SSC CHSL 2020 Official Paper 21 (Held on: 5 Aug 2021 Shift 3) (Previous Year Paper)

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

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ENGLISH LANGUAGE

Q1. Select the option that can be used as a one-word substitute for the given group of words.

Relating to soldiers or war

(a) Official
(b) Political
(c) Marital
(d) Martial

Q2. Select the most appropriate word to fill in the blank.

Despite their _____, impersonal rules that apply to all are essential in large systems.

(a) advantages
(b) limitations
(c) support
(d) benefits

Q3. Select the most appropriate meaning of the idiomatic expression given.

To poke one’s nose into

(a) To take interest in others’ affairs
(b) To insert something in another’s nose
(c) To clean one’s nose with a twig
(d) To bury oneself in another matter

Q4. Select the option that expresses the given sentence in active voice.

Wi-Fi hotspots will be installed by the government in remote areas by 2022.

(a) The government will install remote areas and hotspots by 2022.
(b) Wi-Fi hotspots will install in remote areas by 2022 by the government.
(c) Remote areas will install Wi-Fi hotspots by the government by 2022.
(d) The government will install Wi-Fi hotspots in remote areas by 2022.

Q5. In the given sentence, identify the segment which contains a grammatical error.

Despite of being a close friend he did not help me in any way.

(a) he did not help me
(b) a close friend
(c) in any way
(d) Despite of being

Q6. Fill in the blank with most appropriate word.

The old building was _____ by the authorities.

(a) pulled off
(b) pulled down

(c) pulled through
(d) pulled up

Q7. Select the most appropriate synonym of the given word.

Herald

(a) Announce
(b) Halt
(c) Succeed
(d) Suppress

Q8. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution'.

Large glasses magnified his eyes so that to gave him the appearance of a wise owl.

(a) so that it gives
(b) so as to give
(c) as though to gave
(d) No substitution

Q9. Select the INCORRECTLY spelt word.

(a) Temparary
(b) Fragrance
(c) Interfere
(d) Accustomed

Q10. Select the most appropriate ANTONYM of the given word.

Restrictive

(a) Thrifty
(b) Closed
(c) Broad
(d) Liberal

Q11. Select the most appropriate one-word substitution for the given words.

One who pretends to be what he is not

(a) hypocrite
(b) optimist
(c) fanatic
(d) stoic

Q12. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

The police arrested / two young men / but neither of them were / responsible for the robbery.

(a) two young men
(b) but neither of them were
(c) for the robbery
(d) The police arrested

Q13. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.

A. Earlier, they had to look through hundreds of mugshots in large books and they could make a positive identification only in 5% of the cases.

B. This saves a lot of time and effort and also leads to more positive identifications.

C. Now computers make this easier for witnesses by projecting only pictures that match the descriptions closely.

D. After a crime, witnesses often give the police a description and thus help to identify the criminal.

(a) DACB
(b) ACBD

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(c) BACD
(d) CBAD

Q14. Select the most appropriate antonym of the given word.

NEGLECT

(a) omit
(b) care
(c) trust
(d) fail

Q15. Select the misspelt word.

(a) Trecherous
(b) Pompous
(c) Vicious
(d) Lustrous

Q16. Select the most appropriate meaning of the underlined idiom in the given sentence.

The friends quarrelled some time ago but now they are trying to make up with each other.

(a) to part forever
(b) to blame each other
(c) to settle their differences
(d) to compete with one another

Q17. Select the most appropriate synonym of the given word.

ADEPT

(a) clumsy
(b) skilled
(c) lazy
(d) rough

Q18. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.

I want to buy this book. Please give me any money.

(a) less money
(b) little money
(c) some money
(d) No substitution required

Q19. Select the correct indirect form of the given sentence.

The watchman said, “I did not see anyone last night.”

(a) The watchman said that he did not saw anyone the previous night.
(b) The watchman said that I had not seen anyone last night.
(c) The watchman said that he did not see anyone last night.
(d) The watchman said that he had not seen anyone the previous night.

Q20. Given below are four sentences in jumbled order. Select the option that gives their correct order.

A. The other was a ruffled, glum-faced man, heavily built and roughly dressed.

B. One man had a handsome presence with a bold and frank look.

C. But the most striking thing was that they were handcuffed together.

D. The two men who boarded the train from Denver were an odd pair.

(a) DCAB
(b) ADCB
(c) DBAC
(d) BADC

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Directions

In the following passage, some words have been deleted. Select the most appropriate option to fill in each blank.

We must understand that people can process very little information presented orally. So, it is (1) ____, particularly for a teacher, to realise that the students have sometimes listened to three or four teachers (2) __ you. So, the teacher must have props like notes, handouts and slides that will make the learning material (3) __ alive for the students and stay that way with them. A visual aid, a little movement or colour will get the students' attention. Another important thing to (4) __ is that long, complicated sentences spoken fast are simply too difficult for students to understand. It is, therefore, (5) ____ to use short sentences that make sense to them instantly.

Q21. Select the most appropriate option to fill in blank number 1.

(a) urgent
(b) important
(c) unnecessary
(d) immaterial

Q22. Select the most appropriate option to fill in blank number 2.

(a) before
(b) after
(c) beside
(d) behind

Q23. Select the most appropriate option to fill in blank number 3.

(a) go
(b) stay
(c) be
(d) come

Q24. Select the most appropriate option to fill in blank number 4.

(a) guess
(b) decide
(c) determine
(d) realise

Q25. Select the most appropriate option to fill in blank number 5.

(a) critical
(b) compulsory
(c) mandatory
(d) advisable

GENERAL INTELLIGENCE

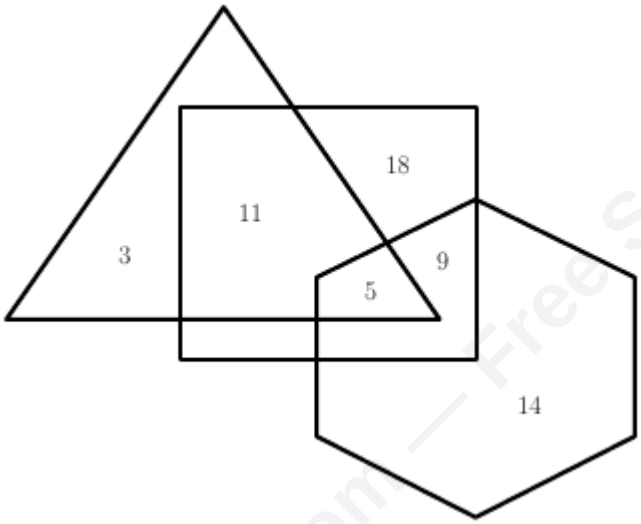
Q26. Select the option in which the numbers in the set share the same relationship as the numbers in the given set.

(25, 19, 36)

(a) (27, 11, 38)
(b) (24, 22, 49)
(c) (22, 17, 25)
(d) (20, 14, 66)

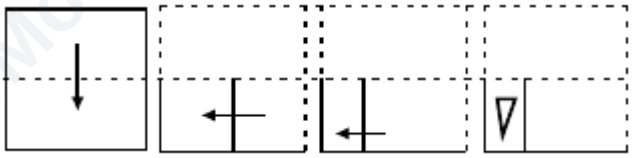
Q27. In the Venn diagram given below, if 'Hexagon' represents Farmers', 'Triangle' represents "Villagers' and 'Square' represents 'Beneficiaries', then how many Farmers are there who are Villagers and Beneficiaries also?

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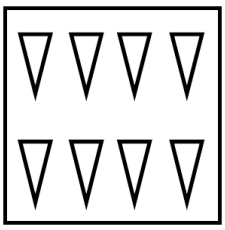


(a) 18
(b) 5
(c) 9
(d) 11

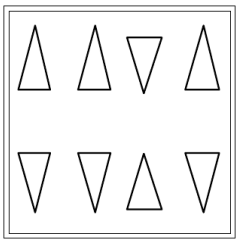
Q28. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?



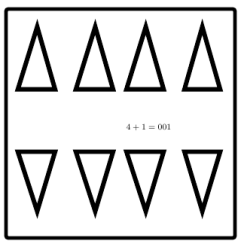
(a)



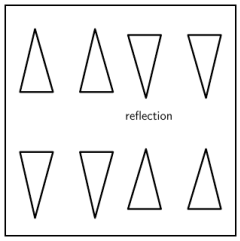
(b)



(c)



(d)



Q29. Select the option that represents the correct order of the given words as they would appear in an English dictionary.

1. Primary
2. Pristine
3. Predator
4. Precaution
5. Preserve

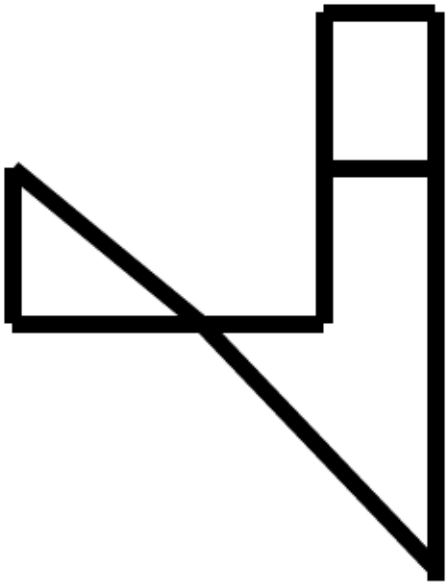
(a) 4, 3, 5, 2, 1
(b) 4, 3, 5, 1, 2
(c) 3, 4, 5, 1, 2
(d) 4, 5, 3, 1, 2

Q30. Select the number from among the given options that can replace the question mark (?) in the following series.

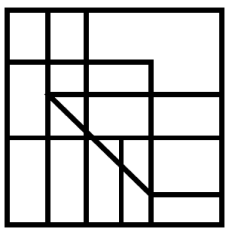
52, ?, 113, 162, 226, 307

(a) 70
(b) 89
(c) 77
(d) 83

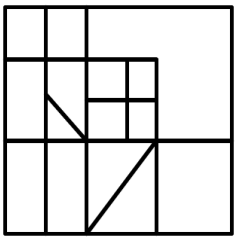
Q31. Select the option in which the given figure is embedded (rotation is NOT allowed).



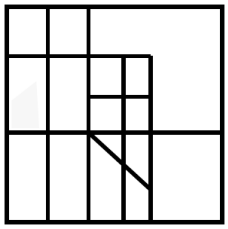
(a)



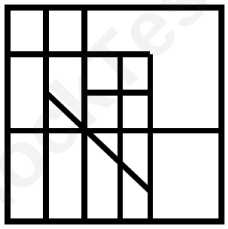
(b)



(c)



(d)



Q32. Select the correct combination of mathematical signs that can sequentially replace the * signs and balance the given equation.

100 * 25 * 35 * 15 * 5 * 180

(a) –, +, ÷, ×, =
(b) +, –, ÷, ×, =
(c) –, +, ×, ÷, =
(d) ×, –, +, ÷, =

Q33. Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.

Courage : Bravery

(a) Patience : Violent
(b) Systematic : Orderly
(c) Aggressive : Fragile
(d) Afraid : Lazy

Q34. Three of the following four letter-cluster pairs are alike in a certain way and one is different. Select the odd one.

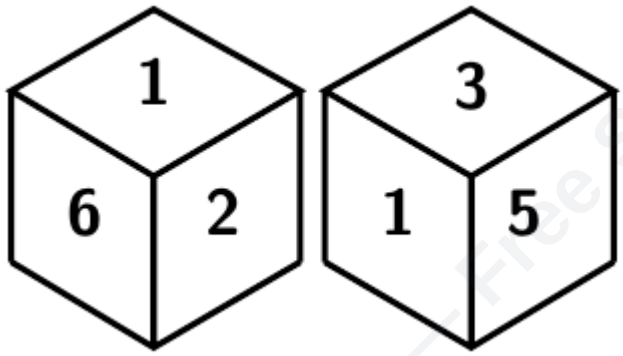
(a) TAP : VDT
(b) RAT : TDX
(c) DRY : FUC
(d) FRY : HTB

Q35. Four words are given, three of which are alike in a certain way while one is not. Select the inconsistent word.

