ANSWERS

1. (B): $\text{Loss}\% = \frac{1}{6} \times 100 = \frac{50}{3}\%$.

2. (C): $xy^2m = (2xy + 5y)^2 - (2xy - 5y)^2$

$= (2xy + 5y + 2xy - 5y)$
$(2xy + 5y - 2xy + 5y)$

$= (4xy)(10y)$

$\Rightarrow \quad xy^2m = 40xy^2$

$\Rightarrow \quad m = 40.$

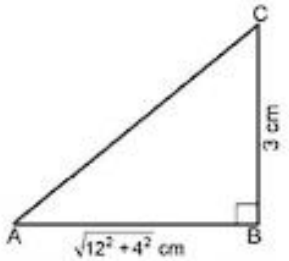
3. (D): $84xy^2z^2$

Hence, like term of $84xy^2z^2$

$= 6 \times 4 \times x \times z \times y \times z \times y$

$= 24xy^2z^2.$

4. (A): $(AC)^2 = (3)^2 + \left(\sqrt{12^2 + 4^2}\right)^2$



$= 9 + 144 + 16 = 169 = (13)^2$

$\therefore \quad AC = 13$ cm

Perimeter of the given figure

$= \left(4\sqrt{10} + 16\right)$ cm.

5. (D): $\because$ 1000 revolutions = 2000 m

$\Rightarrow$ 1 revolution = 2 m

$C = 2\pi r$

$$\Rightarrow \quad 2 = 2 \times \frac{22}{7} \times r$$

$$\Rightarrow \quad r = \frac{7}{22} = 0.318 \text{ m}$$

Hence, the diameter of the wheel = 0.636 m.

6. (D): $\because \quad a = 5 + 2\sqrt{6}$

$$\therefore \quad \frac{1}{a} = \frac{1}{5+2\sqrt{6}} \times \frac{5-2\sqrt{6}}{5-2\sqrt{6}}$$

$$= \frac{5-2\sqrt{6}}{1}$$

$$a + b = 5 + 2\sqrt{6} + 5 - 2\sqrt{6} = 10$$

Squaring both sides, then we get

$a^2 + b^2 + 2ab = 100$

$\Rightarrow a^2 + b^2 + 2(5+2\sqrt{6})(5-2\sqrt{6}) = 100$

$\Rightarrow a^2 + b^2 + 2 \times (25 - 24) = 100$

$\therefore \quad a^2 + b^2 = 100 - 2 = 98$

Hence, the value of $a^2 + b^2 = 98$.

7. (A): According to the question

$$3(290 - x) = (150 + x)$$

$$\Rightarrow \quad 870 - 3x = 150 + x$$

$$\Rightarrow \quad 870 - 150 = 4x$$

$$\Rightarrow \quad 720 = 4x$$

$$\therefore \quad x = \frac{720}{4} = 180$$

Hence, required no. of cards given by Gauransh to Tanya = 180.

8. (D): Let present age of B = x years

and Present age of A = $2x$ years

5 years ago, B's age = $(x - 5)$

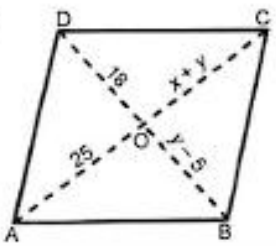
According to the question,

$$x - 5 = b \Rightarrow x = b + 5$$

$\therefore$ Present age of A = $2x = 2(b + 5)$

$= 2b + 10$.

9. (B):



$\because$ Diagonals of $\parallel$ gm bisect each other.

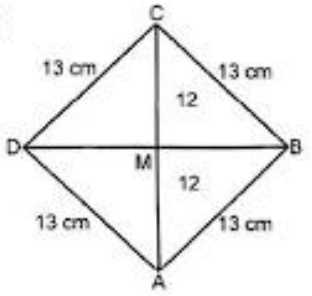
$\therefore \quad y - 5 = 18 \Rightarrow y = 23$

and $\quad x + y = 25 \Rightarrow x = 25 - 23 = 2$

Hence, $\quad x = 2, y = 23$.

