Ques 1. ANS (C) Solution:

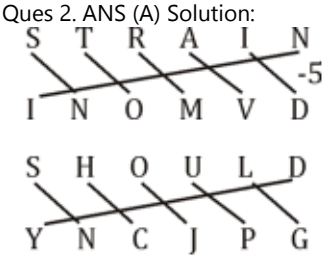
$8^2 - 5^2 = 39$

$5^2 - 4^2 = 9$

$9^2 - 8^2 = 17\ [\times 35]$

$3^2 - 2^2 = 5$

Ques 2. ANS (A) Solution:







Ques 3. ANS (D) Solution: +7 series, except FN

Ques 4. ANS (B) Solution: +4, +3, +2, +1 series

Ques 5. ANS (D) Solution:

Ques 6. ANS (B) Solution: Kaliveli lake

Ques 7. ANS (C) Solution:

Option (a)

$(10 \div 2) - 7 < (10 - 7) \div 2$

$-2 < 1.5$

Option (b)

$(10 \times 7) + 2 < (10 + 2) \times 7$

$72 < 84$

Option (c)

$(10 + 7) \times 2 < (10 \times 2) + 7$

$34 < 27$

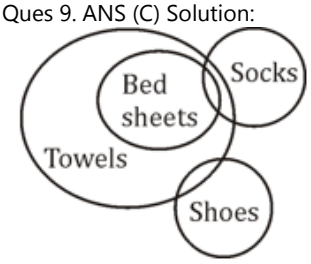
Option (d)

$(10 - 2) \div 7 < (10 \div 7) + 2$

$1.2 < 3.4$

Ques 8. ANS (C) Solution: In option (c) difference of 6 and other having 14 difference between alphabets

Ques 9. ANS (C) Solution:




I → ✗

II → ✗

III → ✓

Ques 10. ANS (D) Solution:

Ques 11. ANS (A) Solution:

Ques 12. ANS (D) Solution: Constitution starts with preamble, similarly

Book starts with preface.

Ques 13. ANS (B) Solution:

Ques 14. ANS (C) Solution:

Ques 15. ANS (C) Solution: Difference of 3 and 6 in given set; then the difference of 4 and 8 is the right option.

Ques 16. ANS (B) Solution: +7, +7, +7, +7 series.

Ques 17. ANS (B) Solution:

Pankaj $= \frac{1}{3}$ Father

Present age of Pankaj's grand father = 88 – 3 = 85

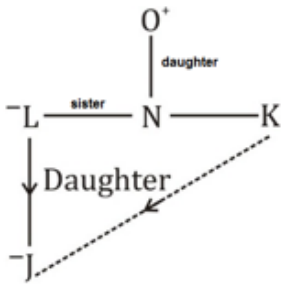
And 5 years ago, his age = 85 – 5 = 80

Now, A.T.Q $\Rightarrow$ Father $-5 = \frac{1}{2} \times 80 = 40$

$\therefore$ Father = 40 + 5 = 45

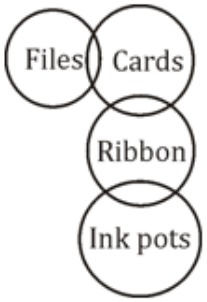
Now, Present age of Pankaj $= \frac{1}{3} \times 45 = 15\ years$

Ques 18. ANS (C) Solution:




J is the niece of K

Ques 19. ANS (D) Solution:




I → ✗

II → ✗

III → ✗

Ques 20. ANS (C) Solution: The first series is 1,2,3,4,5,... and the second series is 1,4,9,16,... which is the square of the previous term

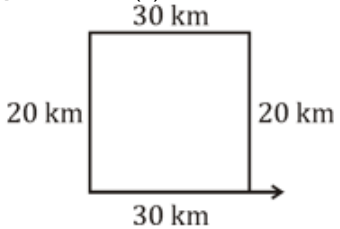
Ques 21. ANS (B) Solution: Only option (b) that not follows the difference sequence of Alphabets.

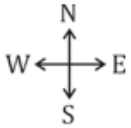
Ques 22. ANS (C) Solution: The last structure having biggest contour and the second structure having upper spacing.

Ques 23. ANS (B) Solution:

Ques 24. ANS (A) Solution: Horse: hoof: man : foot

Ques 25. ANS (B) Solution:




Ques 26. ANS (A) Solution: Alphabetical series having gap of 2 alphabets

Ques 27. ANS (C) Solution: 867
689
425
281
Ques 28. ANS (A) Solution:
The letters, on rearrangement, form the word 'ABHORRENCE' meaning 'Hatred', the opposite of which is 'Liking'.
So, the answer is (a).
Ques 29. ANS (C) Solution:

| K | A | S | H | M | I | R | C |
|---|---|---|---|---|---|---|---|
| 8 | 1 | 4 | 2 | 7 | 5 | 3 | 6 |

| I | A | H | K | S | M | C | R |
|---|---|---|---|---|---|---|---|
| 5 | 1 | 2 | 8 | 4 | 7 | 6 | 3 |

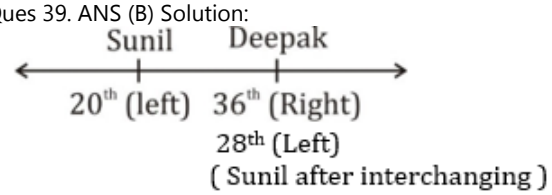
Ques 30. ANS (C) Solution: ×2, ×4 series
550 should be replaced by 640
Ques 31. ANS (A) Solution: Except (a) all other have the difference of 11.
Ques 32. ANS (C) Solution:

$16 \times 10^{-2} : 16 \times 10^{-4} :: 102 \times 10^{-2} : 102 \times 10^{-4}$

Ques 33. ANS (B) Solution:
Fingers → Hand
Toes → Feet
Ques 34. ANS (B) Solution: ×1.5 ⇒ 45, 90, 135
Ques 35. ANS (C) Solution:

| 3 | 2 | 5 |
|---|---|---|
| 3 | 1 | 4 |

3 → 6
2 → 1
5 → 4
Ques 36. ANS (A) Solution: except (a) all other have +3 difference
Ques 37. ANS (C) Solution: Except option (c) which is a square of 71, all other are cubes of 12 (1728), 17(4913), 19(6859)
Ques 38. ANS (C) Solution:
E D F C A B
F and C are sitting in the center.
Ques 39. ANS (B) Solution:




∴ Total number of boys in the row
= 36 + 28 − 1
= 63

Ques 40. ANS (B) Solution: '2' represents male cricketers who are adults but are not tall.
Ques 41. ANS (D) Solution:
The new number formed after rearrangement is 6 4 7 9 8 3 2 5

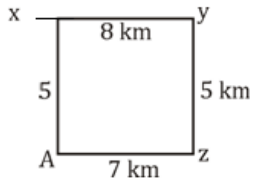
The seventh digit from the right end is 4. The third digit to the right of 4 is 8.
Ques 42. ANS (A) Solution:
Ques 43. ANS (D) Solution:

| M | A | T | H | E | M | A | T | I | C | S |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 6 | 7 | 8 |

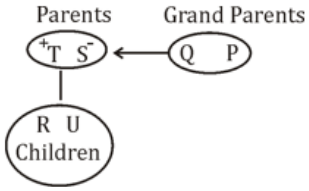
AMIT AND MAHESH ARE MATHEMATICIAN

| A | M | I | T | | A | N | D | | M | A | H | E | S | H | | M | A | T | H | E | M | A | T | I | C | I | A | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 6 | 3 | | 2 | 9 | 0 | | 1 | 2 | 4 | 5 | 8 | 4 | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 6 | 7 | 6 | 2 | 9 |

Ques 44. ANS (A) Solution:
Ques 45. ANS (A) Solution: 3. Beep- 5. Boxed, 4. Boxer, 1. Brain, 2. Brand.
Ques 46. ANS (A) Solution:




Ques 47. ANS (B) Solution: 7 × 10 − 5 = 65
8 × 4 − 2 = 30
6 × 9 − 3 = 51
Ques 48. ANS (C) Solution: 10 × 2 + 5 − 81 ÷ 6 = 25 − 13.5 = 11.5
Ques 49. ANS (A) Solution:
-2 alphabetical series
V P H B
Ques 50. ANS (C) Solution:




T = Teacher – Male
S = Doctor – Female.
Q = Lawyer – Male
P = House Wife – Female
R, U → Son and daughter of T S
↓ ↓
Male engineer Student

Ques 51. ANS (B) Solution: The Parliament can make laws for Union Territories on any subject under the three lists Viz. union list, state list and concurrent list.
Ques 52. ANS (B) Solution: Under article 226 of Indian constitution High court can issue writ when fundamental right of an individual is breached.
Ques 53. ANS (B) Solution: Local Government' is in State subject list of Seventh Schedule of Indian Constitution.
Ques 54. ANS (D) Solution: The 10th Schedule to the Constitution, popularly referred to as the 'Anti-Defection Law,' was inserted by the 52nd Amendment in 1985 which has provisions relating to disqualification of Member of Parliament on the ground of defection.
Ques 55. ANS (C) Solution: The Fifth Schedule of the Constitution deals with the administration and control of scheduled areas and scheduled tribes in any state except the four states of Assam, Meghalaya, Tripura and Mizoram.
Ques 56. ANS (A) Solution: Pension is not included in general methodology while assessing the national income. National income is the aggregate money value of all incomes earned by individuals and enterprises.
Ques 57. ANS (B) Solution: The Black Revolution is associated with self-dependence in the production of crude petroleum.
Ques 58. ANS (C) Solution: The leeward side of a mountain which does not receive rain is known as the Rain Shadow Area.
Ques 59. ANS (D) Solution: The Sundarbans is the largest single block of tidal halophytic mangrove forest in the world. The Sundarban forest lies in the vast delta on the Bay of Bengal formed by the super confluence of the Ganges, Padma, Brahmaputra and Meghna rivers across southern Bangladesh. It is a UNESCO World Heritage Site.
Ques 60. ANS (B) Solution: Keibul Lamjao National Park, Manipur is the only floating national park in the world. It's a swamp,

provides refuge to Eld's deer or Manipuri Deer, listed as an endangered species by IUCN.

Ques 61. ANS (A) Solution: The concept of expanding universe is based on Doppler effect. It was named after Christian Doppler, who first came up with the idea in 1942. Edwin Hubble used the Doppler Effect to determine that universe is expanding. Hubble found that the light from distant galaxies was shifted towards lower frequencies, to the red end of the spectrum. This is known as a red Doppler shift or a red-shift.

Ques 62. ANS (D) Solution: Diamond is a bad conductor of electricity but good conductor of heat. Electricity is conducted in a crystal by electrons that are relatively free. But in diamond, each carbon atom is covalently bonded with four other carbon atoms and there are no free electrons.

Ques 63. ANS (D) Solution: Port Blair is the largest town and a municipal council in Andaman district in the Andaman Islands and the capital of the Andaman and Nicobar Islands, a Union Territory of India. It lies on the east coast of South Andaman Island and is the main entry point to the islands.

Ques 64. ANS (B) Solution: Haemophilia,is a mostly inherited genetic disorder that impairs the body's ability to make blood clots, a process needed to stop bleeding.

Ques 65. ANS (B) Solution: Webbed neck is a characteristic of Turner's syndrome.

Ques 66. ANS (B) Solution: The retina of the eye has two types of light sensitive cells called rods and cones, both are found in the retina. Rods work in low light conditions to help night vision, but cones work in daylight and are responsible for colour discrimination.

Ques 67. ANS (A) Solution: The brain's limbic system controls emotional expression through the hypothalamus, which has control over the body's emotional responses systems. The hypothalamus is responsible for regulating hunger, thirst, response to pain, levels of pleasure, sexual satisfaction, anger and aggressive behavior, etc.

Ques 68. ANS (C) Solution: Potassium is highly reactive and rapidly oxidizes in air, so inspite of its property of malleability it cannot be beaten into sheets.

Ques 69. ANS (A) Solution: Yakshagana is a traditional Indian theatre form, developed in Dakshina Kannada, Udupi, Uttara Kannada, Shimoga and western parts of Chikmagalur districts, in the state of Karnataka.

Ques 70. ANS (B) Solution: Jaugada is the location of some of the Major Rock Edicts of Ashoka, inscribed circa 250 BCE: Major Rock Edicts 1-10 and 14 are inscribed on a central rock in the compound, as well as Separate Edicts 1&2. Jaugada is a ruined fortress in the Ganjam district in Odisha, India.

Ques 71. ANS (B) Solution: The Swaraj Party or the Congress-Khilafat Swarajya Party was formed on 1 January 1923 by C R Das and Motilal Nehru.

