1 + Percentage Increase)

Calculation:

Let the original salary be x. After a 9% increase, the salary becomes:

New Salary = x × (1 + 0.09)

New Salary = x × 1.09

According to the question:
1.09 × x = 6300
=> x = 6300 / 1.09
=> x ≈ 5779
The salary before the increase was Rs. 5,779.

Q66. Answer: (d) 108°

Calculation:
100% = 360°
1% = 360°/100
Total percentage of protein and other constituents = 16 + 14 = 30%
so, 30% will be equal to
30% = 360/100 × 30 = 108°
Therefore The correct answer is 108°.

Q67. Answer: (a) 10%

Formula Used:
Percentage Difference = [(Total Production (2020-21) - Total Production (2019-20)) / Total Production (2019-20)] × 100
Calculation:
Total production of rice (2019-20) = 400
Total production of rice (2020-21) = 440
Percentage Difference = [(440 - 400) / 400] × 100
=> Percentage Difference = [40/400] × 100
=> Percentage Difference = 10%
The percentage difference in the total production of food grains between 2019-20 and 2020-21 is 10%.

Q68. Answer: (b) 5

Calculation:
A = 60[6/25 ÷(16/15 of 3/8)+5-(1-2 1/12)]
60[6/25 ÷(16/15 × 3/8)+5-(1- 25/12)]
60[6/25 ÷(2/5)+5-((-13)/12)]
60[6/25 × (5/2)+5+(13/12)]
60[3/5+5+13/12]
60[(36 + 300 + 65)/60]
A = 401
Step 6: Sum of the digits of A = 4 + 0 + 1 = 5
Therefore The sum of the digits of A is 5.

Q69. Answer: (a) Rs. 4.43 lakh

Given:
Income of company A in the year 2012 = Rs. 6.425 lakh
Profit percentage = 45%
Formula Used:
Profit Percentage = (Profit / Expenditure) × 100
Profit = Income - Expenditure
Profit Percentage = [(Income - Expenditure) / Expenditure] × 100
Calculation:
Let the expenditure be E.
Profit = Income - Expenditure
Profit = 6.425 lakh - E
Profit Percentage = [(Income - Expenditure) / Expenditure] × 100
45 = [(6.425 - E) / E] × 100
Divide both sides by 100:

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0.45 = (6.425 - E) / E

Multiply both sides by E:

0.45E = 6.425 - E

Add E to both sides:

0.45E + E = 6.425

1.45E = 6.425

Divide both sides by 1.45:

E = 6.425 / 1.45

E = 4.43 lakh

The expenditure of the company in the year 2012 was Rs. 4.43 lakh.

Q70. Answer: (a) 270

Given:

The ratio of the outer circumference to the inner circumference of a circular path is 7:6.

The width of the path is 45 meters.

Formula Used:

Ratio of circumferences = Ratio of radii

Outer circumference = 2πR

Inner circumference = (2 π (r))

Where (R) is the radius of the outer circle and (r) is the radius of the inner circle.

Width of the path = (R - r)

Calculation:

Let the radius of the inner circle be (r) meters.

Then, the radius of the outer circle is (r + 45) meters.

Given the ratio of the outer circumference to the inner circumference is 7:6:

(2 π (r + 45))/(2 π r) = 7/6

(r + 45)/(r) = 7/6

Cross-multiply to solve for rrrrr :

6 (r + 45) = 7r

6r + 270 = 7r

270 = 7r - 6r

270 = r

The radius of the inner circle is 270 meters.

Q71. Answer: (d) 12500

Given:

Total votes = 50,000

First candidate received 40% of the votes.

Second candidate received 35% of the votes.

Formula Used:

Percentage of votes received by the third candidate = 100% - (Percentage received by first candidate + Percentage received by second candidate)

Calculation:

Percentage of votes received by the third candidate:

100% - (40% + 35%) = 100% - 75% = 25%

Number of votes received by the third candidate:

(25 / 100) × 50,000 = 0.25 × 50,000 = 12,500

The number of votes received by the third candidate is 12,500.