(a) Gastroenterologist
(b) Psychiatrist
(c) Cardiologist
(d) Ophthalmologist

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Q36. Two different positions of the same dice are shown, the six faces of which are numbered from 1 to 6. Select the number that will be on the face opposite to the one having '4'.



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

Q37. Select the option that is related to the fourth number in the same way as the first number is related to the second number and the fifth number is related to the sixth number.

11 : 242 : : ? : 162 : : 14 : 392

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

Q38. Select the option in which the numbers are related in the same way as are the numbers of the following set.

(21, 13, 17)

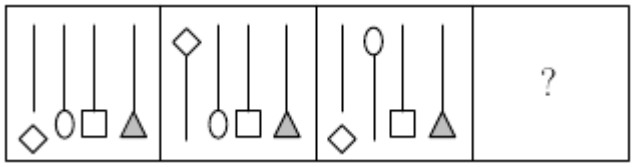
(a) (22, 57, 81)
(b) (11, 21, 140)
(c) (25, 35, 38)
(d) (32, 46, 39)

Q39. Select the option that is related to the third word in the same way as the second word is related to the first word.

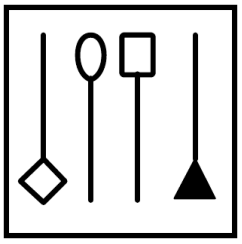
Kick : Football : : Backstroke : ?

(a) Cricket
(b) Weight lifting
(c) Polo
(d) Swimming

Q40. Select the figure that will replace the question mark (?) in the following figure series.

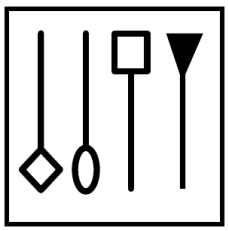


(a)

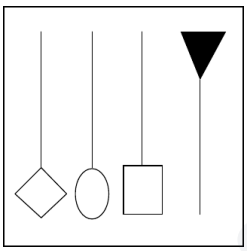


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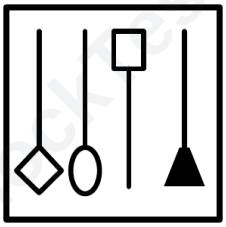
(b)



(c)



(d)



Q41. In a code language, if LOCK is written as 1212311 and KEY is written as 112225, then how will DEAR be written in the same language?

(a) 4222618
(b) 4220218
(c) 4232609
(d) 4052619

Q42. Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the one that is different.

(a) 5 : 130
(b) 8 : 516
(c) 9 : 734
(d) 7 : 348

Q43. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

H _ Z _ H O Z C H O _ D _ O _ E H _ Z F

(a) O B H O Z O
(b) H B Z H H O
(c) O C Z H Z H
(d) O B Z H Z O

Q44. In a certain code language, 'MODERATE' is written as 'OQEFTBVF' and 'LIFE' is written as 'NJGF'. How will 'CLEAR' be written in that language?

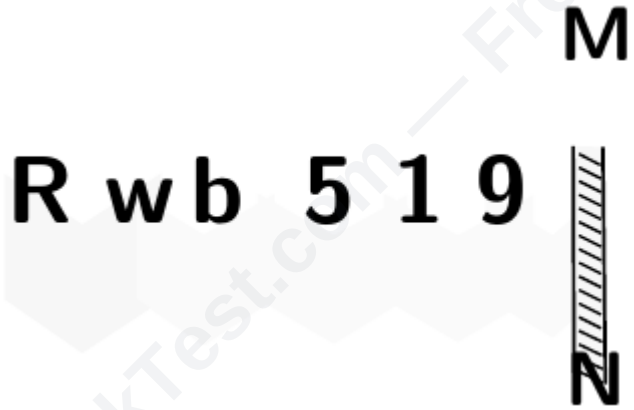
(a) DOFCT
(b) DNGBU
(c) ENFBT
(d) DNFBT

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Q45. A family consists of six members. Surendar is the son of Revant. Pranavi is the wife of Revant. Yugal is the brother of Revant. Kundana is the daughter of Pranavi. Janardan is the brother of Pranavi. How many children does Pranavi have?

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

Q46. Select the correct mirror image of the given combination when the mirror is placed at MN as shown.



(a) 1



(b) 2



(c) 3



(d) 4

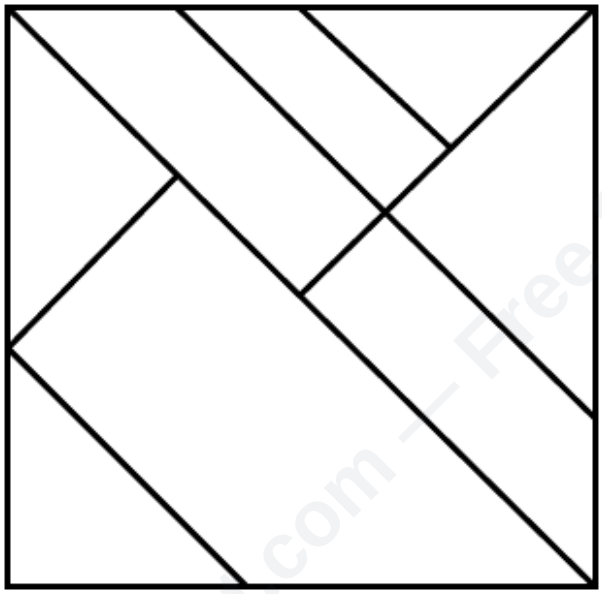


Q47. Select the option that is related to the third term in the same way as the second term is related to the first term.

TANGLE : XERKPI : : FIGHTS : ?

(a) JMKMXX
(b) JNOLXW
(c) KMKLYW
(d) JMKLXW

Q48. How many triangles are there in the figure given below?



(a) 9
(b) 10
(c) 8
(d) 11

Q49. Direction: Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some drivers are artists.

All fathers are artists.

No father is a doctor.

Conclusions:

I. No doctor is an artist.

II. No driver is a doctor.

III. Some artists are fathers.

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

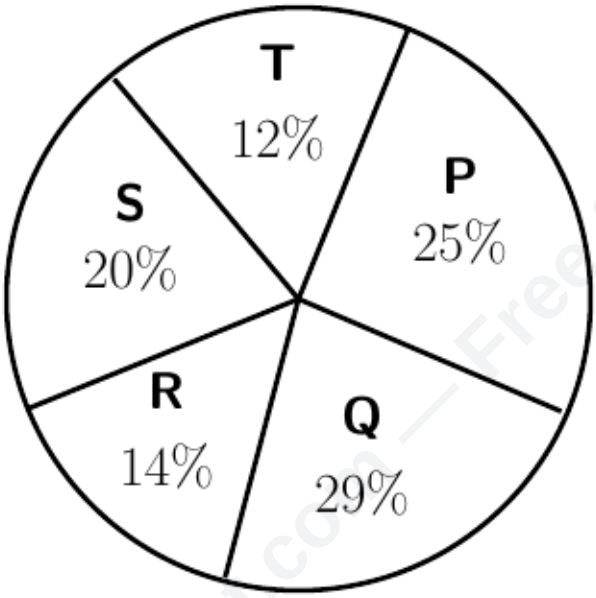
Q50. In a group of 72 actors, each artist participates in three activities, viz., quiz, solo acting, and simulation. 11 actors participate in quiz only, 15 participate in solo acting only and 14 participate in simulation only. If 5 artists participate in all the three activities, then calculate the number of artists participating in any two activities.

(a) 15
(b) 27
(c) 25
(d) 37

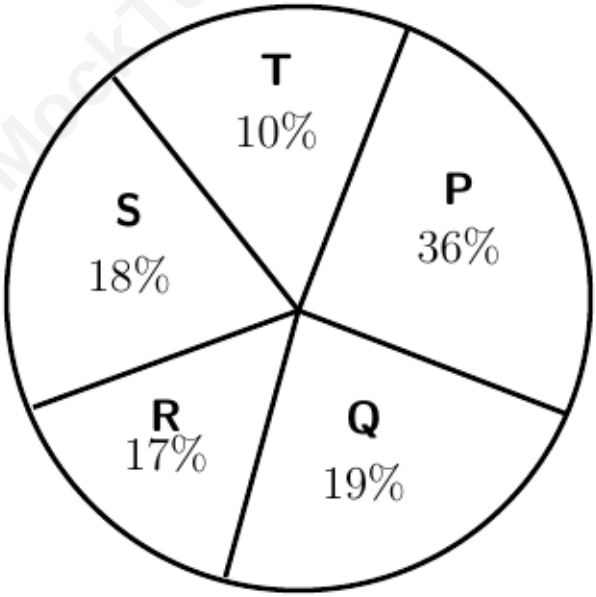
QUANTITATIVE APTITUDE

Q51. The given pie charts show the distribution of students of graduate and postgraduate levels in five different institutes, P, Q, R, S, and T, in a town. Study the pie charts and answer the question that follows.

(i) Total number of students of graduate-level in five different institutes = 12400



(ii) Total number of students of postgraduate level in five different institutes = 8000



The total number of graduate and postgraduate level students in institute Q is:

(a) 5116
(b) 4116
(c) 5126
(d) 5216

Q52. If the number 87m6203m is divisible by 6, then find the sum of all possible values of 'm'

(a) 15
(b) 20
(c) 10
(d) 16

Q53. For A = 30°, find the value of: $(-3\sin^2 2A+2\sec^2 A-\tan 3A/2)/(1/3\sin 3A)$

(a) 11/4
(b) -7/4
(c) 57/4
(d) -7/36

Q54. In a triangle ABC, if BD and CD bisect angle B and angle C, respectively, and angle A = 100°, then find angle BDC.

(a) 110°
(b) 100°
(c) 140°
(d) 130°

Q55. If a : b = 3 : 5, b : c = 7 : 8 and c : d = 2 : 3, then 2a : 3d is equal to

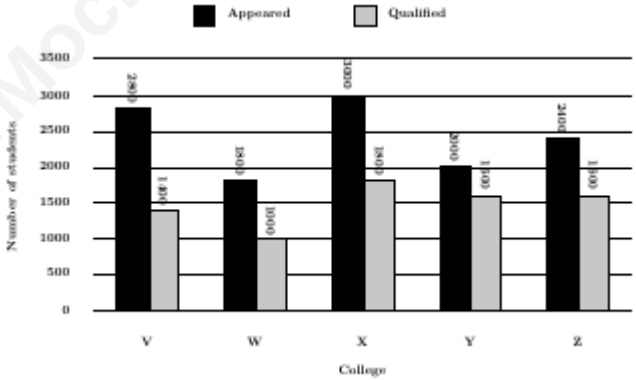
(a) 1 : 2
(b) 7 : 15
(c) 7 : 20
(d) 7 : 30

Q56. The in-radius and circumradius of a right-angled triangle is 3 cm and 12.5 cm, respectively. The area of the triangle is:

(a) 84 cm^2
(b) 88 cm2
(c) 48 cm2
(d) 64 cm2

Q57. Study the following graph and answer the question that follows.

Number of students that appeared and qualified, from various colleges, at a scholarship examination.



What is the difference between the average number of students that appeared for the scholarship examination from all the given colleges, and the average number of students that qualified from all the colleges together?

(a) 910
(b) 940
(c) 920
(d) 930

Q58. The numbers 2, 3, 4 and 5 occur (2 + 5k), (5k - 7), (2k - 3) and (k + 2) times, respectively. The average of the numbers is 2.85. Later on, the number 2 was replaced by 6 in all the places. What is the average of the new numbers?

(a) 2.4
(b) 3.85
(c) 5.25
(d) 4.75

Q59. A number P is 20% more than a number Q but 10% less than a number R. What percentage is number Q of number R?

(a) 75
(b) 80
(c) 85
(d) 90

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Q60. If $\cos\theta = 7/3\sqrt{6}$ and θ is an acute angle, then the value of $27\sin^2\theta - 3/2$ is:

(a) 12
(b) 1
(c) 15
(d) 9

Q61. Find the value of θ, if $\sec^2\theta + (1 - \sqrt{3})\tan\theta - (1 + \sqrt{3}) = 0$, where θ is an acute angle.

