1. Ans.(d):
Sol.

→ Either I or III follows

2. Ans.(c):
Sol. -1 series

3. Ans.(a):
Sol. X-rays were discovered in 1895 by Wilhelm Conrad Roentgen (1845-1923) who was a Professor at Wurzburg University in Germany.

4. Ans.(b):
Sol. 3M company has been associated with the development of Post-It and Scotch Tape. More than Tape and Post-Its 3M produces an almost incomprehensible 55,000 items.

5. Ans.(d):
Sol. $5x^2 + 10x + 4x = 5x^2 + 14x$

6. Ans.(a):
Sol. A memory cache is a portion of memory made of high-speed static RAM (SRAM) instead of the slower and cheaper dynamic RAM (DRAM) used for main memory.

7. Ans.(b):
Sol. Net profit $= \left[11 + 11 + \frac{11 \times 11}{100}\right]\%$
$= [22 + 1.21]\% = 23.21\%$

8. Ans.(a):
Sol. I. $100 \rightarrow 102$
  II. $100 \rightarrow 118$
  Ratio $= 102 : 118 = 51 : 59$

9. Ans.(b):
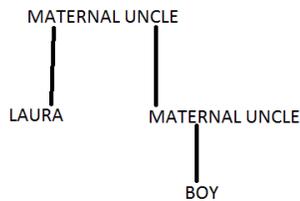**Sol.** $0.592 \div 0.8 = 0.74$

10. Ans.(b):
Sol.

Aunt and nephew

11. Ans.(d):
Sol. $69696 \times (10000 - 1) = 696890304$

12. Ans.(a):
Sol. RIPPLE → 613382
PREACH → 362457
PILLER → 318826

13. Ans.(d):
Sol. $\frac{1}{9} + \frac{1}{16} = \frac{25}{9 \times 16} \Rightarrow \frac{25}{144}$
Time $= \frac{144}{25} = 5\frac{19}{25}$

14. Ans.(b):
Sol. The 46th International Film Festival of India was held on 20 to 30 November 2015 in Goa.The International Jury was headed by the chairperson, Shekhar Kapur along with UK based director, Micheal Radford, Palestinian based Israel director, Ms. Suha Arraf, German Actress, Julia Jentsch and South Korean filmmaker Jeon Kyu-Hwan.

15. Ans.(c):
Sol. A good warning sign of an approaching tsunami is "drawback," when the ocean recedes drastically or the water level falls unusually along the shoreline.

16. Ans.(c):
Sol. 6 × 7 ÷ 3 + 8 – 20 = 2

17. Ans.(b):
Sol. Argon's elemental symbol is Ar, and it is the most abundant rare gas (noble gas) in the atmosphere.

18. Ans.(b):
Sol. According to statement only conclusion II follows

19. Ans.(b):
Sol. Standard deviation $= \sqrt{\text{Variance}} = \sqrt{196} = 14$

20. Ans.(b):
Sol. India's great freedom fighter Netaji Subhash Chandra Bose had renamed Andaman and Nicobar Islands as "Shaheed " and "Swarajya"when Subhash Babu keled Indian National Army briefly captured the islands during WW2.

21. Ans.(b):
Sol. $\frac{4923}{547} - 10 = -1$

22. Ans.(d):
Sol. Adam's Apple is a projection at the front of the neck formed by the thyroid cartilage of the larynx, often prominent in men.

23. Ans.(d):
Sol. India organized the FIFA U-17 World cup in the year 2017.

24. Ans.(b):
Sol. $\frac{1+\frac{1}{2}+\frac{1}{2}+\frac{3}{4}+\frac{1}{4}+2+\frac{1}{2}+\frac{1}{4}+\frac{3}{4}}{9} = \frac{13}{18}$

25. Ans.(c):
Sol. Variance of 2, 4, 5, 6, 8, 17 = 23.33
Variance of 2[2, 4, 5, 6, 8, 17] = 4 × 23.33 = 93.333

26. Ans.(d):
Sol. Loss $= \frac{15}{100} = \frac{3}{20}, \frac{17}{20} = \frac{SP}{CP}$
SP → 17 → 22100
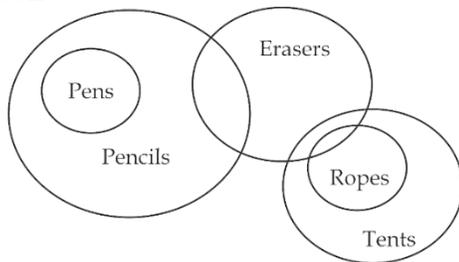CP → 20 → $\frac{22100}{17}$×20 = 26000
For profit → 15% $= \frac{23}{20} = \frac{SP}{CP}$
20 → 26000
23 → $\frac{26000}{20} \times 23 = 29900$