Q72. Answer: (d) 28 : 45

Given:

The ratio x : y = 5 : 6

Calculation:

Let x = 5k and y = 6k, where k is a constant.
Substitute x = 5k and y = 6k into 2x + 3y and 3x + 5y:
2x + 3y = 2(5k) + 3(6k) = 10k + 18k = 28k
3x + 5y = 3(5k) + 5(6k) = 15k + 30k = 45k
The ratio 2x + 3y : 3x + 5y is 28k : 45k.
Simplify by removing k:
The ratio is 28 : 45.
The ratio 2x + 3y : 3x + 5y is 28 : 45.

Q73. Answer: (a) 25%

Given:
The amount becomes Rs. 24,000 in 2 years.
The amount becomes Rs. 32,000 in 4 years.
Formula Used:
Simple interest = Amount after time - Principal
Interest for 2 years = Amount after 2 years - Principal
Interest for 4 years = Amount after 4 years - Principal
Annual interest = (Interest for 4 years - Interest for 2 years) / 2
Calculation:
Let the principal be P and the annual interest rate be R%.
Interest for 2 years = Rs. 24,000 - P
Interest for 4 years = Rs. 32,000 - P
The interest earned in 2 years = Interest for 4 years - Interest for 2 years
Interest for 4 years - Interest for 2 years = (Rs. 32,000 - P) - (Rs. 24,000 - P)
Interest for 2 years = Rs. 32,000 - Rs. 24,000
Interest for 2 years = Rs. 8,000
Annual interest = Rs. 8,000 / 2 = Rs. 4,000
Since the interest for 2 years is Rs. 8,000, the annual interest is Rs. 4,000.
Interest = Principal × Rate × Time / 100
8,000 = P × R × 2 / 100
R = (8,000 × 100) / (P × 2)
To find P, use the amount after 2 years:
P + 8,000 = Rs. 24,000
P = Rs. 24,000 - Rs. 8,000
P = Rs. 16,000
Substitute P into the formula for R:
R = (8,000 × 100) / (16,000 × 2)
R = 500 / 2
R = 25%
The annual rate of interest is 25%.

Q74. Answer: (b) 12

Given:
f(p) = sin^(p + 2)x + cos^(p + 2)x
Calculation:
To find the value of 6f(2) - 4f(4) + 10f(0), first calculate f(p) for p = 2, p = 4, and p = 0:
For p = 2:
f(2) = sin^4x + cos^4x
For p = 4:
f(4) = sin^6x + cos^6x
For p = 0:
f(0) = $\sin^2 x + \cos^2 x$

We know that $\sin^2x + \cos^2x = 1$.
Using the identity for sin^4x + cos^4x:
$\sin^4x + \cos^4x = (\sin^2x + \cos^2x)^2 - 2\sin^2x \cos^2x$
$\sin^4x + \cos^4x = 1 - 2\sin^2x \cos^2x$
Using the identity $\sin^2x \cos^2x = (1/4)\sin^2(2x)$:
$\sin^4x + \cos^4x = 1 - (1/2)\sin^2(2x)$
To find sin^6x + cos^6x, use the identity:
$\sin^6x + \cos^6x = (\sin^2x + \cos^2x)^3 - 3\sin^2x \cos^2x(\sin^2x + \cos^2x)$
$\sin^6x + \cos^6x = 1 - 3(\sin^2x \cos^2x)$
$\sin^6x + \cos^6x = 1 - (3/4)\sin^2(2x)$
Now calculate 6f(2) - 4f(4) + 10f(0):
$6f(2) = 6(\sin^4x + \cos^4x) = 6(1 - (1/2)\sin^2(2x))$
$4f(4) = 4(\sin^6x + \cos^6x) = 4(1 - (3/4)\sin^2(2x))$
$10f(0) = 10(\sin^2x + \cos^2x) = 10$
Combine:
$6f(2) - 4f(4) + 10f(0)$
$= 6[1 - (1/2)\sin^2(2x)] - 4[1 - (3/4)\sin^2(2x)] + 10$
$= 6 - 3\sin^2(2x) - 4 + 3\sin^2(2x) + 10$
$= 6 - 4 + 10$
$= 12$
The value of 6f(2) - 4f(4) + 10f(0) is 12.