Ques 72. ANS (C) Solution:

सेलिब्रिटी शेफ और पूर्व फूड नेटवर्क स्टार माइकल चियारेलो का 61 वर्ष की आयु में निधन हो गया। एक दशक तक, चियारेलो ने पीबीएस, फूड नेटवर्क, फाइन लिविंग और कुकिंग चैनल पर शो की मेजबानी की। वह 'टुडे' शो और 'द व्यू' में अतिथि शेफ के रूप में भी दिखाई दिए। उनका एमी-विजेता कुकिंग शो 'ईज़ी एंटरटेनिंग विद माइकल चियारेलो' फूड नेटवर्क पर 10 सीज़न तक चला। 26 जनवरी, 1962 को रेड ब्लफ़, कैलिफ़ोर्निया में जन्मे चियारेलो ने 1987 में नापा वैली में अपना पहला रेस्तरां, ट्रा विग्ने खोला, और बाद में बोट्टेगा, ओटिमो और कोक्केटा जैसे रेस्तरां खोले। उन्होंने 1999 में चियारेलो फैमिली वाइनयार्ड्स बनाकर वाइनमेकिंग में कदम रखा। Celebrity chef and former Food Network star Michael Chiarello has died at the age of 61 . For a decade , Chiarello hosted shows on PBS , Food Network , Fine Living and the Cooking Channel . He has been a guest on the ' Today ' show and ' The View ' . Also appeared as a chef . His Emmy - winning cooking show ' Easy Entertaining with Michael Chiarello ' ran for 10 seasons on the Food Network . Born on January 26 , 1962, in Red Bluff , California , Chiarello opened his first restaurant , Tra's , in Napa Valley in 1987 . Vigne , and later opened restaurants such as Bottega , Ottimo and Coqueta . He ventured into winemaking in 1999 by creating Chiarello Family Vineyards .

Ques 73. ANS (C) Solution:

देश की सबसे बड़ी कार निर्माता कंपनी मारुति सुजुकी इंडिया ने डीलरों से जुड़े वित्तीय समाधान के लिए आईडीबीआई बैंक के साथ एक समझौते पर हस्ताक्षर किए हैं. मारुति सुजुकी इंडिया ने एक बयान में बताया कि इस डील से देश भर में 4,000 से अधिक मारुति सुजुकी बिक्री आउटलेटों को फायदा होगा. आईडीबीआई बैंक लिमिटेड एलआईसी और भारत सरकार के स्वामित्व का एक वित्तीय बैंक है, इसकी स्थापना 1964 में की गयी थी. The country's largest car manufacturer Maruti Suzuki India has signed an agreement with IDBI Bank for financial solutions related to dealers. Maruti Suzuki India said in a statement that this deal will benefit more than 4,000 Maruti Suzuki sales outlets across the country. IDBI Bank Limited is a financial bank owned by LIC and Government of India, it was established in 1964.

Ques 74. ANS (C) Solution: The national emblem is an adaptation of the Lion Capital, originally found atop the Ashoka Column at Sarnath, established in 250 BC. The capital has four Asiatic lions—symbolising power, courage, pride and confidence—seated on a circular abacus. The abacus has sculptures of a bull, a horse, a lion and an elephant.

Ques 75. ANS (A) Solution:

भारत में आयोजित हो रहे विश्व कप 2023 के 8वें मैच में, पाकिस्तान ने श्रीलंका को 6 विकेट से हरा दिया है. इसके साथ ही पाकिस्तान ने विश्व कप में सर्वोच्च रन चेज का रिकॉर्ड भी बना दिया. श्रीलंका ने 50 ओवरों में 344/9 का विशाल स्कोर बनाया. जिसके जवाब में पाकिस्तान ने यह विशाल लक्ष्य 4 विकेट खोकर हासिल कर लिया. वहीं वर्ल्ड कप में दूसरे सबसे सफल रन चेज का रिकॉर्ड आयरलैंड के नाम दर्ज है. पाकिस्तान और श्रीलंका के बीच 1975 वर्ल्ड कप से लेकर अभी तक कुल नौ मैच खेले जा चुके हैं। In the 8th match of the World Cup 2023 being held in India, Pakistan has defeated Sri Lanka by 6 wickets. With this, Pakistan also made the record of highest run chase in the World Cup. Sri Lanka made a huge score of 344/9 in 50 overs. In response to which Pakistan achieved this huge target by losing 4 wickets. Ireland holds the record for the second most successful run chase in the World Cup. A total of nine matches have been played between Pakistan and Sri Lanka since the 1975 World Cup.

Ques 76. ANS (C) Solution: For the first time two additional Commissioners were appointed on 16th October 1989 but they had a very short tenure till 1st January 1990.

Ques 77. ANS (C) Solution: Under Article 140, Parliament may, by law, confer such supplementary powers on the Supreme Court as may appear to be necessary to enable it to perform effectively the functions placed upon it under the Constitution but such supplementary powers should not be inconsistent with any of the provisions of the Constitution.

Ques 78. ANS (D) Solution: National Highway 66, commonly referred to as NH 66 (erstwhile NH-17 and a part of NH-47), is a busy National Highway that runs roughly north–south along the western coast of India, parallel to the Western Ghats.

Ques 79. ANS (B) Solution: The Ambubachi Mela is an annual Hindu mela held at Kamakhya Temple in Guwahati, Assam.

Ques 80. ANS (D) Solution:

उत्तर प्रदेश के मुख्यमंत्री योगी आदित्यनाथ ने 804 करोड़ रुपये की विकास परियोजनाओं का उद्घाटन और शिलान्यास किया और स्वतंत्रता सेनानी राजा राव रामबख्श सिंह की घुड़सवारी प्रतिमा का अनावरण किया। एक यूपी सीएम ने उल्लेख किया कि सनातन धर्म परंपरा के अनुसार, 'पितृपक्ष' की अवधि हमारे पूर्वजों के प्रति कृतज्ञता व्यक्त करने के लिए समर्पित है और यह बहुत गर्व की बात है कि इस अवधि के दौरान हम उनकी प्रतिमा का अनावरण कर रहे हैं।

प्रख्यात स्वतंत्रता सेनानी, राजा रामबख्श सिंह, जिनके वीरतापूर्ण प्रयासों ने स्वतंत्रता की लौ जलाई। Uttar Pradesh Chief Minister Yogi Adityanath inaugurated and laid the foundation stone of development projects worth Rs 804 crore and unveiled the equestrian statue of freedom fighter Raja Rao Rambaksh Singh. A UP CM mentioned that as per Sanatan Dharma tradition, the period of 'Pitrapaksha' is dedicated to expressing gratitude towards our ancestors and it is a matter of great pride that during this period we are unveiling their statue. Renowned freedom fighter, Raja Rambaksh Singh, whose heroic efforts lit the flame of freedom.