27. Ans.(d):
Sol.

I. ✗
II. ✗
III. ✗
IV. ✓

28. Ans.(c):
Sol. $\frac{2}{3}, \frac{5}{6}, \frac{3}{4}$
Reversing them
1.5, 1.2, 1.33
Descending order = 1.5, 1.33, 1.2
Ascending order $= \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$

29. Ans.(a):

Sol. cos (A + B) = cosA cosB – sinA sinB

$TanA = \dfrac{15}{8}$, $\quad CosA = \dfrac{8}{\sqrt{15^2 + 8^2}} = \dfrac{8}{17}$

$TanB = \dfrac{7}{24}$, $\quad CosB = \dfrac{24}{\sqrt{24^2 + 7^2}} = \dfrac{24}{25}$

$SinA = \dfrac{15}{17}$, $\quad SinB = \dfrac{7}{25}$

$\cos(A + B) = \dfrac{8}{17} \times \dfrac{24}{25} - \dfrac{15}{17} \times \dfrac{7}{25} = \dfrac{192 - 105}{425} = \dfrac{87}{425}$

30. Ans.(a):

Sol. UK Becomes First Country To Legalize Three-Parent IVF. The parliament in the House of Commons voted to approve a new type of in vitro fertilization (IVF) which would allow the creation of so-called "three-person babies" in the United Kingdom.

31. Ans.(d):

Sol. The Montessori Method, developed by Dr. Maria Montessori and put into use for the first time in 1907, is based on the idea of self-education.

32. Ans.(d):

Sol. In Western European political science, the term polyarchy poly "many", arkhe "rule") was used by Robert Dahl to describe a form of government in which power is invested in multiple people. It takes the form of neither a dictatorship nor a democracy.

33. Ans.(c):

Sol. $8^{2/3} = 4$

34. Ans.(c):

Sol. Amount = $950 + \dfrac{950 \times 6 \times 4}{100}$ = 1178 Rs

35. Ans.(c):

Sol. 1x + 5x + 8x+ 9x = 368

23x = 368 ⇒ x = 16

1x = 16 ⇒ 5x = 80

8x = 128 ⇒ 9x = 144

36. Ans.(c):

Sol. New Horizons data hints there are few small Kuiper belt bodies.

37. Ans.(a):

Sol. Osmosis is there in our day to day life. And osmosis plays an important role in our day to day life and also important in plants. Roots take in water from roots from ground through osmosis. When we put dried raisins in water, the raisins swells up as they gain water

38. Ans.(d):

Sol. The 2014 Commonwealth Games was a multi-sport event held in Glasgow, Scotland from 23 July to 3 August 2014.

39. Ans.(c):
Sol. order of rotation of a rectangle = 2

40. Ans.(d):
Sol. 2400 = LCM × HCF
2400 = 96 × HCF
HCF = $\frac{2400}{96} = 25$

41. Ans.(a):
Sol. Walk both way in = 5hr 40 min = 340 min
Walk one way = 170 min
Walking + riding back = 270 min
Riding one way = 270 – 170 = 100 min
Riding both way = 200 min = 3 hr 20 min

42. Ans.(c):
Sol. Most birth control pills are "combination pills" containing a mix of the hormones estrogen and progesterone to prevent ovulation.

43. Ans.(c):
Sol. Distance between two cycle = $24 \times \frac{1}{4} = 6$

In 10 min from opposite direction Relative speed = $\frac{6}{\frac{10}{60}} = 36$ km/hr

Speed of women = 36 – 24 = 12 km/hr

44. Ans.(b):
Sol. Mother Goddess, Pashupati Shiva, Peepal, Pigeon, Swastik were worshipped by the Harappans.

45. Ans.(a):
Sol. The twinkling of a star is due to atmospheric refraction of starlight. The starlight, on entering the earth's atmosphere, undergoes refraction continuously consequently the position of the star's image changes with time.

46. Ans.(b):
Sol.

47. Ans.(b):
Sol. Kailash Satyarthi selected for 2015 Harvard Humanitarian of the Year Award. It is an annual award given by US based Harvard University.