Q75. Answer: (a) 2 : 3

Given:
A line from point A is tangent to the circle at point B.
A secant is drawn from point A to the circle intersecting it at points C and D.
AB = 42 cm (tangent segment)
AC = 21 cm (secant segment from A to C)
Formula Used:
The Power of a Point theorem states:
The square of the length of the tangent segment (AB) from a point to a circle is equal to the product of the lengths of the segments of the secant (AC and AD) from the same point.
$AB^2 = AC \times AD$
Calculation:
Let AD be the length of the secant segment from A to D.
According to the Power of a Point theorem:
$AB^2 = AC \times AD$
$42^2 = 21 \times AD$
$1764 = 21 \times AD$
$AD = 1764 / 21$
$AD = 84$ cm
$CD = AD - AC$
$CD = 84 \text{ cm} - 21 \text{ cm}$
$CD = 63$ cm
The ratio between AB and CD is:
$AB : CD = 42 : 63$
Simplify the ratio:
$42 / 21 : 63 / 21$
$2 : 3$
The ratio between AB and CD is 2 : 3.

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Q76. Answer: (c) tidal

The correct answer is tidal

Key Points

• The Gulf of Khambhat, the Gulf of Kutch, and the Gangetic delta provide ideal conditions for utilizing tidal energy.

• Tidal energy is a form of hydropower that converts the energy obtained from tides into useful forms of power, mainly electricity.

• These regions have significant tidal ranges, which make them suitable for generating tidal energy.

• Tidal energy is a renewable source of energy and has the potential to contribute to the energy mix of India.

• Unlike solar and wind energy, tidal energy is predictable and consistent, as tides are influenced by the gravitational forces of the moon and sun.

Additional Information

• Tidal energy is harnessed by constructing tidal barrages, tidal fences, and tidal turbines.

• Tidal barrages work similar to dams, where water is trapped during high tides and released during low tides to generate electricity.

• Tidal fences and turbines operate like underwater wind turbines, where the movement of water turns the blades to generate power.

• India has a vast coastline, which provides ample opportunities for the development of tidal energy projects.

• The development of tidal energy can help reduce the dependence on fossil fuels and contribute to sustainable energy solutions.

Q77. Answer: (a) Gopala

The correct answer is Gopala

Key Points

• Gopala was the founder of the Pala Empire.

• The Pala Empire was an imperial power during the Late Classical period on the Indian subcontinent, which originated in the region of Bengal.

• Gopala was elected as the ruler by a group of regional chieftains and gained control over the areas of Bihar and Bengal.

• He laid the foundation of the Pala dynasty which ruled from the 8th to the 12th century.

• The Pala Empire is known for its patronage of Buddhism and the establishment of many Buddhist institutions and structures.

Additional Information

• The Palas were known for their contribution to the cultural and educational development of the region.

• The famous universities of Nalanda and Vikramashila flourished under their rule.

• The Pala Empire was succeeded by the Sena dynasty in the 12th century.

• The founder of the Pala dynasty, Gopala, was succeeded by his son Dharmapala, who expanded the empire significantly.

• The Pala rulers also had diplomatic relations with other Asian countries, including the Tibetan Empire.

Q78. Answer: (a) Gulf of Kutch

The correct answer is Gulf of Kutch

Key Points

• Gulf of Kutch is the leading tidal energy generation site in India as of 2022.

• It is located on the west coast of India, in the state of Gujarat.

• The region is known for its high tidal range, making it suitable for tidal energy projects.

• Gulf of Kutch's tidal energy potential has been recognized and harnessed to support renewable energy initiatives in India.

• It plays a significant role in India's efforts to diversify its energy sources and reduce dependence on fossil fuels.

Additional Information

• Tidal energy is a form of hydropower that converts the energy obtained from tides into useful forms of power, mainly electricity.

• India has a vast coastline and several regions with significant tidal ranges, providing ample opportunities for tidal energy generation.

• The Gulf of Khambhat and the Sundarbans are other notable regions with potential for tidal energy in India.

• The Indian government is actively promoting renewable energy projects to achieve its sustainable development goals and reduce carbon emissions.

Q79. Answer: (c) 7

The correct answer is 7 players

Key Points

• 7 players are the minimum number required for a football match to start according to the Laws of the Game.

• The Laws of the Game are maintained by the International Football Association Board (IFAB).