10. (D)

11. (D):



In ΔADM,

$$DM^2 = (13)^2 - (12)^2$$

$$= 169 - 144 = 25$$

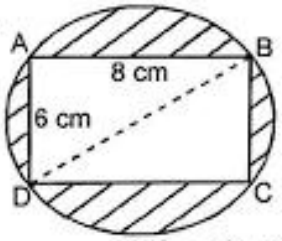
$$\therefore \quad DM = 5 \text{ cm}$$

$$DB = 2 \times 5 = 10 \text{ cm}$$

$$\text{Area of rhombus} = \frac{1}{2} \times d_1 \times d_2$$

$$= \frac{1}{2} \times 24 \times 10 = 120 \text{ cm}^2.$$

12. (B):



$$BD^2 = 8^2 + 6^2 = 64 + 36 = 100$$

$$\therefore \quad BD = 10 \text{ cm}$$

$\therefore$ radius of circle = 5 cm

Area of rectangle = $8 \times 6 = 48 \text{ cm}^2$

Area of shaded region = Area of circle − Area of rectangle

$$= \frac{22}{7} \times 5 \times 5 - 48$$

$$= \frac{550}{7} - 48$$

$$= \frac{550 - 336}{7} = \frac{214}{7}$$

$= 30.5 \text{ cm}^2$.

13. (D): $(-5)^{m+1} \times (-5)^{m-1} = (-5)^3$

$\Rightarrow \quad (-5)^{m+1+m-1} = (-5)^3$

$\Rightarrow \quad 2m = 3 \Rightarrow m = \frac{3}{2}.$

14. (D): Let numerator $= x$

$\therefore$ Denominator $= x + 2$

$\therefore$ Fraction $= \frac{x}{x+2}$

According to the question

$$\frac{x-2}{x+2+5} = \frac{1}{10}$$

$\Rightarrow \quad \frac{x-2}{x+7} = \frac{1}{10}$

$\Rightarrow \quad 10x - 20 = x + 7$

$\Rightarrow \quad 9x = 27 \Rightarrow x = 3$

$\therefore$ Fraction $= \frac{3}{5}.$

15. (D): $(n^2 + 1)^2 = (2n)^2 + (n^2 - 1)^2$

$\Rightarrow \quad n^4 + 2n^2 + 1 = 4n^2 + n^4 - 2n^2 + 1$

$= n^4 + 2n^2 + 1$

Hence, $(2n, n^2 - 1, n^2 + 1)$ is a pythagorean triplet.

16. (A): $\frac{C_1}{C_2} = \frac{2\pi r_1}{2\pi r_2}$

$\Rightarrow \quad \frac{5}{3} = \frac{r_1}{r_2}$

Hence, $r_1 : r_2 = 5 : 3.$

17. (A): First write in ascending order

0, 3, 7, 7, 8, 8, 9, 10

Here $n = 8$ which is even number

$\therefore$ Median $= \frac{\text{4th term} + \text{5th term}}{2}$

$= \frac{7+8}{2} = \frac{15}{2} = 7.5.$

18. (D): $4a^2 - 9b^2 - 2a - 3b$

$= (2a)^2 - (3b)^2 - 1(2a + 3b)$

$= (2a + 3b)(2a - 3b) - 1(2a + 3b)$

$= (2a + 3b)(2a - 3b - 1).$

19. (B): $\sqrt[4]{\sqrt[3]{2^2}} = 2^{\frac{2}{12}} = 2^{\frac{1}{6}}.$

20. (*)

21. (D): Here, 1 hour 36 minutes $= 1\frac{36}{60}$ hr.

$= 1\frac{3}{5} = \frac{8}{5}$ hr.

given, 2 pipes stopped working

$\therefore$ remaining pipes $= 5 - 2 = 3$ pipes

$\because$ 5 pipes fill a tank in $\frac{8}{5}$ hr.