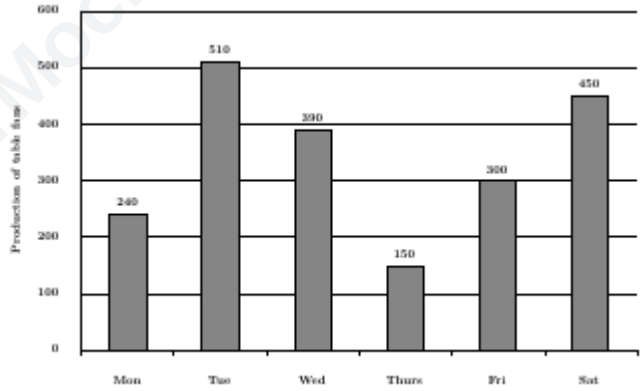
(a) 60°
(b) 30°
(c) 45°
(d) 15°

Q62. Two circles of radii 4 cm and 3 cm, respectively, touch each other externally. What is the distance (in cm) between their centres?

(a) 16
(b) 7
(c) 5
(d) 9

Q63. Study the given bar graph and answer the question that follows.

The bar graph shows the production of table fans in a factory during one week.



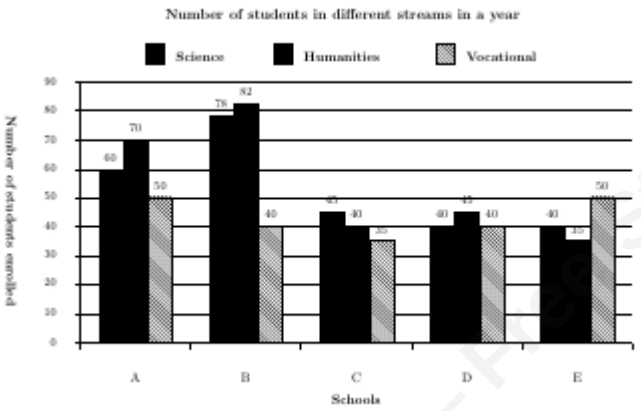
The average production of table fans on Friday and Saturday exceeds the average production of table fans during the week by:

(a) 45
(b) 30
(c) 35
(d) 40

Q64. The number of students enrolled in different streams at the Senior Secondary level in five schools is shown in the given bar graph.

The number of students enrolled in the Humanities stream in schools A, C, and D is what percentage of the number of students enrolled in the Vocational stream in schools C, D, and E?

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(a) 115
(b) 75
(c) 124
(d) 80.64

Q65. If a + b = 24 and $a^2 + b^2 = 306$, where a > b, then the value of 4a - 5b is:

(a) 12
(b) 18
(c) 20
(d) 15

Q66. During his morning walk, Atul walks for 45 minutes at a speed of 8 km/h and takes 15 rounds of a park. Shekhar takes 10 rounds of the same park in 40 minutes. What is the speed of Shekhar in km/h?

(a) 6
(b) 7.2
(c) 7.5
(d) 6.75

Q67. What is the coefficient of y^2 in the expansion of $(\sqrt{2}y^2 - 5\sqrt{3})^3$?

(a) $-30\sqrt{3}$
(b) $225\sqrt{2}$
(c) $30\sqrt{3}$
(d) $-225\sqrt{2}$

Q68. How many spherical bullets, each bullet being 7 cm in diameter, can be made out of a cube of lead whose edge measures 77 cm? (Take π = 22/7)

(a) 2451
(b) 4521
(c) 2541
(d) 1452

Q69. An article is listed at Rs. 5,000 and two successive discounts of 12% and 12% are given on it. How much will the seller gain or lose if he gives a single discount of 24%?

(a) Loss Rs. 72
(b) Profit Rs. 72
(c) Profit Rs. 64
(d) Loss Rs. 64

Q70. The distance between two equal parallel chords of a circle is 10 cm. If the chords are 24 cm long, then what is the length of the radius?

(a) 26 cm
(b) 13 cm
(c) $2\sqrt{61}$ cm

(d) 17 cm

Q71. Sachin alone can complete a piece of work for Rs. 8,500 in 81/2 days. But with the help of Vishnu, the work is completed in 6 days. The share to be paid to Vishnu is:

(a) Rs. 2,400
(b) Rs. 2,000
(c) Rs. 2,500
(d) Rs. 3,200

Q72. If x - y = 4 and $x^3 - y^3 = 316$, then the value of x^4 + y^4 is:

(a) 2248
(b) 2284
(c) 2428
(d) 2482

Q73. The value of 182/11÷[7/33+{29/6-3/11×(51/6-31/3)}] is:

(a) 4
(b) 5
(c) 8
(d) 2

Q74. Krishan invested a sum of Rs. 25,000 in two parts. He earned 11% p.a. simple interest on part 1 and 10% p.a. compound interest compounded annually on part 2. If the total interest received by him after 2 years is Rs. 5,370, then find the sum invested on simple interest.

(a) Rs. 11,000
(b) Rs. 13,000
(c) Rs. 12,000
(d) Rs. 12,500

Q75. An article was sold at a loss of 24%. If it were sold for Rs. 1,596 more, then there would have been a gain of 18%, The cost price of the article is:

(a) Rs. 4200
(b) Rs. 3600
(c) Rs. 3800
(d) Rs. 3400

GENERAL AWARENESS

Q76. In which of the following states is the Bhadra Wildlife Sanctuary located?

(a) Gujarat
(b) West Bengal
(c) Karnataka
(d) Bihar

Q77. With which of the following sports is Murugappa Gold Cup associated?

(a) Table tennis
(b) Cricket
(c) Football
(d) Hockey

Q78. Which of the following statements about bromine is correct?

(a) It is a solid at room temperature.
(b) It is a gas at room temperature.
(c) It is a metal.
(d) It is a liquid at room temperature.

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Q79. The cause of Siderosis is excessive deposition of _____ in the body tissue.

(a) iron
(b) zinc
(c) aluminium
(d) coal

Q80. Qutub Minar is of how many storeys?

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

Q81. By which amendment of the Indian Constitution the words 'Socialist' and 'Secular' were added to the Preamble?

(a) 41st Amendment Act, 1976
(b) 42nd Amendment Act, 1976
(c) 44th Amendment Act, 1978
(d) 43rd Amendment Act, 1977

Q82. Cuscuta is an example of:

(a) host
(b) parasite
(c) autotroph
(d) saprotroph

Q83. Where is the Kandariya Mahadev Temple located?

(a) Madhera
(b) Khajuraho
(c) Aurangabad
(d) Devgarh

Q84. Who among the following is the first Indian to be awarded with UN Military Gender Advocate Award in May 2020?

(a) Shivangi Singh
(b) Suman Gawani
(c) Rani Rampal
(d) Jyoti Sharma

Q85. In September 2020, who was appointed as the Chairman of National School of Drama?

(a) Waman Kendre
(b) Paresh Rawal
(c) Anupam Kher
(d) Nawazuddin Siddiqui

Q86. How many Olympic Medals did India win in the sport of wrestling, as of January 2021?

(a) Four
(b) Five
(c) Three
(d) Two

Q87. NBFC for recovery of loans under the SARFAESI Act in the Union Budget 2020-21. (NBFC) eligibility limit was proposed to be reduced to an asset size of _____.

(a) 400 Crore
(b) 300 Crore
(c) 200 Crore
(d) 100 Crore

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Q88. Which of the following Indian cities hosted the International Summit on Women in STEM (Science, Technology, Engineering and Mathematics) in January 2020?

(a) Pune
(b) New Delhi
(c) Lucknow
(d) Hyderabad

Q89. In which year was the Marine Products Export Development Authority (MPEDA) established in India?

(a) 1947
(b) 1974
(c) 1972
(d) 1948

Q90. What is the minimum age to be an eligible voter for Lok Sabha elections?

(a) 16 years
(b) 18 years
(c) 17 years
(d) 15 years

Q91. Who won the 10 m air rifle event at the fifth edition of the International Online Shooting Championship in October 2020?

(a) Divyansh Singh Panwar
(b) Manu Bhaker
(c) Rahi Sarnobat
(d) Visnu Shivaraj Pandian

Q92. In which of the following states is Sambhar Salt Lake situated?

(a) Punjab
(b) Andhra Pradesh
(c) Rajasthan
(d) Gujarat

Q93. Which type of storage device is a hard disk?

(a) Tertiary
(b) Off-line
(c) Primary
(d) Secondary

Q94. Which of the following is the world's third-highest mountain that connects the borders of India and Nepal?

(a) Nanga Parbat
(b) Broad Peak
(c) K2
(d) Kanchenjunga

Q95. Lohit river is a tributary of:

(a) Chambal
(b) Yamuna
(c) Ghaghara
(d) Brahmaputra

Q96. PM Narendra Modi laid the foundation stone for water supply project in which state through video conferencing in July 2020?

(a) Manipur
(b) Telangana
(c) Punjab

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(d) Uttar Pradesh

Q97. What is the use of the functional key F7 in Microsoft Word 2010?

(a) It is used as a search key.
(b) It is used to run spell check and grammar check.
(c) It is used for renaming files and folders.
(d) It is used to open the Help window.

Q98. Who was the founder of the Mamluk dynasty in India?

(a) Iltutmish
(b) Bakhtiyar Khilji
(c) Qutub-ud-din Aibak
(d) Razia Sultan

Q99. Who among the following was conferred with the 'Best Actor' award at the Dadasaheb Phalke International Film Festival in February 2020?

(a) Hrithik Roshan
(b) Amir Khan
(c) Ranveer Singh
(d) Ranbir Kapoor

Q100. Which of the following statements is correct?

(a) In 1775, the Siraj ud-Daulah was defeated in the Battle of Plassey.
(b) In 1776, the first railway service began from Bombay to Thane.
(c) In 1774, the Asiatic Society was founded by Sir Williams Jones.
(d) In 1793, the Cornwallis code was enacted.

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) Martial

The solution is in Hindi. Read it online.

Q2. Answer: (b) limitations

The solution is in Hindi. Read it online.

Q3. Answer: (a) To take interest in others' affairs

The solution is in Hindi. Read it online.

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Q4. Answer: (d) The government will install Wi-Fi hotspots in remote areas by 2022.

The solution is in Hindi. Read it online.

Q5. Answer: (d) Despite of being

The solution is in Hindi. Read it online.

Q6. Answer: (b) pulled down

The solution is in Hindi. Read it online.

Q7. Answer: (a) Announce

The solution is in Hindi. Read it online.

Q8. Answer: (b) so as to give

The solution is in Hindi. Read it online.

Q9. Answer: (a) Temparary

The solution is in Hindi. Read it online.

Q10. Answer: (d) Liberal

The solution is in Hindi. Read it online.

Q11. Answer: (a) hypocrite

The solution is in Hindi. Read it online.

Q12. Answer: (b) but neither of them were

The solution is in Hindi. Read it online.

Q13. Answer: (a) DACB

The correct answer is 'DACB'.

Key Points

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

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

• Sentence D will be the first sentence because it is an introductory sentence explaining how the witnesses give a description of a crime to the police.

• Sentence A will be the next sentence because it further explains Sentence D.

• Sentence C will be the next sentence because it explains how computers help them.

• Lastly, Sentence B will be used.

• Thus, the correct sequence is:

• D: After a crime, witnesses often give the police a description and thus help to identify the criminal.

• A: Earlier, they had to look through hundreds of mugshots in large books and they could make a positive identification only in 5% of the cases.

• C: Now computers make this easier for witnesses by projecting only pictures that match the descriptions closely.

• B: This saves a lot of time and effort and also leads to more positive identifications.

Correct Sequence: After a crime, witnesses often give the police a description and thus help to identify the criminal. Earlier, they had to look through hundreds of mugshots in large books and they could make a positive identification only in 5% of the cases. Now computers make this easier for witnesses by projecting only pictures that match the descriptions closely. This saves a lot of time and effort and also leads to more positive identifications.