• Each team can have a maximum of 11 players on the field, including the goalkeeper.

• If a team cannot field at least 7 players at any point during the match, the game is abandoned.

• The rule ensures that the game remains competitive and fair, preventing teams from playing with too few players.

Additional Information

• The International Football Association Board (IFAB) was founded in 1886 and is responsible for the Laws of the Game in association football.

• The Laws of the Game are the codified rules that help govern the sport of football and ensure consistency across all levels of play.

• In official competitions, teams are also required to have a specific number of players on the bench as substitutes, typically ranging from 3 to 7 players depending on the competition rules.

• The goalkeeper is a crucial position and must be one of the players on the field at all times.

• Substitutions can be made during the match to replace tired or injured players, ensuring that a team can maintain at least the minimum number of players required.

Q80. Answer: (b) Finance

The correct answer is Finance

Key Points

• The Department of Public Enterprises was integrated into the Ministry of Finance in 2021.

• This move was aimed at accelerating the privatisation process and enabling greater financial oversight over state-run enterprises.

• The restructuring is expected to streamline decision-making and enhance efficiency in managing public sector enterprises.

• The Ministry of Finance is responsible for the economic and financial administration of the government, making it well-suited to oversee public enterprises.

Additional Information

• The Department of Public Enterprises (DPE) was originally under the Ministry of Heavy Industries and Public Enterprises.

• This reallocation aims to align public enterprises' functioning with the broader economic policies and fiscal strategies of the government.

• Privatisation is a key component of the government's strategy to reduce fiscal burden and improve the efficiency of public sector units (PSUs).

• The Ministry of Finance plays a pivotal role in formulating and implementing India's economic policies, including budget preparation, taxation, and financial regulations.

Q81. Answer: (d) Sphincter

The correct answer is Sphincter

Key Points

• The muscle that regulates the exit of food from the stomach into the small intestine is called the Sphincter.

• Specifically, this muscle is known as the pyloric sphincter, which acts as a valve to control the flow of partially digested food from the stomach to the small intestine.

• The pyloric sphincter is crucial in the digestive process as it ensures that food is properly mixed with digestive enzymes before moving to the next stage of digestion.

• Proper functioning of the pyloric sphincter is essential to prevent backflow and ensure smooth digestion.

Additional Information

• The human digestive system consists of several sphincters that regulate the passage of food and waste, including the lower esophageal sphincter, the pyloric sphincter, and the anal sphincter.

• Each sphincter has a specific function and location within the digestive tract, contributing to the overall efficiency of the digestive process.

• Disorders of the pyloric sphincter, such as pyloric stenosis, can lead to significant digestive issues and require medical intervention.

• Maintaining a healthy diet and lifestyle can support the proper functioning of the digestive sphincters and overall digestive health.

Q82. Answer: (b) Tamil Nadu

The correct answer is Tamil Nadu

Key Points

• Bharatanatyam is a classical dance form that originated in Tamil Nadu.

• It is one of the oldest dance forms in India, known for its fixed upper torso, bent legs, and intricate footwork combined with expressive hand gestures and facial expressions.

• The dance form was traditionally performed in temples as a part of religious rituals but has since evolved to be performed on stages worldwide.

• Bharatanatyam is often accompanied by Carnatic music and involves a rich tradition of storytelling through dance.

Additional Information

• The dance form is believed to have been documented as far back as 2,000 years ago in ancient texts such as the Natya Shastra.

• It was revived and popularized in the 20th century by pioneers like Rukmini Devi Arundale, who redefined and presented it in a modern context.

• Bharatanatyam is characterized by its deep narrative nature, often depicting themes from Hindu mythology.

• It involves three main elements: Nritta (pure dance), Nritya (expressive dance), and Natya (dramatic dance).

• Today, Bharatanatyam is not just a cultural symbol of Tamil Nadu but also a significant part of India's cultural heritage.

Q83. Answer: (a) To decrypt the digital signature

The correct answer is To decrypt the digital signature

Key Points

• The public key is used to decrypt the digital signature in digital signature verification.

• Digital signatures are created using the sender's private key and can be verified by the recipient using the corresponding public key.

• This process ensures the authenticity and integrity of the message or document, confirming that it was indeed signed by the holder of the private key.