$\therefore$ 5 pipes' 1 hour's work $= \frac{5}{8}$

$\therefore$ 1 pipe's 1 hour's work $= \frac{5}{8} \times \frac{1}{5} = \frac{1}{8}$

$\therefore$ 3 pipes' 1 hour's work $= \frac{3}{8}$

Hence, 3 pipes fill a tank in $\frac{8}{3}$ hours

$= 2\frac{2}{3}$ hours

$= 2$ hour $\frac{2}{3} \times 60$ min.

$= 2$ hour 40 minutes

22. (C): The curved surface area of a cylindrical pipes

$= 2\pi(x^2 + x - 132)$

$= 2\pi(x^2 + 12x - 11x - 132)$

$= 2\pi[x(x + 12) - 11(x + 12)]$

$= 2\pi(x - 11)(x + 12)$

$\Rightarrow \quad 2\pi rh = 2\pi(x - 11)(x + 12)$

$\Rightarrow \quad 2\pi(x + 12)h = 2\pi(x - 11)(x + 12))$

$\Rightarrow \quad h = (x - 11)$ m.

23. (C): (A) $(7x + 6b)(7a - 6b)$

$= (\text{III}) \ 49a^2 - 36b^2$

(B) $(7a + 6b)^2$

$= (\text{I}) \ 49a^2 + 84ab + 36b^2$

(C) $(7a - 6b)^2$

$= (\text{IV}) \ 49a^2 - 84ab + 36b^2$

(D) $(7a + 6b)(7a - 3b)$
$= (II)\ 49a^2 + 21ab - 18b^2.$

24. (C): (A) $3m \times 2m = (II)\ 6m^2$
(B) $-9m \times -3n = (III)\ 27mn$
(C) $4a^2 \times 4a^2 = (IV)\ 16a^4$
(D) $2a \times 8a = (I)\ 16a^2$

25. (A): A number is divisible by 3 only when the sum of its digit is divisible by 3.
Given, $2xy8$ is exactly divisible by 3

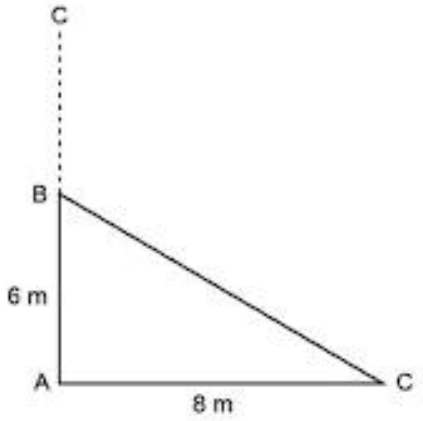
$$\therefore \frac{2+x+y+8}{3} = \frac{10+x+y}{3}$$

$$= \frac{10+2}{3} = 4, \text{ when } x+y=2.$$

26. (B)

27. (C): $6x^2 + 5x - 6$
$= 6x^2 + 9x - 4x - 6$
$= 3x(2x + 3) - 2(2x + 3)$
$= (2x + 3)(3x - 2)$
$\therefore (2x + 3)$ is one of the factor.

28. (C): Let AC be the height of the tree
then, $AC = AB + BC$
given, $AB = 6$ m
$AC = 8$ m
by pythagoras theorem
In ΔABC



$AB^2 + AC^2 = BC^2$
$\Rightarrow 6^2 + 8^2 = BC^2 \Rightarrow BC^2 = 36 + 64$
$\Rightarrow BC^2 = 100 = (10)^2$
$\Rightarrow BC = 10$ m
$\therefore$ the height of the tree = AC = AB + BC
$= 6 + 10 = 16$ m.