Q14. Answer: (b) care

The solution is in Hindi. Read it online.

Q15. Answer: (a) Trecherous

The solution is in Hindi. Read it online.

Q16. Answer: (c) to settle their differences

The solution is in Hindi. Read it online.

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Q17. Answer: (b) skilled

The solution is in Hindi. Read it online.

Q18. Answer: (c) some money

The solution is in Hindi. Read it online.

Q19. Answer: (d) The watchman said that he had not seen anyone the previous night.

The solution is in Hindi. Read it online.

Q20. Answer: (c) DBAC

The correct answer is 'DBAC'.

Key Points

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

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

• Sentence D will be the first sentence because it is an introductory sentence.

• Sentence B will be the next sentence because it further explains Sentence D.

• Sentence A will be the next sentence because it explains how they looked.

• Lastly, Sentence C will be used.

• Thus, the correct sequence is:

• D: The two men who boarded the train from Denver were an odd pair.

• B: One man had a handsome presence with a bold and frank look.

• A: The other was a ruffled, glum-faced man, heavily built and roughly dressed.

• C: The two men who boarded the train from Denver were an odd pair.

Correct Sequence: The two men who boarded the train from Denver were an odd pair. One man had a handsome presence with a bold and frank look. The other was a ruffled, glum-faced man, heavily built and roughly dressed. The two men who boarded the train from Denver were an odd pair.

Q21. Answer: (b) important

The solution is in Hindi. Read it online.

Q22. Answer: (a) before

The solution is in Hindi. Read it online.

Q23. Answer: (d) come

The solution is in Hindi. Read it online.

Q24. Answer: (d) realise

The solution is in Hindi. Read it online.

Q25. Answer: (d) advisable

The solution is in Hindi. Read it online.

Q26. Answer: (c) (22, 17, 25)

The Logic here is as follows:

(1^(st) Number – 2^(nd) number)² = 3^(rd) Number

In (25, 19, 36)

(1^(st) Number – 2^(nd) number)²

(25 - 19)²

= 6²

= 36 = 3^(rd) Number

Now check the all options,

Option (1) (27, 11, 38)

(1^(st) Number – 2^(nd) number)²

(27 - 11)²

= 16²

= 256 ≠ 3^(rd) Number

Option (2) (24, 22, 49)
(1^(st) Number – 2^(nd) number)²
(24 - 22)²
= 2²
= 4 ≠ 3^(rd) Number
Option (3) (22, 17, 25)
(1^(st) Number – 2^(nd) number)²
(22 - 17)²
= 5²
= 25 = 3^(rd) Number
Option (4) (20, 14, 66)
(1^(st) Number – 2^(nd) number)²
(20 - 14)²
= 6²
= 36 ≠ 3^(rd) Number
Hence, the correct answer is "(22, 17, 25)".

Q27. Answer: (b) 5

The shaded part represents is the number of Farmers are there who are Villagers and Beneficiaries.
The number of Farmers are there who are Villagers and Beneficiaries = 5
Hence, '5' is the correct answer.

Q28. Answer: (c) [figure]

The image obtained when the paper is unfolded is,
Hence, option 3 is the correct answer.

Q29. Answer: (b) 4, 3, 5, 1, 2

According to the sequence in the dictionary:
The correct order of the given words is:
4. Precaution
3. Predator
5. Preserve
1. Primary
2. Pristine
Hence, the correct answer is "4, 3, 5, 1, 2".

Q30. Answer: (c) 77

The pattern followed here is:
Hence, '77' is the correct answer.

Q31. Answer: (d) [figure]

The embedded part of this image is:
Hence, option (4) is the correct answer.

Q32. Answer: (c) –, +, ×, ÷, =

According to BODMAS rule:
Given equation 100 * 25 * 35 * 15 * 5 * 180
Option 1: Using the combination –, +, ÷, ×, =
100 – 25 + 35 ÷ 15 × 5 = 180
By BODMAS rule
100 – 25 + 2.34 × 5 = 180
100 – 25 + 11.7 = 180
111.7 – 25 = 180
86.7 = 180 (LHS ≠ RHS)

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Option 2: Using combination +, –, ÷, ×, =

100 + 25 – 35 ÷ 15 × 5 = 180

100 + 25 – 2.34 × 5 = 180

100 + 25 – 11.7 = 180

125 – 11.7 = 180

113.3 = 180 (LHS ≠ RHS)

Option 3: Using the combination –, +, ×, ÷, =

100 – 25 + 35 × 15 ÷ 5 = 180

100 – 25 + 35 × 3 = 180

100 – 25 + 105 = 180

205 – 25 = 180

180 = 180 (LHS = RHS)

Option 4: Using the combination ×, –, +, ÷, =

100 × 25 – 35 + 15 ÷5 =180

100 × 25 – 35 + 3 =180

2500 – 35 + 3 =180

2503 – 35 =180

2468 = 180 (LHS ≠ RHS)

Hence, the answer is "–, +, ×, ÷, =".

Q33. Answer: (b) Systematic : Orderly

The logic followed here is:

Courage : Bravery → Courage is the synonyms word of Bravery.

Similarly,

Systematic : Orderly→ Systematic is the synonyms word of Orderly.

Hence, 'Systematic : Orderly' is the correct answer.

Q34. Answer: (d) FRY : HTB

Table show alphabet serial number –

The pattern followed is,

All follow the same pattern, except 'FRY : HTB'.

Hence, "FRY : HTB" is the odd one.

Q35. Answer: (b) Psychiatrist

The logic followed here is:

Option (1) Gastroenterologist → A gastroenterology is a specialist doctor of diseases of the stomach and liver and the diseases that affect the digestive system.

Option (2) Psychiatrist → A psychiatrist is a general medical doctor who diagnoses and treats mental, emotional, and behavioural disorders.

Option (3) Cardiologist → A cardiologist is a specialist doctor of diseases of the heart.

Option (4) Ophthalmologist → An ophthalmologist is a specialist doctor of diseases of the eye and vision care.

Hence, "Psychiatrist" is an odd one.

Q36. Answer: (b) 1

Logic: If two dice have the same face value in the given image then their clockwise or anticlockwise wise number are known as opposite numbers in dice.

If we rotate the second dice in a clockwise direction.

We get,

In first dice and second dice.

Number '1' is common.

The left letter will be opposite to each other writing them clockwise starting from 1.

Letter	Opposite
6	5

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2	3
1	4

Hence, the face opposite to the 4 is “1”.

Q37. Answer: (a) 9

The pattern followed here is,
Let (1^(st) number : 2^(nd) number)
(1^(st) number)² × 2 = 2^(nd) number
Now follow the steps:
11 : 242
(1^(st) number)² × 2
= 11²× 2
= 121 × 2
= 242 = 2^(nd) number
And,
14 : 392
(1^(st) number)² × 2
= 14²× 2
= 196 × 2
= 392 = 2^(nd) number
Similarly,
? : 162
(1^(st) number)² × 2
= 9²× 2
= 81 × 2
= 162 = 2^(nd) number
Hence, “9” is correct answer.

Q38. Answer: (d) (32, 46, 39)

The Logic here is as follows:
(1^(st) Number + 2^(nd) number) ÷ 2 = 3^(rd) Number
In (21, 13, 17)
(1^(st) Number + 2^(nd) number) ÷ 2
= (21 + 13) ÷ 2
= 34 ÷ 2
= 17 = 3^(rd) Number
Now check the all options,
Option (1) (22, 57, 81)
(1^(st) Number + 2^(nd) number) ÷ 2
= (22 + 57) ÷ 2
= 79 ÷ 2
= 39.5 ≠ 3^(rd) Number
Option (2) (11, 21, 140)
(1^(st) Number + 2^(nd) number) ÷ 2
= (11 + 21) ÷ 2
= 32 ÷ 2
= 16 ≠ 3^(rd) Number
Option (3) (25, 35, 38)
(1^(st) Number + 2^(nd) number) ÷ 2
= (25 + 35) ÷ 2
= 60 ÷ 2

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= 30 ≠ 3^(rd) Number
Option (4) (32, 46, 39)
(1^(st) Number + 2^(nd) number) ÷ 2
= (32 + 46) ÷ 2
= 78 ÷ 2
= 39 = 3^(rd) Number
Hence, the correct answer is "(32, 46, 39)".

Q39. Answer: (d) Swimming

The logic followed here is:
Kick : Football → Kick is an ancient style of football.
Similarly,
Backstroke : swimming → Backstroke is an ancient style of swimming.
Hence, the correct answer is "Swimming ".

Q40. Answer: (d) [figure]

The figure that will replace the question mark (?) in the following figure series is shown below:
Alternate first second and third small figure vertically flip.
Hence, ‘option 4’ is the correct answer.

Q41. Answer: (a) 4222618

The table is alphabets place value:
The pattern followed here is:
Step 1: Consonants coded as its alphabet place value numerical.
Step 2: Vowel’s coded as opposite alphabet place value numerical.
LOCK is written as 1212311
And,
KEY is written as 112225
Similarly,
Hence, 'DEAR' is coded as "4222618".

Q42. Answer: (b) 8 : 516

The logic is here is:
(1^(st) number)^3 + 5 = 2^(nd) number.
Option (1): 5 : 130
Now, follow the logic:
(5)^3 + 5 = 125 + 5 = 130 = 2^(nd) number
This option follows the pattern.
Option (2): 8 : 516
Now, follow the logic:
(8)^3 + 5 = 512 + 5 = 517 ≠ 2^(nd) number
This option do not follow the pattern.
Option (3): 9 : 734
Now, follow the logic:
(9)^3 + 5 = 729 + 5 = 734 = 2^(nd) number
This option follows the pattern.
Option (4): 7 : 348
Now, follow the logic:
(7)^3 + 5 = 343 + 5 = 348 = 2^(nd) number
This option follows the pattern.
Hence, pair “8 : 516” is an odd one.

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Q43. Answer: (d) O B Z H Z O

Given :- H _ Z _ H O Z C H O _ D _ O _ E H _ Z F

By checking options and substituting accordingly.

1): O B H O Z O → H O Z B / H O Z C / H O H D / O O Z E / H O Z F

2): H B Z H H O → H H Z B / H O Z C / H O Z D / H O H E / H O Z F

3): O C Z H Z H → H O Z C / H O Z C / H O Z D / H O Z E / H H Z F

4): O B Z H Z O → H O Z B / H O Z C / H O Z D / H O Z E / H O Z F

• Here last letter of the word is increasing by +1.

♦ B + 1 = C, C + 1 = D, D + 1 = E, E + 1 = F.

• Option (4) gives a pattern of H O Z B - H O Z C - H O Z D - H O Z E - H O Z F.

Hence, ‘O B Z H Z O’ is the correct answer.

Q44. Answer: (d) DNFBT

The table is alphabets place value:

The pattern followed here is:

If alphabet place value more than 10 then is coded as second next alphabet.

• Place value more than 10 + 2 = letter

If alphabet place value less than 10 then is coded as next alphabet.

• Place value less than 10 + 1 = letter

'MODERATE' is written as 'OQEFTBVF'

And,

'LIFE' is written as 'NJGF'

Similarly,

Hence, 'CLEAR' is coded as "DNFBT".

Q45. Answer: (d) 2

Preparing the family tree using the following symbols,

We can draw the following Family Tree from the information given above:

1) Surendar is the son of Revant.

2) Pranavi is the wife of Revant.

3) Yugal is the brother of Revant.

4) Kundana is the daughter of Pranavi.

5) Janardan is the brother of Pranavi.

Hence, Pranavi have "2" children.

Q46. Answer: (a) 1 [figure]

The correct mirror image of the given figure when the mirror is held at the right side is:

Hence, "option (1)" is the correct answer.

Additional Information

In Mirror image left side and right side changed vice-versa where top and bottom remain same.

Reflection of an object into the water is its water image. It appears by inverting an object vertically i.e. upside down.

The water image of the figure looks like the mirror image of the figure in case the mirror is horizontally at the bottom of the figure.

Water image is just a reflection where top and bottom part of the images changed where left and right side of the image remain same.