• Public key cryptography is a fundamental aspect of secure digital communications, enabling trust and security in electronic transactions.

Additional Information

• Digital signatures are widely used in various applications, including software distribution, financial transactions, and legal agreements, to verify the origin and integrity of the data.

• The security of digital signatures relies on the difficulty of deriving the private key from the public key, making it computationally infeasible to forge a valid signature without access to the private key.

• Public key infrastructure (PKI) supports the issuance, management, and revocation of digital certificates, which bind public keys to the identities of their owners.

• Standards such as RSA and DSA are commonly used algorithms for generating digital signatures.

• Regulatory frameworks like the eIDAS Regulation in the European Union provide legal recognition and standards for electronic signatures and trust services.

Q84. Answer: (b) 7

The correct answer is 7

Key Points

• 7 basic talams are recognized in Indian Classical Carnatic music.

• The seven basic talams are: Dhruva, Matya, Rupaka, Jhampa, Triputa, Ata, and Eka.

• Each talam has a specific structure and is used to maintain the rhythm in Carnatic music compositions.

• Talam is an essential aspect of Carnatic music, providing the rhythmic framework for performances.

• These basic talams are further expanded into 35 talams by applying the five jatis (types of rhythmic units).

Additional Information

• Carnatic music is a major genre of Indian classical music that originated in South India.

• It is known for its complex rhythmic and melodic patterns and is typically performed with vocal and instrumental accompaniment.

• The primary elements of Carnatic music include ragam (melody), talam (rhythm), and bhavam (expression).

• Performances often feature improvisation and intricate compositions known as kritis.

• Carnatic music has a rich tradition and is deeply rooted in Indian culture and spirituality.

Q85. Answer: (b) Gurung community

The correct answer is Gurung community

Key Points

• Tamu Lochar is one of the traditional festivals of the Gurung community of Sikkim.

• It is celebrated to mark the beginning of their new year.

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• The festival falls on the 15th day of Pusa, according to the Hindu calendar Vikram Samvat, which corresponds to 30th December in the English calendar.

Additional Information

• The Gurung community is one of the indigenous communities of Sikkim.

• The festival is a vibrant and colorful celebration, marked by traditional dances, songs, and various cultural events.

• It is a time for family gatherings, feasts, and rituals to welcome the new year with joy and prosperity.

Q86. Answer: (b) Fingerprint scan

The correct answer is Fingerprint scan

Key Points

• A fingerprint scan is an example of multi-factor authentication (MFA) used to enhance PC security.

• MFA requires two or more verification factors to gain access to a resource such as an application or online account, improving security by combining something you know (password) with something you have (security token) or something you are (biometric verification).

• Using a fingerprint scan adds an additional layer of security as it is unique to each individual and difficult to replicate.

• Other examples of multi-factor authentication methods include facial recognition, one-time passwords (OTPs), and smart cards.

Additional Information

• Antivirus software is primarily used to detect and remove malware, but it does not constitute multi-factor authentication.

• OS protection refers to security features built into the operating system, such as user account control and encryption, but it is not MFA.

• Firewall protection helps to block unauthorized access to a network but does not involve multiple factors of authentication.

• Implementing MFA is a critical step in securing sensitive information and preventing unauthorized access to systems.

Q87. Answer: (a) Dari

The correct answer is Dari

Key Points

• Dari is one of the official languages of Afghanistan, alongside Pashto.

• Dari, also known as Afghan Persian, is widely used for administration and in the media.

• It serves as the lingua franca in Afghanistan, facilitating communication among different ethnic groups.

• As a variety of Persian, Dari shares linguistic similarities with Farsi, the Persian spoken in Iran.

• Both Dari and Pashto are used in government and education, but Dari has a more dominant role in urban areas.

Additional Information

• Pashto is the other official language of Afghanistan and is predominantly spoken in the southern and eastern regions.

• Afghanistan's constitution recognizes both Dari and Pashto as official languages, ensuring their use in government and education.

• Besides Dari and Pashto, there are several other languages spoken in Afghanistan, including Uzbek, Turkmen, Balochi, and Pashai.

• The promotion of Dari and Pashto aims to foster national unity and communication across diverse linguistic communities.