Ques 81. ANS (C) Solution: Depreciation is an annual allowance for the wear and tear of Capital goods.

Ques 82. ANS (C) Solution: Pancha Rathas is a monument complex at Mahabalipuram, on the Coromandel Coast of the Bay of Bengal, in the Kancheepuram district of the state of Tamil Nadu, India. They include the Dharmaraja Ratha, Bhima Ratha, Arjuna Ratha, Nakula Sahadeva Ratha, and Draupadi Ratha.

Ques 83. ANS (D) Solution: The Kameng-Sonitpur Elephant Reserve (KSER) is located in the eastern hill forests of Arunachal Pradesh and Assam in India, and its area is about 7500 sq. km.

Ques 84. ANS (D) Solution:

Ques 85. ANS (D) Solution:

प्रधानमंत्री नरेंद्र मोदी ने तंजानिया की राष्ट्रपति सामिया सुलुहू हसन के साथ बैठक की और द्विपक्षीय संबंधों की पूरी श्रृंखला की समीक्षा की. भारत और तंजानिया ने रक्षा सहयोग के लिए 5 साल का रोडमैप तैयार किया है. प्रधानमंत्री नरेंद्र मोदी और तंजानिया की राष्ट्रपति सामिया सुलुहु हसन के बीच नई दिल्ली में हुई बातचीत के दौरान यह निर्णय लिया गया. सुलुहु के राष्ट्रपति का पद संभालने के बाद यह भारत की पहली यात्रा है. तंजानिया से किसी राष्ट्रपति की पिछले 8 सालों में यह पहली भारत यात्रा है. तंजानिया एक पूर्वी अफ्रीकी देश है. दोनों देशों ने डिजिटल भुगतान, संस्कृति, खेल, समुद्री उद्योग और वाणिज्यिक असैन्य व्यापारी जहाजों की गतिविधि और पहचान पर पूर्व सूचना साझा करने के क्षेत्र में सहयोग मुहैया कराने के लिए छह समझौतों पर हस्ताक्षर किए। Prime Minister Narendra Modi met with Tanzanian President Samia Suluhu Hassan and reviewed the entire gamut of bilateral relations . India and Tanzania have prepared a 5-year roadmap for defense cooperation. This decision was taken during talks between Prime Minister Narendra Modi and Tanzanian President Samia Suluhu Hassan in New Delhi. This is Suluhu's first visit to India after assuming the post of President. This is the first visit of a President from Tanzania to India in the last 8 years. Tanzania is an East African country. The two countries signed six agreements to provide cooperation in the fields of digital payments, culture, sports, maritime industry and sharing of prior information on movement and identification of commercial civilian merchant vessels.

Ques 86. ANS (B) Solution: The National Commission of backward Classes (NCBC) Bill, passed by Parliament of India inserted Article 338B into the Constitution after Articles 338 and 338A which deal with the National Commission for Scheduled Castes (SC) and National Commission for Scheduled Tribes (ST) respectively.

Ques 87. ANS (B) Solution: The Board of Control for Cricket in India (BCCI) is the national governing body for cricket in India. The headquarters of the Board of Control for Cricket in India (BCCI) are located in Mumbai.

Ques 88. ANS (C) Solution:

Ques 89. ANS (A) Solution: In a significant ruling, the Supreme Court on Friday said that access to the Internet is a fundamental right under Article 19 of the Constitution, and asked the Jammu and Kashmir administration to review within a week all orders imposing curbs in the Union Territory.

Ques 90. ANS (A) Solution: UN Women has proposed to partner with Kerala's gender park to take forward projects and campaigns aimed at securing gender parity in South Asia.

Ques 91. ANS (D) Solution: The SDG India Index 2019-20, developed by NITI Aayog, was launched on December 30th, 2019. The Index has been constructed spanning across 16 out of 17 SDGs with a qualitative assessment on SDG 17.

Ques 92. ANS (B) Solution: Hemoglobin captures oxygen and transports it through the bloodstream by binding oxygen to each of its four heme groups. These heme groups are prosthetic groups; they are non-protein chemical compounds that are associated with hemoglobin and are necessary for its function.

Ques 93. ANS (C) Solution: If the inflation in an economy is rising steadily, the Central Bank might increase the repo rate.

Ques 94. ANS (C) Solution: Copper and its alloys (brasses, bronzes, cupronickel, copper-nickel-zinc, and others) are natural antimicrobial materials.

Ques 95. ANS (D) Solution: Jayakwadi dam is an earthen dam located on Godavari river at the site of Jayakwadi village in Paithan taluka of Aurangabad district in Maharashtra, India.

Ques 96. ANS (A) Solution:

Most Common Gases in a volcanic eruption are Water vapor ($H_2O$), carbon dioxide ($CO_2$), and sulfur dioxide ($SO_2$). Other Gases released are carbon monoxide (CO), hydrogen sulfide ($H_2S$), carbonyl sulfide (COS), carbon disulfide ($CS_2$), hydrogen chloride (HCl), hydrogen ($H_2$), methane ($CH_4$), hydrogen flouride (HF), boron, hydrogen bromine (HBr), mercury (Hg) vapor, organic compounds, even gold.

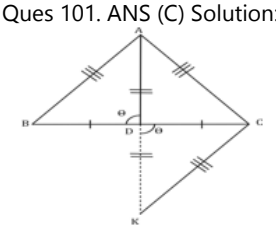
Ques 97. ANS (A) Solution: Mehrunnisa after marrying Jahangir was given the title of Nur Mahal (Light of the palace) and later on known as Nur Jahan (Light of the world). She is known to be the most influential empress in history and the most beloved wife of Jahangir.

Ques 98. ANS (D) Solution: C. Rajagopalachari's formula (or C. R. formula or Rajaji formula) was a proposal formulated by Chakravarti Rajagopalachari to solve the political deadlock between the All India Muslim League and the Indian National Congress on the independence of British India.

Ques 99. ANS (C) Solution: Sri Lanka becomes 1st South Asian country to call match fixing a crime. Sri Lanka has become the first South Asian nation to bring match-fixing cases to the category of crime as its parliament passed a bill related to 'Prevention of Offences Related to Sports'.