Q47. Answer: (d) JMKLXW

The logic here is,

TANGLE : XERKPI

Similarly,

FIGHTS : ?

Hence, "JMKLXW" is correct answer.

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Q48. Answer: (b) 10

The number of triangles in the given figure is:

So, there are a total of 10 triangles in the figure.

Hence, '10' is the correct answer.

Q49. Answer: (b) Only conclusion III follows

Statements:

Some drivers are artists.

All fathers are artists.

No father is a doctor.

The least possible diagram for the given statements is as follows

Conclusions:

I. No doctor is an artist → False (It is possible but not definite)

II. No driver is a doctor → False (It is possible but not definite)

III. Some artists are fathers → True (because all fathers are artists so some artists are also fathers)

Hence, "Only conclusions III follows".

Additional Information

Q50. Answer: (b) 27

Given:

Total number of actors = 72

11 actors participate in quiz only.

15 participate in solo acting only.

14 participate in simulation only.

5 artists participate in all the three activities.

We know that,

Total number of actors = participate only in quiz, solo acting, and simulation + participate in all the three activities + participating in any two activities

=> 72 = (11 + 15 + 14) + 5 + (a + b + c)

=> 72 = 40 + 5 + (a + b + c)

=> (a + b + c) = 72 - 40 – 5

=> (a + b + c) = 72 - 45

=> (a + b + c) = 27

Hence, "27" number of artists participating in any two activities.

Q51. Answer: (a) 5116

Calculation:

Total number of gradute and post graduate level students in institute Q is:

Total number of graudate level students in Q = 12400 × 29/100 = 3596

Total number of psot graudate level students in Q = 8000 × 19/100 = 1520

Total = 3596 + 1520 = 5116

Therefore Required answer is 5116

Q52. Answer: (c) 10

Shortcut Trick

For divisibility by 6, the number must be divisible by both 2 and 3.

Divisibility by 2: Last digit m must be even (0, 2, 4, 6, 8).

Divisibility by 3: Sum of digits (8+7+m+6+2+0+3+m = 26 + 2m) must be divisible by 3.

Check even values of m: If m=2, sum=30 (Yes); If m=8, sum=42 (Yes).

Sum of possible values of m = 2 + 8 = 10.

Therefore The correct answer is 10.

Alternate Method

Given: Number = 87m6203m, Divisor = 6.

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Formula Used: Divisibility rules for 2 and 3.
=> For divisibility by 2, m in {0, 2, 4, 6, 8}.
=> For divisibility by 3, (8 + 7 + m + 6 + 2 + 0 + 3 + m) ÷ 3 must leave remainder 0.
=> (26 + 2m) ÷ 3 → (2 + 2m) ÷ 3 must be divisible by 3.
=> If m = 0, 2 + 0 = 2 (No)
=> If m = 2, 2 + 4 = 6 (Yes)
=> If m = 4, 2 + 8 = 10 (No)
=> If m = 6, 2 + 12 = 14 (No)
=> If m = 8, 2 + 16 = 18 (Yes)
=> Possible values of m are 2 and 8.
=> Sum of values = 2 + 8 = 10.
Therefore The correct answer is 10.
Additional Information
Divisibility by 3
A number is divisible by 3 if the sum of its digits is divisible by 3.
Divisibility by 6
A number is divisible by 6 if it satisfies the divisibility rules of both 2 (even number) and 3 (sum of digits) simultaneously.
Divisibility by 4
A number is divisible by 4 if the last two digits of the number are divisible by 4.

Q53. Answer: (b) -7/4

Shortcut Trick
Substitute A = 30° directly into the given expression.
Numerator = $-3\times\sin^2 60° + 2\times\sec^2 30° - \tan 45° = -3\times(3/4) + 2\times(4/3) - 1 = -7/12$.
Denominator = $(1/3)\times\sin 90° = 1/3$.
Result = $(-7/12) \div (1/3) = -7/4$.
Therefore The correct answer is −7/4.
Alternate Method
Given:
A = 30°
Expression: $[-3\sin^2 2A + 2\sec^2 A - \tan(3A/2)] / [(1/3)\sin 3A]$
Calculation:
=> Substitute A = 30° into the individual terms:
=> $\sin(2A) = \sin(2 \times 30°) = \sin(60°) = \sqrt{3}/2$
=> $\sec(A) = \sec(30°) = 2/\sqrt{3}$
=> $\tan(3A/2) = \tan(3 \times 30° / 2) = \tan(45°) = 1$
=> $\sin(3A) = \sin(3 \times 30°) = \sin(90°) = 1$
=> Now substitute these values back into the expression:
=> Numerator = $-3\times(\sqrt{3}/2)^2 + 2\times(2/\sqrt{3})^2 - 1$
=> Numerator = $-3\times(3/4) + 2\times(4/3) - 1$
=> Numerator = $-9/4 + 8/3 - 1$
=> LCM of 4 and 3 is 12.
=> Numerator = $(-27 + 32 - 12) / 12 = -7/12$
=> Denominator = $(1/3) \times 1 = 1/3$
=> Final Value = $(-7/12) / (1/3)$
=> Final Value = $(-7/12) \times 3 = -7/4$
Therefore The correct answer is −7/4.
Additional Information
Standard Trigonometric Values
For standard angles: $\sin(30°) = 1/2$, $\sin(60°) = \sqrt{3}/2$, $\sin(90°) = 1$. The tangent of 45° is always 1.
Reciprocal Identities
$\sec(\theta) = 1/\cos(\theta)$, $\operatorname{cosec}(\theta) = 1/\sin(\theta)$, and $\cot(\theta) = 1/\tan(\theta)$. Since $\cos(30°) = \sqrt{3}/2$, $\sec(30°) = 2/\sqrt{3}$.

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Basic Trigonometric Identities

$\sin^2(\theta) + \cos^2(\theta) = 1$, $1 + \tan^2(\theta) = \sec^2(\theta)$, and $1 + \cot^2(\theta) = \operatorname{cosec}^2(\theta)$.

Q54. Answer: (c) 140°

Given:

BD and CD bisect angle B and angle C

angle A = 100°

Concept used:

The Sum of all angles of a triangle is 180°

Calculation:

=> angle A + angle B + angle C = 180°

=> angle B + angle C = 180° - 100 °

=> 80°

=> angle D + angle B/2 + angle C/2 = 180°

=> angle D + 80/2 = 180°

=> angle D = 180° - 40°

=> 140°

Therefore angle BDC is 140°.

Q55. Answer: (d) 7 : 30

Given:

a : b = 3 : 5

b : c = 7 : 8

c : d = 2 : 3

Calculation:

a : b = 3 : 5

b : c = 7 : 8

c : d = 2 : 3

a : b : c : d = 21 : 35 : 40 : 60

So, 2a : 3d = 2 × 21 : 3 × 60

=> 7 : 30

Therefore Required answer is 7 : 30

Q56. Answer: (a) 84 cm²

Given:

The In-radius and circumradius of a right-angle triangle is 3 cm and 12.5 cm.

Concept used:

Inradius of right-angle triangle = (P + B - H)/2

Circumradius of a right angle triangle = H/2

Area of a right angle triangle = (1/2 × P × B)

Where,

P = Perpendicular

B = Base

H = Hypotenuse

Calculation:

According to the question

Inradius of right-angle triangle = (P + B – H)/2

=> (P + B – H)/2 = 3

=> P + B – H = 6 ....(1)

Circumradius of a right angle triangle = H/2

=> H/2 = 12.5

=> H = 25

Putting the value of H in equation (1)

=> P + B – 25 = 6

=> P + B = 31

Now,

=> $(P^2 + B^2) = (25)^2$

=> $P^2 + B^2 = 625$

P + B = 31

=> $(P + B)^2 = (31)^2$

=> $P^2 + B^2 + 2PB = 961$

=> 2PB = 961 – 625

=> PB = 168

So, area of triangle = 1/2 × PB

=> (1/2 × 168) = 84 cm^2

Therefore The area of the triangle is 84 cm2

Q57. Answer: (c) 920

Average number of students appeared from all the colleges = 1/5(2800 + 1800 + 3000 + 2000 + 2400)

=> 2400

Average number of students qualified from all the colleges = 1/5(1400 + 1000 + 1800 + 1600 + 1600)

=> 1480

Difference = 2400 - 1480

=> 920

Therefore Required difference is 920

Q58. Answer: (c) 5.25

Concept used:

Of n1 and n2 are the number of elements in 2 groups and m1 and m2 are their frequencies.

Average = (n1m1 + n2m2)/(n1 + n2)

Calculation:

According to the question,

2.85 = [2(2 + 5k) + 3(5k - 7) + 4(2k - 3) + 5(k + 2)]/(2 + 5k + 5k – 7 + 2k – 3 + k + 2)

On cross multiplication,

=> 4 + 10k + 15k – 21 + 8k – 12 + 5k + 10 = 37.05k – 17.1

=> 38k – 19 = 37.05k – 17.1

=> 0.95k = 1.9

=> k = 2

Now,

Total number of two = 2 + 5 × 2 = 12

Previously total of all 2's = 12 × 2 = 24

Now total = 12 × 6 = 72

Difference = 72 – 24 = 48

So, new average = 2.85 + 48/(13 × 2 – 6) = 2.85 + 2.4

=> 5.25

Therefore The average of new numbers is 5.25

Q59. Answer: (a) 75

Calculation:

According to the question,

P = Q × 6/5

P : Q = 6 : 5

P = R × 9/10

P : R = 9 : 10

P must be same in each case

So, P : Q : R = 18 : 15 : 20

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Q = (15/20) × 100 = 75% of R

Therefore Required answer is 75%

Alternate MethodHow to calculate the ratio of three numbers if the relations are only given between two:

Step 1:

Q P R

5 : 6

9 : 10

Step 2:

Q P R

5 : 6 6

9 9 : 10

_____

45 : 54 : 60

_____

15 : 18 : 20

_____

Therefore 15/20 ×100 = 75%

Q60. Answer: (b) 1

Given:

cos θ=7/3√6

Concept used:

$Cos^2\theta = 1 – Sin^2\theta$

Calculation:

$27sin^2\ \theta-3/2$

$=> 27(1 – Cos^2\theta) – 3/2$

$=> 27 – 27Cos^2\theta – 3/2$

$=> 27 – 27 \times 49/54 – 3/2$

$=> 27 – 49/2 – 3/2$

$=> (54 – 49 – 3)/2$

$=> 2/2 = 1$

Therefore Required answer is 1

Q61. Answer: (a) 60°

Given:

$sec^2\theta + (1 - \sqrt{3})tan\theta – (1 + \sqrt{3}) = 0$

Concept used:

$sec2\theta = tan^2\theta + 1$

Calculation:

$sec^2\theta + (1 - \sqrt{3})tan\theta – (1 + \sqrt{3}) = 0$

$=> 1 + tan^2\theta + tan\theta - \sqrt{3}tan\theta – 1 - \sqrt{3} = 0$

$=> tan^2\theta + tan\theta - \sqrt{3}tan\theta - \sqrt{3} = 0$

$=> tan\theta(tan\theta + 1) - \sqrt{3}(tan\theta + 1) = 0$

$=> (tan\theta + 1)(tan\theta - \sqrt{3}) = 0$

$=> tan\theta = -1$ or $\sqrt{3}$

$tan\theta = tan60°$

So, $\theta = 60°$

Therefore The value of θ is 60°

Q62. Answer: (b) 7

Given:

The Radii of 1st circle is 4 cm

The Radii of the second circle is 3 cm

Calculation:

=> O1C = 4 cm

=> O2C = 3 cm

=> O1O2 = 4 + 3

=> 7 cm

Therefore The required answer is 7 cm.