29. (A): $\frac{M_1 d_1 h_1}{w_1} = \frac{M_2 d_2 h_2}{w_2}$

$\Rightarrow \frac{15 \times 5 \times 1}{900} = \frac{20 \times 7 \times 1}{w_2}$
$\Rightarrow 15 \times 5 \times w_2 = 20 \times 7 \times 900$
$\Rightarrow w_2 = \frac{20 \times 7 \times 900}{15 \times 5}$
$= 4 \times 7 \times 60$
$\Rightarrow w_2 = 1680$
$\therefore$ 20 boys earn ₹ 1680 in 7 days.

30. (D): Given, AB || CD and EF || GH
$\because$ PQRS is a parallelogram
$\therefore \angle QPS = \angle QRS = 110^\circ$
$\Rightarrow \angle QRS = 110^\circ$
and $\angle QRS + \angle QRH = 180^\circ$
(Linear pair of Angles)
$\Rightarrow 110^\circ + \angle QRH = 180^\circ$
$\Rightarrow \angle QRH = 180 - 110^\circ$
$\Rightarrow \angle QRH = 70^\circ.$

31. (C): $\because A = P\left(1 + \frac{r}{100}\right)^n$

$\therefore 176400 = 160000\left(1 + \frac{5}{100}\right)^n$
$\Rightarrow \frac{176400}{160000} = \left(1 + \frac{1}{20}\right)^n$
$\Rightarrow \frac{441}{400} = \left(\frac{21}{20}\right)^n$
$\Rightarrow \left(\frac{21}{20}\right)^2 = \left(\frac{21}{20}\right)^n$
$\Rightarrow n = 2$
$\therefore$ Required time = 2 years.

32. (D): Simple Interest $= \frac{prt}{100}$
$= \frac{1000 \times 10 \times 3}{100} =$ ₹ 300

and compound interest

$$= P\left(1+\frac{r}{100}\right)^n - P$$

$$= 1000\left(1+\frac{10}{100}\right)^3 - 1000$$

$$= 1000\left(\frac{11}{10}\right)^3 - 1000$$

$$= 1000\times\frac{1331}{1000} - 1000$$

$$= 1331 - 1000 = ₹\ 331$$

$\therefore$ Anita gain at the end of 3 years

$$= 331 - 330 = ₹\ 31.$$

33. (D): (Mohan + Rohan)'s 1 day's work

$$= \frac{1}{25}+\frac{1}{20}$$

$$= \frac{4+5}{100} = \frac{9}{100}$$

$\Rightarrow$ (Mohan + Rohan)'s 5 day's work

$$= 5\left(\frac{9}{100}\right) = \frac{9}{20}$$

$\therefore$ Remaining work $= 1-\frac{9}{2} = \frac{11}{20}$

Hence, Rohan will finish the remaining work in

$$= \frac{\frac{11}{20}}{\frac{1}{20}} = 11 \text{ days.}$$

34. (C) **35. (B)**

36. (C): Let two numbers are x and $2x$.

Then, $x^2 + (2x)^2 = 50{,}000$

$\Rightarrow$ $x^2 + 4x^2 = 50{,}000$

$\Rightarrow$ $5x^2 = 50{,}000$

$\Rightarrow$ $x^2 = 10{,}000$

$\Rightarrow$ $x^2 = (100)^2$

$\Rightarrow$ $x = 100$

$\therefore$ The difference of numbers $= 2x - x$

$= x = 100.$

37. (A): $\sqrt[3]{1372}\times\sqrt[3]{1458}$

$= (4 \times 7 \times 7 \times 7)^{1/3} \times (2 \times 9 \times 9 \times 9)^{1/3}$