48. Ans.(a):
Sol. Total students = 60
Total who likes Maths and English = 60 – 12 = 48
Maths ∪ English = Maths + English – (maths ∩ English)
48 = 42 + 32 – (maths ∩ English)
Maths ∩ English = 26
Only maths = 42 – 26 = 16
$\frac{16}{60} \times 100 = 26.67\%$

49. Ans.(b):
Sol. Total students = 60
Total who likes Maths and English = 60 – 12 = 48
Maths ∪ English = Maths + English – (maths ∩ English)
48 = 42 + 32 – (maths ∩ English)
Maths ∩ English = 26

50. Ans.(d):
Sol. Exactly one subject = 42 + 32 -26 – 26 = 22

51. Ans.(b):
Sol. Golconda historic fortress and ruined city lying 5 miles (8 km) west of Hyderabad in western Telangana state, southern India. The fort was built by the Kakatiya dynasty in the 13th century.

52. Ans.(d):
Sol. $\sin x = \frac{4}{5}$
$\cos x = \frac{3}{5}$
$\sec x = \frac{5}{3}$
$\sec^2 x - 1 = \frac{25}{9} - 1 = \frac{16}{9}$

53. Ans.(c):
Sol. $P \rightarrow 2 \quad H \rightarrow 6$
$R \rightarrow 7 \quad I \rightarrow 8$
$A \rightarrow 5 \quad T \rightarrow 3$
$B \rightarrow 9 \quad A \rightarrow 5$
$A \rightarrow 5 \quad L \rightarrow 4$
$B \rightarrow 9$
$H \rightarrow 6$
$A \rightarrow 5$
$R \rightarrow 7$
$A \rightarrow 5$
$T \rightarrow 3$
$H \rightarrow 6$
$I \rightarrow 8$

54. Ans.(c):
Sol. HCF of (1757, 2259) = 251

55. Ans.(b):
Sol. In November 2015, Belgium became the leader in the FIFA rankings for the first time, after topping their Euro 2016 qualifying group.
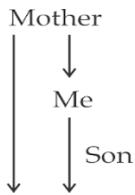
56. Ans.(c):
Sol. $(-2)^2 \sqrt{\left[\left(-\frac{1}{2}\right)^2 + 0^2\right]}$
$4\sqrt{\frac{1}{4}} = \frac{4}{2} = 2$

57. Ans.(c):
Sol.

Mother
↓
Me
   Son
[Grandson → Girl]

58. Ans.(d):
Sol. Calcutta High Court is the oldest High Court in India. Calcutta High Court was established on 1 July 1862 under the High Courts Act, 1861. It has jurisdiction over the state of West Bengal and the Union Territory of the Andaman and Nicobar Islands.

59. Ans.(a):
Sol. Sublimation is the transition of a substance directly from the solid to the gas phase, without passing through the intermediate liquid phase.

60. Ans.(b):
Sol. $x - 3 = 3x + 7 \Rightarrow x = -5$

61. Ans.(a):
Sol. Justice M. Fathima Beevi became the first female judge to be a part of the Supreme court of India, and the first Muslim woman to be appointed to any of the higher judiciaries in country.

62. Ans.(b):
Sol. In the Northern Hemisphere the vernal equinox falls about March 20 or 21, as the Sun crosses the celestial equator going north.

63. Ans.(c):
Sol. $\frac{33800}{520 \times 5} = 13$

64. Ans.(a):
Sol. The streams of dust and gas thus released form a huge, extremely tenuous atmosphere around the comet called the coma, and the force exerted on the coma by the Sun's radiation pressure and solar wind cause an enormous tail to form, which points away from the Sun.

65. Ans.(d):
Sol. The Kaisar-i-Hind Medal for Public Service in India was a medal awarded by the British monarch to civilians of any nationality who rendered distinguished service in the advancement of the interests of the British Raj. Mahatma Gandhi was awarded the Kaisar-i-Hind in 1915 by The Lord Hardinge of Penshurst.
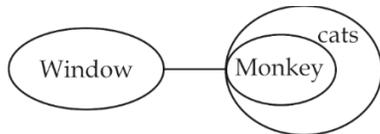
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66. Ans.(d):
Sol.

  1 ×
  2 ×
  3 √
  4. ×

67. Ans.(b):
Sol.

68. Ans.(c):
Sol. 6 + 9 × 8 ÷ 3 – 20 = 10

69. Ans.(c):
Sol. The Karla Caves are a complex of ancient Buddhist Indian rock-cut caves at Karli near Lonavala, Maharashtra.