• Efforts are ongoing to preserve and promote the linguistic heritage of Afghanistan's various ethnic groups.

Q88. Answer: (d) Dhyanchand Award

The correct answer is Dhyanchand Award

Key Points

• The Dhyanchand Award is presented for lifetime achievement in sports and games.

• It was instituted to honor those sportspersons who have contributed to sports by their performance and continue to contribute to the promotion of sports even after their retirement from an active sporting career.

• The award is named after the legendary Indian hockey player, Major Dhyan Chand, who is considered one of the greatest field hockey players in history.

• Recipients of this award are chosen based on their performance and contribution to the field of sports, both during and after their active sports career.

Additional Information

• The Arjuna Award is given for outstanding performance in sports and games.

• The Major Dhyan Chand Khel Ratna is India's highest sporting honor awarded for the most outstanding performance in sports.

• The Dronacharya Award is presented to coaches for producing medal winners at prestigious international sports events.

• The Dhyanchand Award was established in 2002 and is one of the highest honors for lifetime achievement in sports in India.
• Recipients of the Dhyanchand Award receive a statuette, a certificate, ceremonial dress, and a cash prize.

Q89. Answer: (c) Mewati Gharana

The correct answer is Mewati Gharana

Key Points

• Pandit Rattan Mohan Sharma is associated with the Mewati Gharana.
• The Mewati Gharana is known for its distinct style of singing, especially in the genre of Tarana.
• This Gharana has produced several renowned musicians and has a rich heritage in Indian classical music.
• Pandit Rattan Mohan Sharma is a disciple of Pt. Jasraj, one of the most prominent figures of the Mewati Gharana.

Additional Information

• Pandit Rattan Mohan Sharma has performed extensively both in India and abroad, promoting the art of Tarana singing.
• He has received numerous awards and accolades for his contributions to Indian classical music.
• The Mewati Gharana emphasizes the use of intricate rhythmic patterns and melodic improvisations in its performances.
• It is one of the major Gharanas of Hindustani classical music.

Q90. Answer: (b) i - c, ii - a, iii - d, iv - b

The correct answer is i - c, ii - a, iii - d, iv - b

Key Points

• Balanced Growth Theory is associated with Ragnar Nurkse.
• Big Push Theory is attributed to Rosenstein Rodan.
• Secular Deterioration is linked to Prebisch-Singer.
• Capital Goods and Heavy Industry is related to Feldman-Mahalanobis.
• Thus, the correct matching is i - c, ii - a, iii - d, iv - b.

Additional Information

• Ragnar Nurkse was an Estonian international economist known for his contributions to the theory of balanced growth.
• Rosenstein Rodan was an Austrian economist who introduced the Big Push Theory, emphasizing the need for large-scale investments to overcome underdevelopment.
• Prebisch-Singer hypothesis suggests that over the long term, the price of primary commodities declines in relation to the price of manufactured goods, leading to deteriorating terms of trade for countries that export primary commodities.
• Feldman-Mahalanobis model was an economic development model proposed by Soviet economist G. A. Feldman and later adapted by Indian statistician P.C. Mahalanobis, focusing on the role of heavy industry in economic development.

Q91. Answer: (a) It is non-justiciable.

The correct answer is It is non-justiciable

Key Points

• Option 1 is correct because Directive Principles of State Policy are non-justiciable, meaning they are not enforceable by any court.
• These principles are guidelines for the framing of laws by the government and aim to create social and economic conditions under which the citizens can lead a good life.
• Directive Principles are enshrined in Part IV of the Constitution of India from Articles 36 to 51.
• In contrast, Fundamental Rights are justiciable and enforceable by the courts, provided in Part III of the Constitution.

Additional Information

• The Directive Principles are inspired by the Directive Principles given in the Constitution of Ireland and also by the principles of Gandhism.
• They aim to promote the welfare of the people by securing and protecting a social order through justice—social, economic, and political—and to minimize inequalities in income, status, facilities, and opportunities.
• Some of the key areas covered by the Directive Principles include the provision for adequate means of livelihood, equitable distribution of wealth, equal pay for equal work for men and women, protection of children and youth, and promotion of educational and economic interests of weaker sections.
• While these principles are not enforceable by law, they are fundamental in the governance of the country, and it is the duty of the State to apply these principles in making laws.