$= (4 \times 7^3 \times 2 \times 9^3)^{1/3}$

$= (8 \times 7^3 \times 9^3)^{1/3}$

$= (2^3 \times 7^3 \times 9^3)^{1/3}$

$= 2 \times 7 \times 9 = 126.$

38. (C): $\because (a^3 + b^3 + c^3 - 3abc)$

$= (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ac)$

When, $a + b + c = 0$

then, $a^3 + b^3 + c^3 = 3abc$

Given, $a = 12$, $b = -5$ and $c = -7$

$\therefore$ $a + b + c = 12 - 5 - 7$

$= 12 - 12 = 0$

$\Rightarrow$ $a + b + c = 0$

$\therefore$ $a^3 + b^3 + c^3 = 3abc$

$= 3 \times 12 \times -5 \times -7$

$= 1260.$

39. (C): Here, P = ₹ 7000,

depreciation = 40%, $n = 2$

Value after n years $= P\left(1-\frac{r}{100}\right)^n$

$\Rightarrow$ Value after 2 years $= 70000\left(1-\frac{40}{100}\right)^2$

$= 70000\left(1-\frac{2}{5}\right)^2$

$= 70000\left(\frac{3}{5}\right)^2$

$= 70000\times\frac{9}{25}$

$= 2800 \times 9$

$= ₹\ 25200.$

40. (D): Euler's formula for a polyhedron.

$F + V - E = 2$

(A) $4 + 4 - 6 = 8 - 6 = 2$

(B) $8 + 6 - 12 = 14 - 12 = 2$

(C) $12 + 20 - 30 = 32 - 30 = 2$

(D) $6 + 4 - 6 = 4$

$\therefore$ Option (D) V = 4, F = 6, E = 6 can not be true for a polyhedron.

41. (A):

Class	Mid-value (x)	Frequency (f)	fx
0 – 20	10	17	170
20 – 40	30	28	840
40 – 60	50	32	1600
60 – 80	70	f	$70f$
80 – 100	90	19	1710
		$\Sigma f = 96 + f$	$\Sigma fx = 4320 + 70f$

$\because$ $\text{Mean} = \dfrac{\Sigma fx}{n}$, $\Sigma f = n$

$\therefore$ $50 = \dfrac{4320 + 70f}{96 + f}$

$\Rightarrow$ $50(96 + f) = 4320 + 70f$

$\Rightarrow$ $4800 + 50f = 4320 + 70f$

$\Rightarrow$ $4800 - 4320 = 70f - 50f$

$\Rightarrow$ $20f = 480$

$\Rightarrow$ $f = 24.$

42. (A) **43. (D)**

44. (C): Let $S = \{1, 2, 3, ... 30\}$

then $n(S) = 30$

Let E be the even of prime number

then $E = \{2, 3, 5, 7, 11, 13, 17, 19, 23, 29\}$

$\therefore$ $n(E) = 10$

$\therefore$ Prob. of prime number $= \dfrac{n(E)}{n(S)} = \dfrac{10}{30} = \dfrac{1}{3}.$

45. (A)

46. (B): Part filled by both taps in 1 hour

$$= \frac{1}{4} + \frac{1}{3} = \frac{7}{12}$$

$\therefore$ It will take $\dfrac{12}{7}$ hour to fill it.

47. (B): Given, $p(x) = 3x^2 + 4x + 5$

$g(x) = x - 2$

$\because$ $p(x) = 3x^2 + 4x + 5$

$= (x - 2)(3x + 10) + 25$

$\therefore$ When $p(x)$ is divided by $g(x)$

then, remainder = 25.

48. (B): Given, In a figure

$\angle QAP = 35°$ and $\angle ACD = 100°$

From given figure

$\angle QAP = \angle BAC = 35°$,

[vertically opposite angle]

By exteriror angle theorem:

$\angle BAC + \angle ABC = \angle ACD$

$\Rightarrow 35° + \angle ABC = 100°$

$\Rightarrow$ $\angle ABC = 100 - 35°$

$\Rightarrow$ $\angle ABC = 65°.$

49. (B): From given in the chart:

Number of people = 72

$360° = 72$

$\Rightarrow$ $1 = \dfrac{360}{72}$

$\Rightarrow$ $1 = 5°$

$\because$ The number of people speaking Tamil = 7

$\therefore$ degrees represent = $7 \times 5° = 35°$.