Ques 100. ANS (A) Solution: Mardani khel is an armed Indian martial art from Maharashtra. It is particularly known for its use of the uniquely Indian patta and vita.

Ques 101. ANS (C) Solution:




$\Delta ABD \simeq \Delta CDK$

$AB = CK$

In $\Delta ACK$

$AC + CK > AK$

$AC + AB > 2AD$ ...(i)

Ques 102. ANS (A) Solution:

As we know

Length of angle bisector = AD = $\sqrt{AB \times AC - BD \times DC}$

$\Rightarrow \sqrt{16 \times 24 - BD \times DC}$

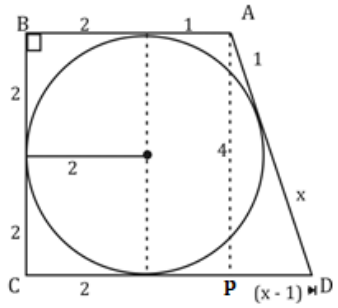
BD = $\frac{16}{40} \times 32 = \frac{64}{5} \Rightarrow 12.8$, CD = 32 – 12.8 = 19.2

AD = $\sqrt{16 \times 24 - (12.8)(19.2)}$

$\Rightarrow \frac{8}{10}\sqrt{600 - 2 \times 192} \Rightarrow \frac{4}{5} \times 2\sqrt{150 - 96}$

$\Rightarrow \frac{24\sqrt{6}}{5} \Rightarrow 4.8\sqrt{6}$

Ques 103. ANS (C) Solution:




Angle ABC is also 90° because AB||CD

In Δ APD

$(x + 1)^2 = (x - 1)^2 + 16$

$x^2 + 1 + 2x = x^2 + 1 - 2x + 16 \Rightarrow 4x = 16 \Rightarrow x = 4$

area of Trapezium ABCD = $=\frac{1}{2} \times (6 + 3) \times 4 = 18\ cm^2$.

Ques 104. ANS (A) Solution:

$Sin16°.sin48°.cosec48°.cosec16°$

$\Rightarrow 1$

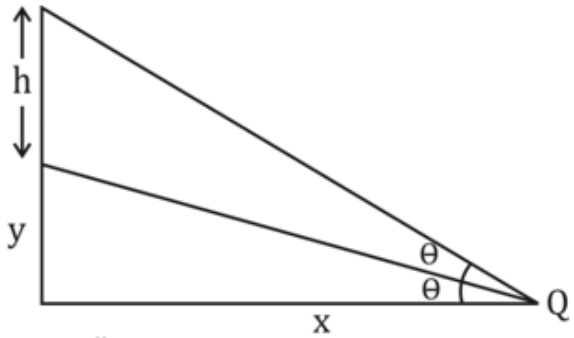
Ques 105. ANS (B) Solution:

S is arc length, R is radius of circle

As we know $\theta = \frac{S}{R} \times \frac{180}{\pi}$

$\theta = \frac{44}{45} \times \frac{180}{22} \times 7 = 56°$

Ques 106. ANS (C) Solution:




$\tan\theta = \frac{y}{x}$ ...(i)

$\tan 2\theta = \frac{h+y}{x}$ ...(ii)

$\Rightarrow \frac{2tan\theta}{1-\tan^2\theta} = \frac{h+y}{x}$

$\Rightarrow \frac{2\times\frac{y}{x}}{1-\frac{y^2}{x^2}} = \frac{h+y}{x}$

$\Rightarrow \frac{2yx}{x^2-y^2} = \frac{h+y}{x} \Rightarrow \frac{2yx^2}{x^2-y^2} - y = h$

$\Rightarrow \frac{2yx^2-x^2y+y^3}{x^2-y^2} = h \Rightarrow \frac{x^2y+y^3}{x^2-y^2} \Rightarrow \frac{y(x^2+y^2)}{(x^2-y^2)}$

Ques 107. ANS (B) Solution:

ATQ,

$\sqrt{-\sqrt{3} + \sqrt{3 + 8(2 + \sqrt{3})}} \Rightarrow \sqrt{-\sqrt{3} + 4 + \sqrt{3}}$

$= 2$

Ques 108. ANS (B) Solution:

Given: $\tan 60° (1 - 3\tan^2 20°) = 3\tan 20° - 4\tan^3 20°$

$\tan 60 = \frac{3tan20°-4\tan^3 20°}{1-\tan^2 20°}$

$\theta = 20$

Required $\Rightarrow 2\sin\frac{3\times20}{2} = 1$

Ques 109. ANS (D) Solution:

As we know

$SinC + sinD = 2\sin\left(\frac{C+D}{2}\right).\cos\left(\frac{C-D}{2}\right)$

ATQ,

$\frac{C-D}{2} = 7.5 \Rightarrow C - D = 15,\ C + D = 75$

So, C = 45 and D = 30

$\Rightarrow \frac{sinC + SinD}{SinC - SinD} = \frac{2\sin\left(\frac{C+D}{2}\right).\cos\left(\frac{C-D}{2}\right)}{2\cos\left(\frac{C+D}{2}\right).\sin\left(\frac{C-D}{2}\right)}$

$\Rightarrow \frac{\frac{1}{\sqrt{2}}+\frac{1}{2}}{\frac{1}{\sqrt{2}}-\frac{1}{2}} \Rightarrow \frac{\sqrt{2}+1}{\sqrt{2}-1} = 3 + 2\sqrt{2}$

Ques 110. ANS (C) Solution:

As we know $(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$

$\Rightarrow (21)^2 = x^2 + y^2 + z^2 + 2 \times 137$

$x^2 + y^2 + z^2 = 167$

$\sqrt{x^3 + y^3 + z^3 - 3xyz} = \sqrt{(x + y + z)[(x^2 + y^2 + z^2 - (xy + yz + zx))]}$

$\Rightarrow \sqrt{21 \times (167 - 137)} = \sqrt{30 \times 21} \Rightarrow 3\sqrt{70}$

Ques 111. ANS (D) Solution:

$Incircle\ radius = \frac{15}{2\sqrt{3}} = \frac{5\sqrt{3}}{2}$

$Required\ Area = \frac{22}{7} \times \frac{25\times3}{4} = \frac{825}{14}$

Ques 112. ANS (B) Solution:

$ATQ\ \frac{2626}{76+x} = 26$

$2626 = 1976 + 26x \Rightarrow x = 25$

Ques 113. ANS (A) Solution:

ATQ

$\frac{41}{8} \div \frac{15}{4}\ of\ \frac{41}{13} \div \left[\frac{26}{8} \div \frac{13}{10}\right] - \frac{7}{18}$

$\Rightarrow \frac{41}{8} \times \frac{4\times13}{41\times15} \div \frac{5}{2} - \frac{7}{18}$

$\Rightarrow \frac{13}{30} \times \frac{2}{5} - \frac{7}{18}$

$\Rightarrow \frac{13\times6-25\times7}{450}$

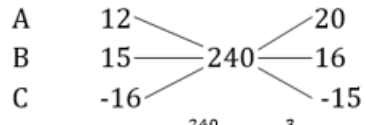
$\Rightarrow -\frac{97}{450}$

Ques 114. ANS (C) Solution:

$Required\ distance = 2 \times \frac{22}{7} \times \frac{126}{2} \times 12 = 4752\ cm$

47.52 m.