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Q92. Answer: (d) Paramhans Mandali

The correct answer is Paramhans Mandali

Key Points

• Paramhans Mandali was the first socio-religious organization established in Bombay in 1840 to work for the annihilation of caste.

• The organization aimed to promote social reforms and work towards the upliftment of the oppressed classes.

• It played a significant role in challenging the rigid caste system prevalent in Indian society during that period.

• Paramhans Mandali was one of the early movements that laid the foundation for future social reform movements in India.

Additional Information

• The Paramhans Mandali was founded by Dadoba Pandurang and other progressive thinkers of that time.

• It focused on the promotion of monotheism and condemned idol worship, superstitions, and social evils.

• The organization also worked towards the education of women and the upliftment of the downtrodden sections of society.

• Though the movement did not last long, its impact on subsequent social reform movements in Maharashtra and other parts of India was significant.

Q93. Answer: (a) 2011

The correct answer is 2011

Key Points

• The catchphrase 'Our census, our future' was used for the 2011 Census of India.

• The 2011 Census was the 15th National census survey conducted by the Census Organization of India.

• The census is conducted every 10 years, and it is the largest administrative and statistical exercise in the world.

• Data collected from the census is used for planning, policy-making, and allocation of resources.

• The 2011 Census highlighted various demographic parameters including population size, distribution, growth, density, and literacy rates.

Additional Information

• The first Census in India was conducted in 1872 during the British rule.

• The Census Act of 1948 provides the legal framework for conducting the census in India.

• The census data is crucial for governance, administration, and development planning at various levels of government.

• It helps in understanding the socio-economic and demographic changes that have taken place over the years.

• The 2011 Census also introduced several technological advancements in data collection and processing.

Q94. Answer: (d) Force may increase the mass of the object

The correct answer is Force may increase the mass of the object

Key Points

• Force may make an object move: When a force is applied to an object, it can cause the object to start moving if it was initially at rest.

• Force may change the direction of a moving object: Forces can alter the trajectory of an object in motion, such as a ball being hit in a different direction.

• Force may change the shape of an object: Applying force can deform objects, such as squeezing a rubber ball.

• Force may increase the mass of the object: This statement is incorrect. Force cannot change the mass of an object; mass is an intrinsic property of matter.

Additional Information

• Force is a vector quantity, meaning it has both magnitude and direction.

• Newton's second law of motion states that the force acting on an object is equal to the mass of that object times its acceleration (F = ma).

1. Forces can be contact forces (e.g., friction, tension) or non-contact forces (e.g., gravity, electromagnetic forces).

• Understanding the effects of forces is fundamental in fields such as physics, engineering, and mechanics.

Q95. Answer: (c) Article 16 (4A)

The correct answer is Article 16 (4A)

Key Points

• Article 16 (4A) of the Indian Constitution deals with reservation in promotion for Scheduled Castes and Scheduled Tribes.

• This article was inserted by the 77th Constitutional Amendment Act, 1995.

• It empowers the state to make any provision for the reservation in matters of promotion to any class or classes of posts in the services under the state in favor of the SCs and STs.

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• The objective is to ensure adequate representation of these communities in public employment.

• This provision is aimed at addressing historical injustices and ensuring social equality.

Additional Information

• Article 16 deals with equality of opportunity in matters of public employment.

• It prohibits discrimination on grounds of religion, race, caste, sex, descent, place of birth, residence, or any of them.

• However, it allows for exceptions in the form of reservations for backward classes, Scheduled Castes, and Scheduled Tribes.

• The Constitution (77th Amendment) Act, 1995 was introduced to provide reservations in promotions which were earlier not included under Article 16.

• Subsequent amendments like the 85th, 95th, and 117th amendments have further shaped the provisions related to reservation in promotions.

Q96. Answer: (b) Siddaramaiah

The correct answer is Siddaramaiah

Key Points

• Siddaramaiah took oath as the Chief Minister of Karnataka in May 2023.

• He is a senior leader of the Indian National Congress and has previously served as the Chief Minister of Karnataka from 2013 to 2018.

• Siddaramaiah's appointment came after the 2023 Karnataka Legislative Assembly elections, where the Indian National Congress secured a significant victory.