50. (C): From the given line graph

The average sales of the company of the even years

$$= \frac{4 + 6 + 8}{3}$$

$$= \frac{18}{3} = 6 \text{ crores.}$$

51. (C) **52. (A)** **53. (A)**

54. (D) **55. (B)** **56. (B)**

57. (C) **58. (A)** **59. (B)**

60. (C) **61. (B)** **62. (B)**

63. (D) **64. (B)** **65. (C)**

66. (B) **67. (C)** **68. (D)**

69. (A) **70. (B)** **71. (B)**

72. (C) **73. (B)** **74. (C)**

75. (D) **76. (C)** **77. (C)**

78. (C) **79. (C)** **80. (A)**

81. (B) **82. (C)** **83. (A)**

84. (C) **85. (B)** **86. (C)**

87. (A) **88.** (A) **89.** (B)

90. (A, B) **91.** (A) **92.** (A)

93. (B) **94.** (A) **95.** (B)

96. (B) **97.** (C) **98.** (B)

99. (A, B, C, D)

100. (C)

101. **(C):** The neighbourhood markets are the ones which provide all necessary items. There are many shops that sell goods and services in our neighbourhoods. We may buy milk from the dairy, groceries from departmental stores, stationery, eatables or medicines from other shops. Many of these are permanent shops, while others are roadside stalls such as that of the vegetable hawker, the fruit vendor, the mechanic, etc. Shops in the neighbourhood are useful in many ways. They are near our home and we can go there on any day of the week. Usually, the buyer and seller know each other and these shops also provide goods on credit.

102. (A)

103. **(B):** The Khilafat Movement, (1919-1920) was a movement of Indian Muslims, led by Muhammad Ali and Shaukat Ali, that demanded the following: The Turkish Sultan or Khalifa must retain control over the Muslim sacred places in the erstwhile Ottoman empire; the jazirat-ul-Arab (Arabia, Syria, Iraq, Palestine) must remain under Muslim sovereignty; and the Khalifa must be left with sufficient territory to enable him to defend the Islamic faith. The Congress supported the movement and Mahatma Gandhi sought to conjoin it to the Non-cooperation Movement.

104. **(B):** The Veda Samaj: Established in Madras (Chennai) in 1864, the Veda Samaj was inspired by the Brahmo Samaj. It worked to abolish caste distinctions and promote widow remarriage and women's education. Its members believed in one God. They condemned the superstitions and rituals of orthodox Hinduism.

105. **(B):** Ladakh is a cold desert lying in the Great Himalayas, on the eastern side of Jammu and Kashmir. The Karakoram Range in the north and the Zanskar mountains in the south enclose it. Several rivers flow through Ladakh, Indus being the most important among them. The rivers form deep valleys and gorges. Several glaciers are found in Ladakh, for example the Gangri glacier. The day temperatures in summer are just above zero degree and the night temperatures well below –30°C. It is freezing cold in the winters when the temperatures may remain below -40°C for most of the time.

The people here are either Muslims or Buddhists. In fact several Buddhists monasteries dot the Ladakhi landscape with their traditional 'gompas'. Some famous monasteries are Hemis, Thiksey, Shey and Lamayuru.

106. (C)

107. **(C):** Mediterranean forest:

- For their fruit production, Mediterranean forests are renowned as the "Orchards of the World."
- Citrus fruits like oranges, figs, olives, and grapes are widely grown here.
- Mediterranean woodlands are found in the Mediterranean Sea region, Central Chile, the Southwest United States, Australia, and Africa.
- They feature thick barks and waxy leaves that aid in reducing transpiration.
- Mediterranean plants adapt to dry summers.

108. **(C):** Sedimentary rocks are formed by deposition, sedimentation, and lithification of sediments over a long period of time.