Q63. Answer: (c) 35

Total production on Friday and Saturday = 300 + 450 = 750

Average production = 375

Total production of the week = 240 + 510 + 390 + 150 + 300 + 450

Average production of the week = 2040/6 = 340

Exceed value = 375 – 340 = 35

Therefore Required answer is 35

Q64. Answer: (c) 124

Number of students enrolled in Humanities in school A = 70

Number of students enrolled in Humanities in school C = 40

Number of students enrolled in Humanities in school D = 45

Total students in Humanity in three schools = 155

Number of students enrolled in Vocational in school C = 35

Number of students enrolled in Vocational in school D = 40

Number of students enrolled in Vocational in school E = 50

Total students in Vocational in three schools = 125

% = (155/125) × 100 = 124%

Therefore Required answer is 124%

Q65. Answer: (d) 15

Given:

a + b = 24

$a^2 + b^2 = 306$

Concept used:

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

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

Calculation:

a + b = 24

=> $(a + b)^2 = 576$

=> $a^2 + b^2 + 2ab = 576$

=> 306 + 2ab = 576

=> 2ab = 270

Now,

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

=> $(a - b)^2 = 306 – 270$

=> $(a - b)^2 = 36$

=> (a - b) = 6

So, a and b is 15 and 9

4a – 5b = 4 × 15 – 5 × 9

=> 60 – 45

=> 15

Therefore Required answer is 15

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Q66. Answer: (a) 6

Given:

Speed of Atul = 8 km/h

Shekhar completes 10 rounds in 40 minutes

Concept used:

Distance = Speed × time

Using unitary method to solve question

Calculation:

In 45 minutes Atul cover 8 × 45/60 = 6 km

So, 15 rounds = 6 km

So, 10 rounds = 4 km

So, Shekhar covers 4 km in 40 minutes

So, his speed is 6 km/h

Therefore The speed of Shekhar is 6 km/h

Q67. Answer: (b) 225√2

Shortcut Trick

To find the coefficient of y^2 in the expansion of $(\sqrt{2}y^2 - 5\sqrt{3})^3$, use the term $3ab^2$ from the algebraic identity $(a - b)^3$.

Here, $a = \sqrt{2}y^2$ and $b = 5\sqrt{3}$.

Required term = $3 \times (\sqrt{2}y^2) \times (5\sqrt{3})^2 \Rightarrow 3 \times \sqrt{2}y^2 \times 75 = 225\sqrt{2}\, y^2$.

Therefore The correct answer is 225√2.

Alternate Method

Given: The expression is $(\sqrt{2}y^2 - 5\sqrt{3})^3$.

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

Calculations:

=> Let $a = \sqrt{2}y^2$ and $b = 5\sqrt{3}$.

=> Expansion = $(\sqrt{2}y^2)^3 - 3(\sqrt{2}y^2)^2(5\sqrt{3}) + 3(\sqrt{2}y^2)(5\sqrt{3})^2 - (5\sqrt{3})^3$

=> Term 1 = $(\sqrt{2})^3(y^2)^3 = 2\sqrt{2}$ y^6

=> Term 2 = $-3(2y^4)(5\sqrt{3}) = -30\sqrt{3}$ y^4

=> Term 3 = $3(\sqrt{2}y^2)(25 \times 3) = 3 \times 75 \times \sqrt{2}\, y^2 = 225\sqrt{2}\, y^2$

=> Term 4 = $-(125 \times 3\sqrt{3}) = -375\sqrt{3}$

=> The full expansion is: $2\sqrt{2}$ y^6 $- 30\sqrt{3}$ y^4 $+ 225\sqrt{2}\, y^2 - 375\sqrt{3}$.

=> The coefficient of the y^2 term is $225\sqrt{2}$.

Therefore The correct answer is 225√2.

Additional Information

Binomial Theorem for Positive Integer

The general term in the expansion of $(x + y)^n$ is T_(r+1) = ^nC_r x^(n−r) y^r.

Algebraic Cubing Identities

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

Power Rules

For any variables or constants, (x^a)^b = x^(a × b) and (xy)^a = x^ay^a.

Q68. Answer: (c) 2541

Given:

Edge of cube = 77 cm

Diameter of each bullet = 7 cm

Concept used:

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

Calculation:

Radius of the spherical bullets = 7/2 = 3.5 cm

Let x numbers of bullets can be made

Now, volume of a spherical bullet = $4/3 \times 22/7 \times (7/2)^3$

According to the question,

$4/3 \times 22/7 \times (7/2)^3 \times x = (77)^3$

$\Rightarrow x = (77 \times 77 \times 77 \times 3 \times 7 \times 8)/(4 \times 22 \times 7 \times 7 \times 7)$

$\Rightarrow x = 2541$

Therefore Total 2541 bullets can be made

Q69. Answer: (a) Loss Rs. 72

Given:

List price = Rs. 5000

Concept used:

Successive discount = X + Y - (XY)/100

Calculation:

SP on first case = $5000 \times 22/25 \times 22/25$

$\Rightarrow 8 \times 484$

$\Rightarrow 3872$

SP on second case = $5000 \times 76/100$

$\Rightarrow 3800$

Profit = 3872 – 3800 = 72

Loss = Rs. 72

Therefore The seller will lose Rs. 72

Q70. Answer: (b) 13 cm

Shortcut Trick

Equal parallel chords are on opposite sides of the center and equidistant from it.

Distance from center to each chord = 10 ÷ 2 = 5 cm.

Half the length of the chord = 24 ÷ 2 = 12 cm.

Radius $r = \sqrt{(12^2 + 5^2)} = \sqrt{(144 + 25)} = \sqrt{169} = 13$ cm.

Therefore The correct answer is 13 cm.

Alternate Method

Given:

Length of equal parallel chords AB and CD = 24 cm

Distance between chords (MN) = 10 cm

Formula Used:

A perpendicular drawn from the center to a chord bisects the chord.

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

O

A

B

C

D

M

N

r

5 cm

12 cm

Calculations:

=> Let O be the center of the circle.

=> Since the parallel chords are of equal length, they are located on opposite sides and are equidistant from the center.

=> Distance from center to chord OM = Total Distance MN ÷ 2 = 10 ÷ 2 = 5 cm.

=> The perpendicular OM bisects the chord AB, so AM = AB ÷ 2 = 24 ÷ 2 = 12 cm.

=> In right-angled ΔOMA, applying Pythagoras theorem:

$\Rightarrow OA^2 = OM^2 + AM^2$

=> $r^2 = 5^2 + 12^2$

=> $r^2 = 25 + 144 = 169$

=> $r = \sqrt{169} = 13$ cm

Therefore The correct answer is 13 cm.

Additional Information

Equal Parallel Chords

If two parallel chords of a circle are equal in length, they must be situated at equal distances from the center and lie on opposite sides of the center.

Perpendicular from Center Rule

A perpendicular drawn from the center of a circle to any chord bisects the chord into two equal halves.

Pythagorean Triplets

Standard Pythagorean triplets like (3, 4, 5), (5, 12, 13), and (8, 15, 17) frequently appear in circle geometry to easily relate the radius, chord length, and distance from the center without full calculation.

Q71. Answer: (c) Rs. 2,500

Shortcut Trick

Efficiency ratio of Sachin : (Sachin + Vishnu) = 1 ÷ (17/2) : 1 ÷ 6 = 2/17 : 1/6 = 12 : 17.

Vishnu share of efficiency = 17 parts − 12 parts = 5 parts.

Total 17 units corresponds to the total wage of Rs. 8,500.

1 unit = Rs. 8,500 ÷ 17 = Rs. 500.

Vishnu share = 5 units × Rs. 500 = Rs. 2,500.

Therefore The correct answer is Rs. 2,500.

Alternate Method

Given:

Time taken by Sachin alone = 17/2 days.

Time taken by (Sachin + Vishnu) together = 6 days.

Total contract amount for the work = Rs. 8,500.

Formula Used:

Wages are distributed in the ratio of Efficiency when the workers work for the same duration. Efficiency = 1 ÷ Time taken.

Calculations:

=> Sachin's 1-day work = 1 ÷ (17/2) = 2/17 units.

=> (Sachin + Vishnu)'s 1-day work = 1/6 units.

=> Vishnu's 1-day work = (1/6) − (2/17) = (17 − 12) / (6 × 17) = 5/102 units.

=> Ratio of Efficiency (Sachin : Vishnu) = (2/17) : (5/102).

=> Multiply by 102 to simplify: (2/17 × 102) : (5/102 × 102) = 12 : 5.

=> Vishnu's share = (5 / (12 + 5)) × 8500 = (5/17) × 8500.

=> Vishnu's share = 5 × 500 = Rs. 2,500.

Therefore The correct answer is Rs. 2,500.

Additional Information

Work and Wages Relationship

Wages are directly proportional to the amount of work done. If people work for the same time, the ratio of their wages is equal to the ratio of their efficiencies.

Efficiency and Time

The Efficiency of a person is inversely proportional to the Time taken to complete the work (E = W/T). If total work W is constant, E1/E2 = T2/T1.

Combined Efficiency

The combined efficiency of two or more persons is the sum of their individual efficiencies (E_(total) = E1 + E2 + ...).

Q72. Answer: (d) 2482

Given:

$x - y = 4$

$x^3 – y^3 = 316$

Formula Used:

$x^3 – y^3 = (x - y)[(x - y)^2 + 3xy]$

Calculation:

$x^3 – y^3 = (x - y)[(x - y)^2 + 3xy]$

=> 316 = 4[(x - y)² + 3xy]

=> 79 = [16 + 3xy]

=> 63 = 3xy

=> xy = 21

So, x = 7

y = 3

x^4 + y^4 = 7^4 + 3^4 = 2482

Therefore Required answer is 2482

Q73. Answer: (a) 4

Given:

182/11÷[7/33+{29/6-3/11×(51/6-31/3)}]

Concept used:

Calculation:

182/11÷[7/33+{29/6-3/11×(51/6-31/3)}]

=> 200/11 ÷ [7/33 + {29/6 – 3/11 × (31/6 – 10/3)}]

=> 200/11 ÷ [7/33 + {29/6 – 3/11 × 11/6}]

=> 200/11 ÷ [7/33 + {29/6 – 1/2}]

=> 200/11 ÷ [7/33 + 13/3]

=> 200/11 ÷ 150/33

=> 200/11 × 33/150

=> 4

Therefore Required answer is 4

Q74. Answer: (c) Rs. 12,000

Shortcut Trick

Effective SI for 2 years at 11% = 22% and Effective CI for 2 years at 10% = 21%.

Overall interest % = (5370 ÷ 25000) × 100 = 21.48%.

By Alligation, Ratio of parts = (21.48 − 21) : (22 − 21.48) = 0.48 : 0.52 = 12 : 13.

Total ratio parts = 12 + 13 = 25 parts → Rs. 25,000.

Sum invested on SI (12 parts) = 12 × 1000 = Rs. 12,000.

Therefore The correct answer is Rs. 12,000.

Alternate Method

Given:

Total sum = Rs. 25,000

Rate for Part 1 (SI) = 11% p.a., Time = 2 years

Rate for Part 2 (CI) = 10% p.a., Time = 2 years

Total interest received = Rs. 5,370

Formula Used:

SI = (P × R × T) ÷ 100

CI Effective Rate = R + R + (R × R) ÷ 100

Calculation:

=> Let the sum invested on SI be Rs. x.

=> The sum invested on CI will be Rs. (25000 − x).

=> Interest from Part 1 (SI) = (x × 11 × 2) ÷ 100 = 0.22x

=> Effective rate for CI at 10% for 2 years = 10 + 10 + (10 × 10) ÷ 100 = 21%

=> Interest from Part 2 (CI) = 21% of (25000 − x) = 0.21 × (25000 − x)

=> Total Interest = 0.22x + 0.21 × (25000 − x) = 5370

=> 0.22x + 5250 − 0.21x = 5370

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=> 0.01x = 5370 − 5250

=> 0.01x = 120

=> x = 120 ÷ 0.01 = 12000

Therefore The correct answer is Rs. 12,000.

Additional Information

Effective Rate of Compound Interest

For 2 years, the effective CI rate can be directly calculated using the successive percentage formula: R_(eff) = R + R + (R × R) ÷ 100.

Difference between CI and SI

The difference between compound interest and simple interest for 2 years on the same principal is given by the formula: D = P(R ÷ 100)².

Rule of Alligation

When a quantity is divided into two parts at different rates, the ratio of the parts is inversely proportional to the differences of their respective rates from the mean aggregate rate.