Ques 115. ANS (D) Solution:




$Required\ time = \frac{240}{21} = 11\frac{3}{7}\ hrs.$

Ques 116. ANS (A) Solution: LCM of 15, 18, 24 & 36 = 9 × 8 × 5 = 360

7 digit largest number = 9999999

Required number = 9999999 – 279 – 6

⇒ 9999714

Ques 117. ANS (B) Solution: area of larger circle = π100

Area of smaller circle = π 4

Total area of shaded region when paper is in original shape= 36 π
Required Ratio : 100π : 100 π – 36 π ⇒ 25: 16

Ques 118. ANS (B) Solution:

ATQ

for a perfect square =a + $\frac{2}{2\times6}\sqrt{a}$ + k$^2$

k = $\frac{1}{12}$.

Ques 119. ANS (C) Solution:

$x + \frac{1}{x} = 2\sqrt{2}, x^2 + \frac{1}{x^2} = 8 - 2 = 6$

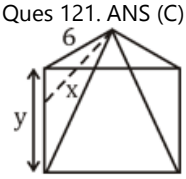
$x^3 + \frac{1}{x^3} = 16\sqrt{2} - 6\sqrt{2} = 10\sqrt{2}$

$x^5 + \frac{1}{x^5} = \left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) - x + \frac{1}{x} = 6 \times 10\sqrt{2} - 2\sqrt{2}$

$\Rightarrow 58\sqrt{2}$

Ques 120. ANS (C) Solution: for the maximum area the parallelogram must be rhombus and sides of rhombus is equal. So required side $= \frac{128}{4} = 32, 32.$

Ques 121. ANS (C) Solution:




Lateral surface area of one side = $8\sqrt{5}$

ATQ,

$\frac{1}{2}x \times y = 8\sqrt{5}$ $xy = 16\sqrt{5} \Rightarrow x = \frac{16\sqrt{5}}{y}$

$\Rightarrow x^2 + \frac{y^2}{4} \Rightarrow 36 \Rightarrow \frac{16\times16\times5}{y^2} + \frac{y^2}{4} = 36$

y = 8, x = $2\sqrt{5}$

Required Ratio = $32\sqrt{5} : 64 \Rightarrow \sqrt{5} : 2$

Ques 122. ANS (A) Solution:

given $a^2 + b^2 + 2c^2 + 2d^2 = 2(ac + cd + bd)$

$\Rightarrow a^2 + c^2 - 2ac + c^2 + d^2 - 2cd + b^2 + d^2 - 2bd = 0$

$\Rightarrow (a - c)^2 + (c - d)^2 + (b - d)^2 = 0$

$\Rightarrow a = c, c = d, b = d$

The Required Ratio = 1: 1: 1: 1

Ques 123. ANS (D) Solution:

volume of the frustum = $\frac{1}{3}\pi^2 h\,(r^2 + R^2 + rR)$

$\Rightarrow \frac{1}{3} \times \frac{22}{7} \times 14 \times (144 + 36 + 72) \Rightarrow 3696\ cm^3$

Ques 124. ANS (D) Solution: ATQ

14 × 16 × 9 = 18 × 4 × x

x = 28

Ques 125. ANS (B) Solution:

CP : MP

100 – 12 : 100 + 12 ⇒ 88 : 112 ⇒ 11 : 14

MP = $\frac{14}{11} \times 9636 \Rightarrow 12264$

Ques 126. ANS (D) Solution:

$x^2 = 2,\ x = \sqrt{2}$

$x + 1 = \sqrt{2} + 1$

put value of x in option d. $\frac{\sqrt{2}-1}{3-2\sqrt{2}}$

$\Rightarrow \frac{\sqrt{2}-1}{(\sqrt{2}-1)^2} = \frac{1}{\sqrt{2}-1} = \sqrt{2} + 1$

Ques 127. ANS (A) Solution:

The required prime number = 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53

Required average = $\frac{379}{15} = 25.2\overline{6}$

Ques 128. ANS (C) Solution:

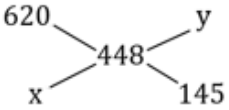
Total age = $8 \times 13 + 8 \times \frac{5}{12} \Rightarrow 104 + 3.\frac{1}{3}$

107 years. 4 month.

New average = $\frac{14 + 16 + 18 + 107\ years + 4\ months}{11}$

$\Rightarrow 14\frac{4}{33}$ years.

Ques 129. ANS (D) Solution:




Form the given data the value of x or y is interdependent and we can't find a value form it.

Ques 130. ANS (C) Solution:

$\frac{54}{D} + \frac{90}{U} = 6 \Rightarrow \frac{18}{D} + \frac{30}{U} = 2$.....equ.1

$\left[\frac{18}{D} + \frac{3}{U} = \frac{48}{60}\right]$ ..... equ. 2

Subtract equ. 2 from equ. 1,

$\frac{30}{U} - \frac{3}{U} = \frac{72}{60}$

$\frac{27}{U} = \frac{6}{5}$

U = 22.5

↓

Upstream Speed

Ques 131. ANS (B) Solution:

Rate = 12%

Half year Rate = 6%

Time 2 half years and 2 months

Rate for 2 months = $\frac{12}{12} \times 2 = 2\%$

| Principle | amount |
|---|---|
| 100 | 106 |
| 100 | 106 |
| 100 | 102 |
| 1000000 | 1146072 |

Gain 1146072−1000000=146072

Gain % = $\frac{146072}{1000000} \times 100$

= 14.6

Approx. = 15%

Ques 132. ANS (A) Solution:

Rate of interest = 16%

Time = 1 year 9 month

Required gain % = $16 + 16 \times \frac{9}{12} + \frac{16\times12}{100} = 29.92\%$

Ques 133. ANS (C) Solution:

ax -6y = -8

⇒ 6y = ax + 8

$\Rightarrow y = \frac{a}{6}x + \frac{8}{6}$

$\therefore$ slope = $\frac{a}{6} = \frac{-4}{3}$

$\therefore$ a = -8

Ques 134. ANS (C) Solution:

$25\% = \frac{1}{4}, 15\% = \frac{3}{20}, 12\% = \frac{3}{25}$

| 4 | 3 |
|---|---|
| 25 | 22 |
| 20 | 17 |
| 2000 | 1122 |

878

$$\text{Equivalent discount} = \frac{878}{2000} \times 100 = 43.9\%$$

Ques 135. ANS (D) Solution:

Gain → 19%

Loss → 19%

Over all loss $\rightarrow \frac{19 \times 19}{100}$

= 3.61% loss

Ques 136. ANS (D) Solution:

Mean proportion = a : b :: b : c

$b = \sqrt{ac}$

$= \sqrt{16.9 \times 32.4}$

= 23.4

Third proportion = a : b :: b : C

$c = \frac{b^2}{a}$

$= \frac{36}{4} = \frac{9}{1}$

Ratio

$\frac{234}{10} : \frac{9}{1} \Rightarrow 13 : 5$

13 : 5

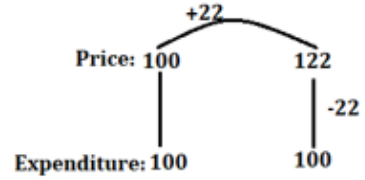
Ques 137. ANS (D) Solution:

$a^3 + b^3 = 7743$

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

$\frac{7743}{29} = 267 = a^2 + b^2 - ab$

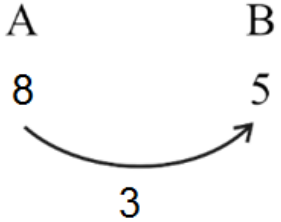
Ques 138. ANS (D) Solution:




so, $= \frac{22}{122} \times 100$

= 18.03%

Ques 139. ANS (D) Solution:




Req % $= \frac{3}{8} \times 100 = \frac{300}{8} = \frac{75}{2}\%$

Ques 140. ANS (D) Solution:

| A | B | C | |
|---|---|---|---|
| Rs 37,500 | Rs 42,500 | Rs 47,500 | |
| 15 | 17 | | 19 unit = Rs. 13699 |

Then the total profit = $\frac{13699}{19} \times \frac{10}{7} \times 51$ = Rs. 52530

Ques 141. ANS (A) Solution:

$$\text{A and B's profit} = \frac{42957}{9} \times 16 = 76368.$$

Ques 142. ANS (C) Solution: Total number of girls enrolled in Painting in the Institutes A and C together = 250 + 150 = 400
Total number of girls enrolled in Stitching in the Institutes D and E together = 250 + 325 = 575
∴ Required ratio =400 : 575 = 16 : 23

Ques 143. ANS (B) Solution:
Total number of girls enrolled in Stitching in all the institutes together = 325 + 250 + 50 + 250 + 325 = 1200 Number of girls enrolled in Stitching in Institute B = 250

∴ Required percentage

$\frac{250}{1200} \times 100 = 20.8 = 21\%$

Ques 144. ANS (A) Solution: Number of girls from all institutes enrolled in
Painting → 250 + 225 + 150 + 175 + 300 = 1100
Stitching → 1200
Dancing → 150 + 200 + 75 + 400 + 350 = 1175
∴ Required ratio = 1100 : 1200 : 1175 = 44 : 48 : 47

Ques 145. ANS (D) Solution:
Total number of girls in the institute A = 250 + 325 + 150 = 725
Number of girls enrolled in

Dancing in the institute A = 150

Required percentage $= \frac{150}{725} \times 100 = 20.69\%$

Ques 146. ANS (B) Solution:
Total number of candidates applying for various posts Company A → 1060 + 950 + 1000 + 830 = 3840
Company
E → 720 + 825 + 760 + 765 = 3070
Required percentage $= \frac{3070}{3840} \times 100 = 79.95\%$

Ques 147. ANS (A) Solution:

Required percentage

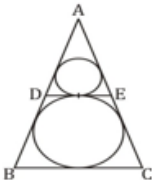
$\frac{760}{(720 + 825 + 760 + 765)} \times 100$

$\frac{760}{3070} \times 100 = 24.75 = 25\%$

Ques 148. ANS (D) Solution:
Average number of candidates applying for post II across various companies
$\frac{950 + 1005 + 920 + 950 + 825}{5} = \frac{4650}{5} = 930$
Average number of candidates applying for post IV
$\frac{830 + 740 + 920 + 960 + 765}{5} = \frac{4215}{5} = 843$
∴ Required difference = 930 – 843 = 87

Ques 149. ANS (C) Solution: Total number of candidates applying in Company A = 3840
Total number of candidates applying in Company C = 965 + 920 + 915 + 920 = 3720
Required ratio = 3840:3720 = 32:31

Ques 150. ANS (B) Solution:




Since bigger circle is the incircle of equilateral triangle so,
Radius of bigger circle will be equal to = 1/3 of height of triangle
$\pi r^2 = 1386$
$\frac{22}{7} \times r^2 = 1386$
$r^2 = 1386 \times \frac{7}{22}$
r = 21 cm
Join DE parallel to BC where O is touching point of both circles
Smaller circle will be incircle of triangle ADE.
Height of ΔADE = 63 – 23 × 2 = 21 cm
Since ΔADE and ΔABC are similar
So,
$\frac{AD}{AB} = \frac{DE}{BC} = \frac{AE}{AC} = \frac{21}{63}$
So ΔADE will also be an equilateral triangle.
Radius of smaller circle $= 21 \times \frac{1}{3} = 7cm$
Area of smaller circle
$= \frac{22}{7} \times 7 \times 7 = 154\ cm^2$