Sedimentary rocks may also contain fossils of plants, animals that once lived on them. The word 'sedimentary' is derived from the Latin word "sedimentum". Shale, limestone, and conglomerate are some other examples of sedimentary rocks.

109. (B)

110. (A): Rice is not grown in plantations. Rice is the staple food crop of a majority of the people in India. Our country is the second largest producer of rice in the world after China. It is a kharif crop which requires high temperature, (above 25°C) and high humidity with annual rainfall above 100 cm. In the areas of less rainfall, it grows with the help of irrigation. It grows best in alluvial clayey soil, which can retain water. China leads in the production of rice followed by India, Japan, Sri Lanka and Egypt. In favourable climatic conditions as in West Bengal and Bangladesh two to three crops are grown in a year.

111. (B): Raja Rammohan Roy (1772 AD-1883 AD): Born in 1772 AD, founded Atmiya Sabha in Calcutta in 1815 AD, that was named Brahmo Sabha and finally Brahmo Samaj in 1828 AD. His journal was named Sabad Kaumudi. Debender became the leader of the Brahmo Samaj after Raja Rammohan Roy. He founded Tattvabodhini Sabha in 1839 and published Tattvabodhini Patrika. He compiled selected passages from the Upanishads, which came to be known as Brahma Dharma.

112. (D): A patent is an exclusive right granted for an invention. In other words, a patent is an exclusive right to a product or a process that generally provides a new way of doing something, or offers a new technical solution to a problem. To get a patent, technical information about the invention must be disclosed to the public in a patent application. The patent owner may give permission to, or license, other parties to use the invention on mutually agreed terms. The owner may also sell the right to the invention to someone else, who will then become the new owner of the patent.

113. (B): Sher Shah Suri (1540-1545) started his career as the manager of a small territory for his uncle in Bihar and eventually challenged and defeated the Mughal emperor Humayun (1530-1540, 1555-1556). Sher Shah captured Delhi and established his own dynasty. Although the Suri dynasty ruled for only fifteen years (1540-1555), it introduced an administration that borrowed elements from Alauddin Khalji and made them more efficient. Sher Shah's administration became the model followed by the great emperor Akbar (1556-1605) when he consolidated the Mughal Empire.

114. (D): The sources of funds for the Gram Panchayat are as follows:

- Collection of taxes on houses, market places etc.
- Government scheme funds received through various departments of the government - through the Janpad and Zila Panchayats.
- Donations for community works etc

115. (D): Erosional landforms by rivers are gorges, canyons, V-shaped valleys, waterfalls, levees, potholes, meanders and oxbow lakes. **Loess** is a clastic, predominantly silt-sized sediment that is formed by the accumulation of wind-blown dust. Ten percent of Earth's land area is covered by loess or similar deposits. Loess is a periglacial or aeolian (windborne) sediment, defined as an accumulation of 20% or less of clay and a balance of roughly equal parts sand and silt, often loosely cemented by calcium carbonate. Usually it is homogeneous and highly porous; it is traversed by vertical capillaries which permit the sediment to fracture and form vertical bluffs.

116. (B) **117.** (C)

118. (D): Right to Health is a part and parcel of Right to Life and therefore right to health is a fundamental right guaranteed to every citizen of India under Article 21 of the Constitution of India.

119. (C): The word metamorphic means 'change of form'. These rocks form under the action of pressure, volume and temperature (PVT) changes. Metamorphism occurs when rocks are forced down to lower levels by tectonic processes or when molten magma rising through the crust comes in contact with the crustal rocks or the underlying rocks are subjected to great amounts of pressure by overlying rocks. Metamorphism is a process by which already consolidated rocks undergo recrystallisation and reorganisation of materials within original rocks.

120. (A)

121. (C): The birth rate for a given period is the total number of live human births per 1,000 population divided by the length of the period in years. The number of live births is normally taken from a universal registration system for births; population counts from a census, and estimation through specialized demographic techniques. The birth rate (along with mortality and migration rates) is used to calculate population growth. The estimated average population may be taken as the mid-year population.