• He was administered the oath of office by the Governor of Karnataka at a ceremony held in Bengaluru.

• Siddaramaiah's tenure is expected to focus on developmental policies and inclusive growth for the state.

Additional Information

• The Indian National Congress is one of the major political parties in India, founded in 1885.

• The party has played a pivotal role in the Indian independence movement and has produced several Prime Ministers of India.

• The Chief Minister is the head of the state government in India, responsible for the administration and governance of the state.

• The Governor is the constitutional head of the state, appointed by the President of India.

• Karnataka is a state in the southwestern region of India, known for its rich cultural heritage and economic development.

Q97. Answer: (c) 1

The correct answer is 1

Key Points

• India has hosted the ICC Men's T-20 Cricket World Cup only once as of 2023.

• India hosted the tournament in 2016.

• The ICC T-20 World Cup is a prestigious international championship in the shortest format of cricket.

• India was originally scheduled to host the 2021 edition, but it was moved to the UAE and Oman due to the COVID-19 pandemic.

Additional Information

• The ICC Men's T-20 Cricket World Cup was first held in 2007 in South Africa.

• It is organized by the International Cricket Council (ICC) and is contested by teams from around the world.

• The tournament has grown in popularity and is one of the most watched cricket events globally.

• India won the inaugural T-20 World Cup in 2007 under the captaincy of MS Dhoni.

Q98. Answer: (c) Saturn

The correct answer is Saturn

Key Points

• Saturn is the second largest planet in our solar system.

• It is known for its extensive and bright ring system, which is the most prominent and complex in the solar system.

• Saturn is a gas giant, primarily composed of hydrogen and helium.

• The planet has at least 274 moons, with Titan being the largest and one of the most interesting due to its thick atmosphere and liquid hydrocarbon lakes.

Additional Information

• Jupiter is the largest planet in our solar system and also has a ring system, but it is much fainter and less prominent than Saturn's.

• Saturn's rings are made up of ice and rock particles that range in size from tiny grains to objects as large as mountains.

• The planet's atmosphere exhibits a banded pattern similar to Jupiter's, caused by high-speed winds and differential rotation.

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• Exploration of Saturn has been primarily conducted by spacecraft such as Pioneer 11, Voyager 1 and 2, and the Cassini-Huygens mission, which provided detailed information about the planet, its rings, and moons.

Q99. Answer: (a) inversely

The correct answer is inversely

Key Points

• Competitive behaviour and competitive market structure are inversely related.

• As the market structure becomes more competitive, the intensity of competitive behaviour among firms tends to decrease.

• Conversely, in less competitive market structures, firms are likely to exhibit more aggressive competitive behaviours to gain a larger market share.

• This inverse relationship is crucial in understanding market dynamics and the strategic interactions between firms.

Additional Information

• The concept of market structure and competitive behaviour is fundamental in the field of industrial organization.

• Market structures can range from perfect competition to monopoly, with various forms of oligopoly and monopolistic competition in between.

• In a perfectly competitive market, firms are price takers and have minimal competitive behaviour regarding pricing.

• In contrast, in a monopolistic market, the single firm has significant market power and competitive behaviour can involve barriers to entry and other strategic actions.

• Understanding the relationship between market structure and competitive behaviour helps in regulating markets and promoting fair competition.

Q100. Answer: (b) Holding property

The correct answer is Holding property

Key Points

• Holding property is NOT a condition for acquiring the citizenship of India.

• Conditions for acquiring Indian citizenship include domicile, descent, and registration.

• Citizenship can also be acquired by naturalization under specific conditions.

• The Citizenship Act, 1955 outlines the various modes and conditions for acquiring Indian citizenship.

Additional Information

• The Citizenship Act, 1955 provides for acquisition and termination of citizenship after the commencement of the Constitution.

• Citizenship can be acquired by birth, descent, registration, naturalization, and incorporation of territory.

• The Act also provides for the renunciation and termination of citizenship.

• Persons of Indian Origin (PIO) and Overseas Citizens of India (OCI) are provided certain benefits but are not considered Indian citizens.

• Recent amendments, such as the Citizenship Amendment Act, 2019, have also impacted the criteria and process for acquiring Indian citizenship.

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