Q75. Answer: (c) Rs. 3800

Given:

The article was sold at a loss of 24%

Concept used:

SP = CP – CP × loss%

SP = CP + CP × profit%

Calculation:

Let CP of the article be 100x

According to the question,

76x + 1596 = 118x

=> 42x = 1596

=> x = 38

So, CP is 3800

Therefore Cost price of the article was Rs. 3800

Q76. Answer: (c) Karnataka

The correct answer is Karnataka.

Key Points

• Bhadra Wildlife Sanctuary

• It is located in the Chikkamagaluru and Shimoga districts of Karnataka. Hence, Option 2 is correct.

• Animals such as tigers, elephants, Black Leopard, Malabar giant squirrels, etc are found in Bhadra Wildlife Sanctuary.

• Bhadra Wildlife Sanctuary was established in the year 1951.

• Previously known as Jagara Valley Wildlife Sanctuary, it was renamed Bhadra Wildlife Sanctuary in 1974.

Important Points

• As of August 2021, 566 wildlife sanctuaries were established in the country which is 3.72 % of the geographical area of the country.

• The oldest bird sanctuary is Vedanthangal Bird Sanctuary near Chennai in Tamil Nadu state. It was established in 1796.

Q77. Answer: (d) Hockey

The correct answer is Hockey.

Key Points

• Murugappa Gold Cup is associated with Hockey. Hence, Option 4 is correct.

Cups/Trophies of Hockey	**Beighton Cup, Nehru Trophy, Stanley Cup, Agha Khan Cup, Dhyanchand Trophy, Wellington Cup, etc.**
Cups/Trophies of Golf	Ryder Cup, Walker Cup, Canada Cup, Eisenhower Cup, etc.
Cups/Trophies of Cricket	Ranji Trophy, Duleep Trophy, Deodhar Trophy Ashes Cup, World Cup, Gavaskar Border Trophy, etc.

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Cups/Trophies of Badminton	Thomas cup, Uber cup, European Cup, Malaysian Cup, Harilela Cup, etc.

Q78. Answer: (d) It is a liquid at room temperature.

The correct answer is It is a liquid at room temperature.

Key Points

• Bromine:

• It is a liquid at room temperature. Hence, Option 4 is correct.

• It is a naturally occurring element that is a liquid at room temperature.

• It has a brownish-red colour with a bleach-like odour, and it dissolves in water.

• Bromine is found naturally in the earth's crust and in seawater in various chemical forms.

• Bromine can also be found as an alternative to chlorine in swimming pools.

• Products containing bromine are used in agriculture and sanitation and as fire retardants (chemicals that help prevent things from catching fire).

• Some bromine-containing compounds were historically used as sedatives (drugs that can make people calm or sleepy).

Q79. Answer: (a) iron

The correct answer is Iron.

Key Points

• Pulmonary siderosis:

• It is caused by repeated inhalation of fine iron or rust dust that happens usually over a number of years. Hence, Option 1 is correct.

• This can happen during work consisting of welding, grinding, foundry work, paint manufacture, or iron ore mining among other similar occupations where a person is exposed to fine iron dust or fumes.

• It causes changes within the lungs that are clearly visible in tissue samples, x-ray images, and other radiological studies.

• In a tissue sample from alveoli, patchy deposits of iron can be seen throughout the sample.

• There is no cure for pulmonary siderosis or other interstitial lung diseases. Any damage is thus permanent. Symptoms can be treated.

Q80. Answer: (a) 5

The correct answer is 5.

Key Points

• Qutab-ud-din Aibak, the first Muslim ruler of Delhi, commenced the construction of the Qutab Minar in 1200 AD, but could only finish the basement. His successor, Iltutmish, added three more storeys, and in 1368, Firoz Shah Tughlaq constructed the fifth and the last storey. Hence, Option 1 is correct.

• Qutab Minar is a soaring, 73 m-high tower of victory, built-in 1193 by Qutab-ud-din Aibak immediately after the defeat of Delhi's last Hindu kingdom.

• The first three storeys are made of red sandstone, the fourth and fifth storeys are of marble and sandstone. At the foot of the tower is the Quwwat-ul-Islam Mosque, the first mosque to be built in India.

• The minaret is named after Qutb-ud-din Aibak, or Qutbuddin Bakhtiar Kaki, a Sufi saint.

• The development of architectural styles from Aibak to Tughlak is quite evident in the minar.

Additional Information

• Qutub Minar (or Qutab Minar) is a minaret and "victory tower" that forms part of the Qutb complex.

• It is a UNESCO World Heritage Site in the Mehrauli area of New Delhi, India.

• The height of Qutb Minar is 72.5 meters, making it the tallest minaret in the world built of bricks.

• The tower tapers, and has a 14.3 meters (47 feet) base diameter, reducing to 2.7 meters (9 feet) at the top of the peak.

Important Points

• Qutub-Ud-Din Aibak of the Slave Dynasty laid the foundation of Minar in A.D. 1199.

• Iltutmish and Firoz Shah Tughlaq, who were Qutub-Ud-din-Aibak's successors, completed the construction of the entire tower.

Q81. Answer: (b) 42nd Amendment Act, 1976

The correct answer is the 42nd Amendment Act, 1976.

Key Points

• The 'Preamble' of the Constitution of India:

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• It is a brief introductory statement that sets out the guiding purpose and principles of the document, and it indicates the source from which the document which derives its authority, meaning, the people.

• It was adopted on 26 November 1949 by the Constituent Assembly of India and came into effect on 26th January 1950.

• After the 42nd amendment, three new terms "Socialist, Secular, and Integrity" were added to the Preamble. Hence, Option 2 is correct.

• 42nd Amendment Act, 1976 is one of the most important amendments to the Indian Constitution.

• It was enacted by the Indian National Congress headed by Indira Gandhi then.

• Due to the large number of amendments this act has brought to the Indian Constitution, it is also known as the 'Mini-Constitution.'

• Only one time the Preamble was amended in 1976 till date.

• Thus, we can say that the words "Socialist and Secular" were added to the Preamble through the 42nd Amendment Act, 1976.

Q82. Answer: (b) parasite

The correct answer is Parasite.

Key Points

• Cuscuta:

• It is a stem parasite. Hence, Option 2 is correct.

• It is also known as Amarbel in India.

• A parasitic plant is a plant that obtains all or part of its nutrition from another plant (the host) without contributing to the benefit of the host and, in some cases, causing extreme damage to the host.

• The defining structural feature of a parasitic plant is the haustorium, a specialized organ that penetrates the host and forms a vascular union between the plants.

Additional Information

• Saprophytes are living organisms that live and feed on dead and decaying organisms.

• An autotroph is an organism that can produce its own food using light, water, carbon dioxide, or other chemicals.

• Host plants are plants that an organism lives on and lives off of.

Q83. Answer: (b) Khajuraho

The Correct Answer is Khajuraho.

Key Points

• The Kandariya Mahadeva Temple:

• The Kandariya Mahadeva Temple "the Great God of the Cave" is the largest and most ornate Hindu temple in the medieval temple group found at Khajuraho in Madhya Pradesh. Hence, Option 2 is correct.

• Kandariya Mahadeo temple at Khajuraho is the epitome of temple architecture in Central India.

• The Kandariya Mahadeva temple was built during the reign of Vidyadhara (r. c. 1003-1035 CE).

• Khajuraho's temples are also known for their extensive erotic sculptures.

• The Lakshmana temple of Khajuraho, dedicated to Vishnu, was built in 954 by the Chandela king, Dhana.

• It is a nagara temple placed on a high platform accessed by stairs.

Q84. Answer: (b) Suman Gawani

The Correct Answer is "Suman Gawani".

Key Points

• Indian Army officer and woman peacekeeper Major Suman Gawani has been selected to be honored with the UN Military Gender Advocate of the Year Award. Hence, Option 2 is correct.

• First, an Indian Army officer and woman peacekeeper Major Suman Gawani has been selected to be honored with the United Nations Military Gender Advocate of the Year Award (2019) on May 29.

• Suman Gawani has served with the United Nations Mission in South Sudan (UNMISS) is being awarded for her outstanding contribution to peacekeeping efforts.

• The award which was created in 2016, honors the dedication and effort of individual military peacekeepers in promoting the UN principles on Women, Peace, and Security in peace operations as nominated by Heads and Force Commanders of peace operations.

• Indian Major Suman Gawani who hails from Pokhara village in Tehri Garwhal joined the Indian Army in 2011 where she graduated from the Officers Training Academy.

• Later, she joined the Army Signal Corps.

Q85. Answer: (b) Paresh Rawal

The correct answer is Paresh Rawal.

Key Points

• The National School of Drama is one of the magnificent theatre training institutions in the world.

• It is only one of its kind in India.

• Chairperson: Shri Paresh Rawal (2020- As of February 2021). Hence, Option 2 is correct.

• It was established by the Sangeet Natak Akademi as one of its constituent units in 1959.

• It became a sovereign institution in 1975 when it was registered as an autonomous organization under the Societies Registration Act XXI of 1860.

• It is completely financed by the Ministry of Culture, Government of India.

• Bharat Rang Mahotsav, or the 'National Theatre Festival' which was instituted in 1999, is the annual theatre festival of the National School of Drama.

• It is held in New Delhi.

• It is acknowledged as the largest theatre festival in Asia.

Q86. Answer: (b) Five

The correct answer is Five.

Key Points

• India has so far won 5 medals in total in wrestling. Hence, Option 2 is correct.

• Wrestling as a sport has a rich history, and it has been part of the Olympics since 1896.

• It is one of the few sports which featured in every Olympic right from 1896.

• India has a rich medal haul in this sport compared to many other sports in which India competes at the Olympics.

• India had won 5 medals in total, and all of them came in freestyle.

• Sakshi Malik is the only woman to have bagged a wrestling medal.

• India has won 7 medals in Tokyo Olympics 2021 - 1 Gold Medal, 2 Silver medals, and 4 Bronze medals.

Q87. Answer: (d) 100 Crore

The correct answer is 100 Crore.

Key Points

• Sitharaman brought down the value of loans that can be introduced for debt recovery under the SARFAESI Act to Rs 20 lakh from Rs 50 lakh for NBFCs having a minimum asset size of Rs 100 crore. Hence, Option 4 is correct.

Additional Information

• Non-Banking Financial Company (NBFC):

• A Non-Banking Financial Company (NBFC) is a company registered under the Companies Act, 1956 engaged in the business of loans and advances, acquisition of shares/stocks/bonds/debentures/securities issued by Government or local authority or other marketable securities of a like nature, leasing, hire-purchase, insurance business, chit business but does not include any institution whose principal business is that of agriculture activity, industrial activity, purchase or sale of any goods (other than securities) or providing any services and sale/purchase/construction of immovable property.

• A non-banking institution which is a company and has principal business of receiving deposits under any scheme or arrangement in one lump sum or in installments by way of contributions or in any other manner is also a non-banking financial company (Residuary non-banking company).

Q88. Answer: (b) New Delhi

The correct answer is New Delhi.

Key Points

• International Summit on Women in STEM:

• The Department of Biotechnology (Ministry of Science & Technology) organized an International Summit on Women in STEM (Science, Technology, Engineering, and Mathematics) in New Delhi in January 2020. Hence, Option 2 is correct.

• The overall aim was to boost the participation of women in the STEM fields for the development of a scientific career.

• Theme: Visualizing the Future: New Skylines.

• The objective of the summit was to showcase successful women in the field of STEM as real-world examples of women scientists, doctors, and engineers as well as the rewards associated with it.

Additional Information

• STEM (Science, Technology, Engineering, and Mathematics):

• It is a curriculum based on the idea of educating students in 4 specific disciplines — science, technology, engineering, and

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mathematics — in an interdisciplinary and applied approach.

• Robust STEM education creates critical thinkers, problem-solvers, and next-generation innovators.

• India is one of the countries that produce the highest number of scientists and engineers, the growth of STEM has picked up significantly over the last few years.

• According to the National Science Foundation, it is predicted that 80% of the jobs created in the next decade will require some form of math and science skills.