122. (B)

123. (C): Steel Authority of India Limited (SAIL) is a central public sector undertaking based in New Delhi, India. It is under the ownership of Ministry of Steel, Government of India. Incorporated on 24 January 1973, SAIL has 60,766 employees (as of 1 October 2022). SAIL operates and owns five integrated steel plants at Bhilai, Rourkela, Durgapur, Bokaro and Burnpur (Asansol) and three special steel plants at Salem, Durgapur and Bhadravathi. It also owns a Ferro Alloy plant at Chandrapur.

124. (B) **125.** (B)

126. (A): $\frac{2}{5} : \frac{8}{25} \Rightarrow \frac{2^3}{5^2} = \frac{8}{25}$

and $\frac{11}{15} : \ldots\ldots \Rightarrow \frac{11^3}{15^2} = \frac{1331}{225}$

$\therefore \frac{2}{5} : \frac{8}{25} :: \frac{11}{15} : \boxed{\frac{1331}{225}}$.

127. (C): Given,

M	A	T	H
×2↓	×2↓	×2↓	×2↓
26	2	40	16

Similarly,

B	O	O	K
×2↓	×2↓	×2↓	×2↓
4	30	30	22

$\therefore$ The code for the word Book is 4303022.

128. (C): B > A > C, D > C $\Rightarrow$ B > A > D > C
Here, C is shortest among all.

129. (*)

130. (A):

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Here, X would be corresponding to letter K.

131. (D): A meaningful sequence
Root → Stem → Leaf → Flower → Fruit.

132. (C): From given figure:
1st: 3 × 4 + 2 = 12 + 2 = 14
2nd: 5 × 6 + 2 = 30 + 2 = 32
Similalry,
3rd: 8 × 9 + 2 = 72 + 2 = $\boxed{74}$
$\therefore$? = 74.

133. (D) **134.** (D) **135.** (D)

136. (C): 36 : 225 $\Rightarrow (6)^2 : (15)^2$
1225 : ____ $\Rightarrow (35)^2$:
from given options
only option (C) $5929 = (77)^2$
1225 : 5929
$\therefore (35)^2 : (77)^2$
Hence, 36 : 225 :: 1225 : $\boxed{5929}$.

137. **(B):** 16 : 41
$\Rightarrow 16 \times 3 - 7 = 48 - 7 = 41$,
20 : ___
$\Rightarrow 20 \times 3 - 7 = 60 - 7 = 53$
$\therefore$ 16 : 41 :: 20 : 53.

138. **(A)**

139. **(C):** According to English dictionary
Aaerstd → Aaersted → Acgledhi → Acgledih → Amquarine.

140. **(C)** **141.** **(D)** **142.** **(A)**

143. **(C):** Z X V, L J H, I G E, U T R, P N L
(−2, −2) (−2, −2) (−2, −2) (−1, −2) (−2, −2)
Here, (C) UTR is odd.

144. **(*)**

145. **(C):** From given figure:
1st: (8 + 6) − (3 + 4 + 1) = 14 − 8 = 6
2nd: (5 + 7) − (5 + 1 + 1) = 12 − 7 = 5
Similarly,
3rd: (6 + 4) − (0 + 5 + 1) = 10 − 6 = $\boxed{4}$
$\therefore$? = the missing number = 4.

146. **(D):** From given pattern:
Row
1st: 5 × 7 + 5 = 35 + 5 = 40
2nd: 11 × 6 + 11 = 66 + 11 = 77
3rd: 3 × 9 + 3 = 27 + 3 = $\boxed{30}$
$\therefore$? = the missing number = 30.

147. **(B):**

A	B	C	D	E	F	G
↓	↓	↓	↓	↓	↓	↓
N	M	L	K	J	I	H

C → L
F → I
Similarly, A → N
$\therefore$? = N

148. **(D)** **149.** **(B)** **150.** **(A)**