70. Ans.(a):
Sol. The concept behind 3D vision is called retinal disparity. Because our eyes are separated by a distance, each eye sees a slightly different version of an image

71. Ans.(d):
Sol. River Narmada emerges from Amarkantak Hill of Maikal Range.

72. Ans.(a):
Sol. Mohammad Hidayatullah was the 11th Chief Justice of India serving from 25 February 1968 to 16 December 1970, and the sixth Vice President of India, serving from 31 August 1979 to 30 August 1984. He had also served as the Acting President of India from 20 July 1969 to 24 August 1969 and from 6 October 1982 to 31 October 1982.

73. Ans.(b):
Sol.

74. Ans.(c):
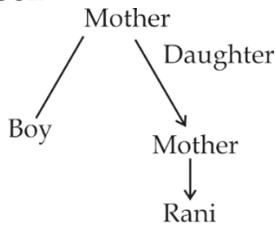**Sol.** 83 + 108 + 74 + 88 + 98 : 3 + 2.52 + 3.84 + 3.68 + 3.96 = 451 : 17

75. Ans.(a):
Sol. $\frac{98+112+101+133+142}{324+288+342+336+420} \times 100$
$= \frac{586}{1710} \times 100 = 34.26\%$

76. Ans.(d):
Sol. 336 + 133 + 3.68 + 36.4 + 88 = 597.08 lakhs

77. Ans.(c):
Sol.

78. Ans.(b):
Sol. Karl Benz gets the credit for inventing the automobile because his car was practical, used a gasoline-powered internal-combustion engine and worked like modern cars do today.

79. Ans.(b):
Sol. Ellen Johnson (born October 29, 1938, Monrovia, Liberia), Liberian politician and economist who was president of Liberia (2006–18). She was the first woman to be elected head of state of an African country.

80. Ans.(d):
Sol. $9 – 5 × 4 + 3 ÷ 2 = - 9.5$

81. Ans.(a):
Sol. $\sqrt{25 + 9} = \sqrt{34}$

82. Ans.(c):
Sol. No. of sides $= \dfrac{360°}{\text{Exterior angle}} = \dfrac{360°}{72°} = 5$

83. Ans.(a):
Sol. Thermal Power pollutes the atmosphere due to production of large amount of smoke and fumes. The heated water that comes from thermal power plant has an adverse effect on the lives in the water and disturbs the ecology.

84. Ans.(c):
Sol. The 2015 G20 Antalya summit was the tenth annual meeting of the G20 heads of government/heads of state. It was held in Belek, Antalya Province, Turkey on 15–16 November 2015
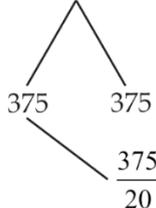
85. Ans.(a):
Sol.

86. Ans.(a):
Sol.

Compound interest = 375 + 375 + 18.75 = 768.75

87. Ans.(c):
Sol. Bandaranaike became Prime Minister on 21 July 1960. She was the first female prime minister in the world, and the first woman to be elected head of government

88. Ans.(b):
Sol.
Bin	Sachin	Ram	Rony	Monty
1	2	3	4	5

89. Ans.(c):
Sol. Rony

90. Ans.(d):
Sol. Sachin

91. Ans.(a):
Sol. $3 \div 2 \times 4 + 2 - 9 = -1$

92. Ans.(a):
Sol. An ecotone is a transition area between two biomes. It is where two communities meet and integrate.

93. Ans.(b):
Sol. Efficiency of Verma = x
Efficiency of Rakshanth = 2x
Together they finish in = 19 days
Total work 3x × 19 = 57x
Verma alone = $\frac{57x}{x} = 57$

94. Ans.(b):
Sol.

95. Ans.(d):
Sol. Bill Gates and Paul Allen founded Microsoft on this day, April 4, in 1975

96. Ans.(a):
Sol. Two numbers are = 18 × 2, 18 × 5
= 36, 90
LCM [36, 90] = 180

97. Ans.(a):
Sol. There are 88 official constellations. But astronomers haven't made up new constellations, when new stars are discovered, they are considered to be a part of whatever constellation they are closest to.

98. Ans.(d):
Sol.

99. Ans.(b):
Sol. India and France have launched a n International Solar Alliance to boost solar energy in developing countries.

100. Ans.(d):
Sol. Arranged in opposite order