• Despite having top-quality talent, the exam-focused education model of India has limited students when it comes to innovation, problem-solving and creativity. This is where the STEM players come in to fill this gap.

• Under Article 51A of the Constitution of India, it is the duty of every citizen of India to develop the scientific temper, humanism and the spirit of inquiry and reform.

Q89. Answer: (c) 1972

The correct answer is 1972.

Key Points

• Marine Products Export Development Authority (MPEDA):

• MPEDA is a nodal coordinating state-owned agency engaged in fishery production and allied activities.

• It was established in 1972 under Marine Products Export Development Authority Act (MPEDA), 1972. Hence, Option 3 is correct.

• It functions under the Union Ministry of Commerce and Industry.

• It is headquartered in Kochi, Kerala.

• Its mandate is to increase exports of seafood including fisheries of all kinds, specifying standards, marketing, processing, extension, and training in various aspects.

• It acts as a coordinating agency with different Central and State Government establishments engaged in fishery production and allied activities.

Q90. Answer: (b) 18 years

The correct answer is 18 years.

Key Points

• Who can Vote in India:

• All citizens, regardless of their race, color, or previous condition of subjugation have the right to vote under the Citizenship Act which grants them protection under the 15th Amendment.

• As per the Election Commission of India, citizens are eligible to become voters under the following conditions:

• Every citizen who is 18 years old on the qualifying date (January 1 of the year in case) unless disqualified, is eligible to be enrolled. Hence, Option 2 is correct.

• Enrollment only at an ordinary place of residence.

• Enrollment only at one place.

• Overseas Indian deemed to be ordinarily resident at the address given in passport.

• Service voters are deemed to be ordinarily resident at their home address.

Important Points

• 61st Constitutional Amendment Act:

• This act lowered the minimum age for being eligible to vote in the Indian Elections from 21 years to 18 years.

• It was passed in 1988.

• It was passed during the government of Prime Minister Rajeev Gandhi.

• The bill received the presidential assent on 28th March 1989.

• The then-president R Venkataraman assented to the bill.

• This was done by amending Article 326 of the Constitution, which concerns elections to the Lok Sabha and the Assemblies.

Q91. Answer: (d) Visnu Shivaraj Pandian

The correct answer is Visnu Shivaraj Pandian.

Key Points

• Visnu Shivaraj Pandian:

• India's Visnu Shivaraj Pandian won the 10m air rifle event at the fifth edition of the International Online Shooting Championship on 3 October 2020. Hence, Option 4 is correct.

• Visnu shot 251.4 to win the title by a clear margin of two points.

• The second place was won by world no. 27 Etienne Germond of France while Olympic quota winner Martin Strempfl of Austria

took third place.

• The 17-year-old Visnu was the only Indian in the final after shooting the fifth-highest qualification score of 621.1.

• The gold was won by Mireia Rossello of Spain with a score of 250.7 (625.9) while the silver was bagged by Ukraine's Tetyana Halkina with 247.9 (619.3).

Q92. Answer: (c) Rajasthan

The correct answer is Rajasthan.

Key Points

• Sambhar Lake:

• It is India’s largest inland salt lake.

• It is located in the Nagaur and Jaipur districts of Rajasthan. Hence, Option 3 is correct.

• It is surrounded on all sides by the Aravali hills.

• It is the source of most of Rajasthan's salt production.

• It has been designated as a Ramsar site.

Additional Information

• Chilka Lake is the largest saline water lake in India.

• Vembanad Lake is the longest lake in India.

• Cholamu Lake is the highest lake in India.

• Wular Lake is the largest freshwater lake in India.

Q93. Answer: (d) Secondary

The correct answer is Secondary storage.

Key Points

• Secondary storage:

• It is also referred to as auxiliary storage, is non-volatile, and is used for later retrieval to store data and programs.

• There are several forms of secondary storage, each with benefits and drawbacks.

• Either magnetic or optical storage media are used for most storage systems.

• The hard disk is an example of secondary storage and magnetic media, which is used for storing data and programs in bulk. Hence, Option 4 is correct.

• In the case of the computer, they are normally in-built and therefore are not portable.

• Some hard drives are reversible, so between machines, they provide easy portable storage.

• In general, they are efficient and stable, with easy access to stored data.

• This allows the disk to rotate at even greater speeds than it would otherwise do without distorting the disk surface.

Additional Information Difference between Primary and Secondary memory:

Primary memory	Secondary memory
Primary memory is temporary.	Secondary memory is permanent.
Primary memory is directly accessible by Processor/CPU.	Secondary memory is not directly accessible by the CPU.
Nature of Parts of Primary memory varies, RAM- volatile in nature. ROM- Non-volatile.	It’s always Non-volatile in nature.
Primary storage is faster, more expensive, and persistent.	Secondary memory devices are less expensive, slower when compared to primary memory devices.
The memory devices used for primary memory are semiconductor memories.	The secondary memory devices are magnetic and optical memories.
Primary memory is also known as Main memory or Internal memory.	Secondary memory is also known as External memory or Auxiliary memory.
Examples: RAM, ROM, Cache memory, PROM, EPROM, Registers, etc.	Examples: Hard Disk, Floppy Disk, Magnetic Tapes, etc.

Q94. Answer: (d) Kanchenjunga

The correct answer is Kanchenjunga.

Key Points

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Kanchenjunga

• It is the world's third-highest mountain that connects the borders of India and Nepal.

• It rises with an elevation of 8,586 m in a section of the Himalayas called Kanchenjunga Himal delimited in the west by the Tamur River.

• It lies between Nepal and Sikkim, India, with three of the five peaks directly on the border, and the remaining two in Nepal's Taplejung District of Province No 1.

• Until 1852, Kanchenjunga was assumed to be the highest mountain in the world.

• Kanchenjunga was first climbed on 25 May 1955 by Joe Brown and George Band.

Additional Information

• World's highest mountain- Great Himalayas.

• Mount Everest is the world's highest peak of 8848m, it is also known as Sagarmatha.

• Kanchenjunga is India's highest peak that is in Sikkim.

• Nanda Devi is India's second-highest peak in Uttarakhand.

• The average height of the Great Himalayas is 6100m.

• Important passes of Himalayas- Zojila, Burzil, Khar-dung-la, Bara-la-cha, Rohtang, etc.

Q95. Answer: (d) Brahmaputra

The correct answer is the Brahmaputra.

Key Points

• The Lohit River:

• It is a river in China and India.

• The Lohit River is also known as the Zayu River.

• Lohit River is a tributary to the Brahmaputra River. Hence, Option 4 is correct.

Additional Information

• The Dhola–Sadiya Bridge or the Bhupen Hazarika Setu, is a beam bridge in India and spans the Lohit River.

• The Brahmaputra River is a transboundary river that flows through Tibet, India, and Bangladesh.

• The Brahmaputra river is the 9th largest river by discharge and the 15th longest in the world.

• The Brahmaputra river is also called Dihang River in Arunachal Pradesh, Yarlung Tsangpo in Tibet and Luit Dilao in Assam.

Q96. Answer: (a) Manipur

The correct answer is Manipur.

Key Points

• PM Narendra Modi laid the foundation stone for the water supply project in Manipur through video conferencing on 23 July 2020. Hence, Option 1 is correct.

• This project will give clean drinking water to Greater Imphal and 1,700 villages in Manipur.

• The fund for the project has been provided by the Centre under ‘Jal Jeevan Mission’ to provide freshwater household tap connections to 1,185 habitations with 1,42,749 households.

• Manipur:

• Number of Districts - 16.

• Lok Sabha seats - 2.

• Rajya Sabha seats - 1.

• State Animal - Sangai.

• State Bird - Mrs. Hume's pheasant.

• National Park - Keibul Lamjao National Park.

• Chief Minister: Nongthombam Biren Singh (As of Feb 2022).

• Governor: La. Ganesan (As of Feb 2022).

Q97. Answer: (b) It is used to run spell check and grammar check.

The correct answer is It is used to run spell-check and grammar checks.

Key Points

• Its have no use of the F7 key in Windows.

• In Microsoft programs such as Microsoft Word, Outlook for checking spellings and grammar, the F7 is commonly used.

• Other uses-

• Shift + F7 = Choose the Thesaurus command.
• Ctrl + F7 = Choose the move command.
• Alt + F7 = Find the next misspelling or grammatical error.
• Renaming files and folders- F2 key.
• Opening help- Windows Key + F1 key.
• Searching content in various apps- Windows Key + Q key.

Q98. Answer: (c) Qutub-ud-din Aibak

The correct answer is Qutub-ud-din Aibak.

Key Points

• Slave Dynasty:
• Established by Qutb ud-Din Aibak. Hence, Option 3 is correct.
• Dynasty lasted from 1206 to 1290.
• It was the first of the dynasties to rule as the Delhi Sultanate.
• Dynasty ended when Jalal ud din Firuz Khilji overthrew the last Mamluk ruler Muiz ud din Qaiqabad in 1290.
• Dynasty was succeeded by the Khilji (or Khalji) dynasty, the second dynasty of the Delhi Sultanate.

Additional Information

• Qutub ud-Din Aibak (Reign: 1206 – 1210):
• The first ruler of the Mamluk Dynasty.
• Mamluk Dynasty is also called the Slave Dynasty.
• Born to a Turkish family in Central Asia.
• Sold as a slave to Muhammad Ghori, the ruler of Ghor in Afghanistan.
• Aibak became Ghori's trusted general and commander.
• He was given charge of Ghori's Indian possessions after 1192.
• When Ghori was assassinated, Aibak declared himself Sultan of Delhi in 1206.
• Started construction of the Quwwat-ul-Islam mosque in Delhi. This is one of the first Islamic monuments in northern India.
• He began the construction of Qutb Minar in Delhi.
• He reigned till his death in 1210. He was said to have been trampled to death by a horse.
• He was succeeded by Aram Shah.

Q99. Answer: (a) Hrithik Roshan

The correct answer is Hrithik Roshan.

Key Points

• Dadasaheb Phalke International Film Festival
• The film festival is named after the father of Indian Cinema - Dadasaheb Phalke.
• It is a unique platform and most prestigious award function to honour and commemorate the Entertainment and Film Industry.
• The Dadasaheb Phalke Award is considered to be the highest award in cinema and is given annually by the Directorate of Film Festivals (an organization set up by the Ministry of Information and Broadcasting) at the National Film Award Ceremony.
• The Dadasaheb Phalke International Film Festival 2020 took place on 20 February 2020, in Mumbai.

Additional Information

• The table given below lists some of the important awards presented at the Dadasaheb Phalke International Film Festival:

Category	Winner
Best Film	Super 30
Best Actor	Hrithik Roshan
Best Actor in Television series	Dheeraj Dhoopar
Best Actress in Television	Divyanka Tripathi
Best Reality Show	Big Boss 13
Best Playback Singer Male	Armaan Malik

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Q100. Answer: (d) In 1793, the Cornwallis code was enacted.

The correct answer is In 1793, the Cornwallis Code was enacted.

Key Points

• Lord Cornwallis:

• He had no knowledge and experience of Indian affairs when he reached India in 1786.

• He took advantage of the reforms effected by Warren Hastings.

• Besides, he was ably helped by Charles Grant and Sir John Shore as revenue administrator while Sir William Jones, the Chief Justice of the Supreme Court, helped him in carrying out his judicial reforms.

• An elaborate code of Regulations known as the “Cornwallis Code” was framed and published in 1793. Hence, Option 4 is correct.

Additional Information

• On 23 June 1757, Siraj-ud-Daulah, the Nawab of Bengal, was defeated in the Battle of Plassey by the East India Company troops. Robert Clive was the Commander-in-Chief of the East India Company troops.

• On 16th April 1853, the first passenger train ran between Bori Bunder (Bombay) and Thane, a distance of 34 km. It was operated by three locomotives, named Sahib, Sultan, and Sindh, and had thirteen carriages.

• Asiatic Society of Bengal, a scholarly society founded on Jan. 15, 1784, by Sir William Jones, a British lawyer, and Orientalist, to encourage Oriental studies. At its founding, Jones delivered the first of a famous series of discourses.

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