Ques 151. ANS (C) Solution: Replace "can" with "could" because the sentence is in indirect form so "can" will change into "could".
Ques 152. ANS (C) Solution: Use "his" in place of "him". Wasting is a gerund which acts as verbal noun so we need to use possessive case before it.
Ques 153. ANS (C) Solution: Use "and reached there" instead of ", reaching there". Present participle should be used only to express an action which coincides with the action of the finite verb.
Ques 154. ANS (A) Solution: Replace "to pay" with "on paying". Gerund is used after certain verbs/phrases that are followed by an appropriate preposition.
Ques 155. ANS (B) Solution: Replace "stay" with "staying". 'Won't + have + gerund (used in the sense of won't allow)
Ques 156. ANS (A) Solution: We use preposition 'of' with complained. So, option "a" is the correct usage here.
Ques 157. ANS (A) Solution: If two different nouns are connected through " and" then both take their respective articles with them.
Ques 158. ANS (C) Solution: (For + a period of time). The present perfect continuous (also called present perfect progressive) is a verb tense which is used to show that an action started in the past and has continued up to the present moment.
Ques 159. ANS (C) Solution: " Up in arms" is idiomatic which means protesting vigorously about something.
Ques 160. ANS (A) Solution: Compromised means "settle a dispute by mutual concession."
Ques 161. ANS (C) Solution: Refer to few lines of the first paragraph, "On February 5, an Additional Sessions Judge in Punjab sentenced three young men to life in prison. Arwinder Singh, Surjit Singh and Ranjit Singh were convicted under a little-known provision of the Indian Penal Code concerning "waging war against the government of India."
Ques 162. ANS (D) Solution: Refer to the lines, "What did happen was that the men were caught with literature supporting the cause of Khalistan, a few posters that did the same, some Facebook posts (whose content we do not know) on the subject."
Ques 163. ANS (A) Solution:
Pulpit: a raised enclosed platform in a church or chapel from which the preacher delivers a sermon.
Dais: a low platform for a lectern or throne.
Ques 164. ANS (C) Solution: Refer to the lines "It is important, however, for the higher courts to recognise not only that the judgment is fatally flawed but also that it represents a dangerous moment for the judiciary."
Ques 165. ANS (C) Solution: Refer to the lines "this is not the first occasion in recent times when a court has abandoned constitutional values in favour of a crude nationalistic rhetoric."
Ques 166. ANS (C) Solution: Bar: prevent or prohibit (someone) from doing something or from going somewhere. Preposition 'from' is used with 'bar/barred' and after prepositions, a gerund form of verb i.e. V1 + ing is used. Hence option C is the correct choice.
Ques 167. ANS (D) Solution: Take to' is an appropriate idiomatic expression to use here which means to make use of a particular public platform to express something. Moreover, the sentence is in Past Indefinite tense and active voice. Hence option D is the correct choice.
Ques 168. ANS (B) Solution: Run amuck (idiomatic expression): to rush around in a violent, murderous frenzy. Hence option B fits in the context.
Ques 169. ANS (D) Solution: Come off: become detached.
Fall through: fail.
Carry off (phrasal verb): to perform or manage successfully.
Ques 170. ANS (B) Solution: Fall away: to distance oneself from someone; to end an association with someone.
Ques 171. ANS (D) Solution: Concede means to surrender or yield (a possession, right, or privilege).
Ques 172. ANS (C) Solution: Chaste means abstaining from extramarital, or from all, sexual intercourse. And, sullied means damaged the purity or integrity of.
Ques 173. ANS (B) Solution: Imbecile means a stupid person. Hence, sane is the correct antonym of it.
Ques 174. ANS (B) Solution: Jubilant means feeling or expressing great happiness and triumph. While, melancholy means a feeling of pensive sadness, typically with no obvious cause. Hence, option(b) is apt.
Ques 175. ANS (C) Solution: Nefarious means (typically of an action or activity) wicked or criminal.
Ques 176. ANS (D) Solution: **Pillage**: rob a place using violence.
**Desecrate**: treat a sacred place or thing with violent disrespect.
**Bequeath:** leave (property) to a person or other beneficiary by a will.
**Consign:** deliver (something) to a person's keeping.
Ques 177. ANS (B) Solution:
Cluster: a group of similar things or people positioned or occurring closely together.

Assemblage: a collection or gathering of things or people.
Ques 178. ANS (C) Solution: Affectionate: readily feeling or showing fondness. Sympathetic: feeling, showing, or expressing sympathy.
Ques 179. ANS (B) Solution: **Consequent**: following as a result or effect.
**Ensuing**: happen or occur afterwards or as a result.
**Dawn**: the first appearance of light in the sky before sunrise.
Ques 180. ANS (D) Solution: Phonetic: relating to speech sounds.
Ques 181. ANS (A) Solution: Wild goose chase: a foolish and hopeless search for or pursuit of something unattainable.
Ques 182. ANS (B) Solution: You bet: sure, or certainty.
Ques 183. ANS (C) Solution: To put the cat among the pigeons: it is used to describe a disturbance caused by an undesirable person.

Ques 184. ANS (C) Solution: To jump ship: to leave any post or position; to quit or resign, especially when there is difficulty with the job.
Ques 185. ANS (B) Solution: To kick the bucket: to die
Ques 186. ANS (C) Solution: sedentary: tending to spend much time seated; somewhat inactive.
Ques 187. ANS (A) Solution: chauffeur: a person employed to drive a private or hired car.
Ques 188. ANS (D) Solution: sabotage: deliberately destroy, damage, or obstruct (something), especially for political or military advantage.
Ques 189. ANS (A) Solution: aluminum: a light silvery-grey metal.
Ques 190. ANS (B) Solution: Proficient: competent or skilled in doing or using something.
Ques 191. ANS (A) Solution:
Ques 192. ANS (C) Solution:
Ques 193. ANS (D) Solution:
Ques 194. ANS (B) Solution:
Ques 195. ANS (D) Solution:
Ques 196. ANS (B) Solution: Definitive: (of a conclusion or agreement) done or reached decisively and with authority.
Ques 197. ANS (C) Solution: Demagogue: rhetorically exploit (an issue) for political purposes in a way calculated to appeal to the desires and prejudices of ordinary people.
Ques 198. ANS (D) Solution: **Recitation**: the action of repeating something aloud from memory.
**Erudition**: the quality of having or showing great knowledge or learning; scholarship.
**Rendition**: a performance or interpretation, especially of a dramatic role or piece of music.
Ques 199. ANS (D) Solution:
Memento: an object kept as a reminder of a person or event.

Glimmer: shine faintly with a wavering light.
Ques 200. ANS (C) Solution:
Totter: move in a feeble or unsteady way.

Stammer: speak with sudden involuntary pauses and a tendency to repeat the initial letters of words.