Ques 1. ANS (A) Solution: Work of scientist is research
Ques 2. ANS (C) Solution: +3 pattern in all letters.
Ques 3. ANS (C) Solution:

$$7 \times 28 + 3 - 52 = 196 + 3 - 52 = 147 \neq 127$$

Ques 4. ANS (B) Solution:
Let Mother's age = M, Daugther's age = D
$M = D^2$ .....(i)
5 years after = M + 5 = 3 (D + 5) .....(ii)
From (i) and (ii)
D = 5, M = 25
Ques 5. ANS (B) Solution:
Ques 6. ANS (C) Solution:

$$(x - y) = \frac{45}{100}(x + y)$$
$$\frac{x}{y} = \frac{29}{11}$$

Ques 7. ANS (C) Solution:

$$12 - 8 \div 12 \times 9 + 3$$
$$12 - \frac{2}{3} \times 9 + 3$$
$$12 - 6 + 3$$
$$= 9$$

Ques 8. ANS (B) Solution:
Ques 9. ANS (A) Solution: First is the unit to measure the second.
Ques 10. ANS (C) Solution:

C	E	G	I		D	F	H	J
↓−2	↓+2	↓−2	↓+2		↓−2	↓+2	↓−2	↓+2
A	G	E	K		B	H	F	L

Ques 11. ANS (C) Solution:

$$11\frac{1}{9} = \frac{100}{9} \times \frac{1}{100} = \frac{1}{9}$$
$$12\frac{1}{2} = \frac{25}{2} \times \frac{1}{100} = \frac{1}{8}$$
$$14\frac{2}{7} = \frac{100}{7} \times \frac{1}{100} = \frac{1}{7}$$
$$16\frac{2}{3} = \frac{50}{3} \times \frac{1}{100} = \frac{1}{6}$$
$$\frac{20}{100} = \frac{1}{5}$$

Ques 12. ANS (B) Solution: All except (b) are works of Shakespeare.
Ques 13. ANS (D) Solution: All there run on electricity. Except gas stove.
Ques 14. ANS (B) Solution:
Ques 15. ANS (C) Solution: Total latter + 1
Ques 16. ANS (A) Solution: +3, +6 series.
Ques 17. ANS (C) Solution:

$$2^1 + 1 = \frac{1}{3}$$
$$2^2 + 1 = \frac{2}{5}$$
$$2^3 + 1 = \frac{3}{9}$$
$$2^4 + 1 = \frac{4}{17}$$
$$2^5 + 1 = \frac{5}{33}.$$

Ques 18. ANS (B) Solution:

$$5^2 + 1 = 26 \hookrightarrow Z$$
$$4^2 + 1 = 17 \hookrightarrow Q$$
$$3^2 + 1 = 10 \hookrightarrow J$$

Ques 19. ANS (D) Solution:
Ques 20. ANS (B) Solution:
Ques 21. ANS (C) Solution:
Ques 22. ANS (A) Solution:

1	4	4	1
A	D	D	A
	×2	×2	
1	8	8	1

4	9	7
D	I	G
	×2	
4	18	7

16	8	15	14	5
P	H	O	N	E
	×2	×2	×2	
16	16	30	28	5

Ques 23. ANS (A) Solution:



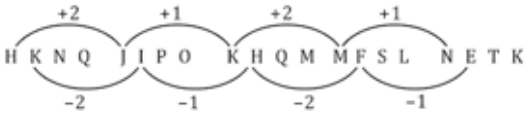
Ques 24. ANS (A) Solution:

4 (×2+1) 9 (×2+1) 19 (×2+1) 39 (×2+1) 79 (×2+1) 159

Ques 25. ANS (A) Solution: First eliminates the second
Ques 26. ANS (A) Solution:

1 3 2
6 5 4

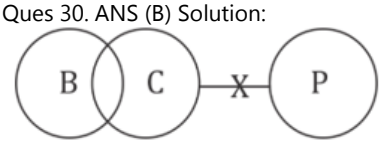
Ques 27. ANS (D) Solution:



Ques 28. ANS (C) Solution:

{7 (+9) 16 (+9) 25} {11 (+9) 20 (+9) 29}

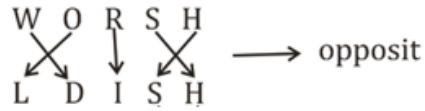
Ques 29. ANS (C) Solution: All except vine are trees
Ques 30. ANS (B) Solution:



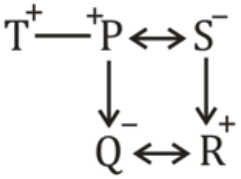
Ques 31. ANS (A) Solution:
Ques 32. ANS (B) Solution: all follow +2 sequence except (b).
Ques 33. ANS (D) Solution: digit sum of all is prime number except (d).
Ques 34. ANS (D) Solution: all related to water except (d).

Ques 35. ANS (B) Solution: Polo is outdoor game other are indoor game.
Ques 36. ANS (A) Solution: 20
Ques 37. ANS (C) Solution:

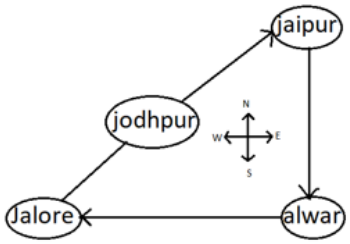




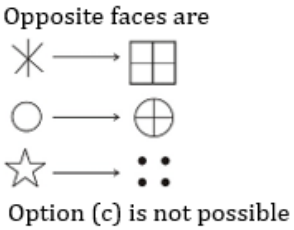
Ques 38. ANS (C) Solution:
Ques 39. ANS (C) Solution: Stapes is part of ear other all are part of eye.
Ques 40. ANS (C) Solution: Uganda's currency is shilling. Rand is currency of South Africa.
Ques 41. ANS (C) Solution:



Ques 42. ANS (C) Solution:
Ques 43. ANS (D) Solution:
Ques 44. ANS (D) Solution:
Ques 45. ANS (D) Solution:
Ques 46. ANS (D) Solution:
Ques 47. ANS (D) Solution:
Ques 48. ANS (D) Solution:
Ques 49. ANS (D) Solution:



Ques 50. ANS (C) Solution:



Ques 51. ANS (A) Solution:
Ques 52. ANS (D) Solution:
Ques 53. ANS (B) Solution: Short run marginal cost curve cuts the average variable cost curve from below at the minimum point of average variable cost.
Ques 54. ANS (B) Solution: By volume, dry air contains 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.04% carbon dioxide, and small amounts of other gases. Air also contains a variable amount of water vapor, on average around 1% at sea level, and 0.4% over the entire atmosphere.
Ques 55. ANS (C) Solution: Lake Baikal is an ancient, massive lake in the mountainous Russian region of Siberia, north of the Mongolian border. Considered the deepest lake in the world, it's circled by a network of hiking paths called the Great Baikal Trail.
Ques 56. ANS (A) Solution: The royal Bengal tiger (Panthera tigris tigris) is the national animal of Bangladesh. Its populations have been estimated at 440 in Bangladesh.
Ques 57. ANS (D) Solution: Digboi has the distinction of being India's oldest continuously producing oilfield. Digboi refinery, now a division of Indian Oil Corporation, had a capacity of about 0.65 MMTPA as of 2003. Digboi is now Headquarter of Assam Oil Division of Indian Oil Corporation Limited
Ques 58. ANS (D) Solution: Hutti Gold Mines Limited (HGML) is a company located in the state of Karnataka, India and engaged in the mining and production of gold.
Ques 59. ANS (D) Solution: The Jaduguda Mine is a uranium mine in Jaduguda village in the Purbi Singhbhum district of the Indian state of Jharkhand. It commenced operation in 1967 and was the first uranium mine in India. The deposits at this mine were discovered in 1951.
Ques 60. ANS (A) Solution: The kharif cropping season is from July –October during beginning of the south-west monsoon.
Ques 61. ANS (D) Solution: Marble is metamorphosed limestone, composed of fairly pure calcite (a crystalline form of calcium carbonate, $CaCO_3$). It is extensively used for sculpture, as an building material, and in many other applications.
Ques 62. ANS (D) Solution: Defence, Inter-state Trade and Commerce and Banking all comes under Union List of Indian constitution.
Ques 63. ANS (A) Solution: Article 352 of the Indian Constitution talks about the national emergency. National emergency is imposed whereby there is a grave threat to the security of India or any of its territory due to war, external aggression or armed rebellion. Such emergency shall be imposed by the president on the basis of written request by the council of ministers headed by the Prime Minister. When they are satisfied that they are satisfied that there is an eminent danger thereof.
Ques 64. ANS (B) Solution: The Gram sabha is a key factor in making the Gram Panchayat play its role and to be responsible. The Gram Sabha is a meeting of all adults who live in the area covered by the Panchayat. Anyone living in the area, who is an adult, that is 18 years old or more, is a member of Gram Sabha
Ques 65. ANS (B) Solution: At the state level, there is a Governor in whom the executive power of the State is vested by the Constitution. But the Governor acts as a nominal head, and the real executive powers are exercised by the Council of Ministers headed by the Chief Minister appointed by Governor.
Ques 66. ANS (D) Solution: There are three level of Government in India
I. Local level government
II. State level government
III. National level government
Ques 67. ANS (B) Solution: Jog. Vishnu Govind Jog, better known as V. G. Jog (22 February 1922 – 31 January 2004), was an Indian violinist. He was the foremost exponent of the violin in the Hindustani music tradition in the 20th century, and is credited for introducing this instrument into Hindustani music.
Ques 68. ANS (D) Solution:
Ques 69. ANS (C) Solution: Kasarkod beach is in kasarkod village in the southern state of Karnataka, India.
Ques 70. ANS (C) Solution:
उत्तर प्रदेश सरकार ने महिलाओं की सुरक्षा के लिए हाल ही में 'सेफ सिटी प्रोजेक्ट' शुरू किया है. इसके तहत गौतम बुद्ध नगर के 17 नगर निगमों के प्रवेश

और निकास स्थलों पर सीसीटीवी के माध्यम से निगरानी का फैसला लिया है. इसके साथ-साथ शहर में सरकारी और गैर-सरकारी स्कूलों, कॉलेजों, मदरसों और विश्वविद्यालयों में सीसीटीवी के माध्यम से निगरानी की जाएगी. Uttar Pradesh government recently launched 'Safe City Project' for the safety of women. is introduced. Under this, it has been decided to monitor the entry and exit points of 17 municipal corporations of Gautam Buddha Nagar through CCTV. Along with this, government and non-government schools, colleges, madrassas and universities in the city will be monitored through CCTV.

Ques 71. ANS (D) Solution:

Ques 72. ANS (D) Solution:

संयुक्त सैन्य अभ्यास 'ऑस्ट्राहिन्द-2023' (AUSTRAHIN23) भारत और ऑस्ट्रेलिया के सशस्त्र बलों के बीच आयोजित किया जा रहा है. 'ऑस्ट्राहिन्द-2023' के दूसरे संस्करण का आयोजन पर्थ, ऑस्ट्रेलिया में 22 नवंबर से 06 दिसंबर 2023 तक किया जा रहा है. संयुक्त सैन्य अभ्यास 'ऑस्ट्राहिन्द की शुरुआत साल 2022 में की गयी थी. इसका पहला संस्करण महाजन, राजस्थान में आयोजित किया गया था. Joint military exercise 'Austrahin2023' is being conducted between the armed forces of India and Australia. The second edition of 'Austrahin2023' is being organized in Perth, Australia from 22 November to 06 December 2023. The joint military exercise 'Austrahind' was started in the year 2022. Its first edition was held in Mahajan, Rajasthan.

Ques 73. ANS (C) Solution: World bank and the government of India signed an agreement along with the Government of Tamil Nadu to help the low-income groups in the state of Tamil Nadu to get access to affordable housing.

Ques 74. ANS (B) Solution:

बैंकिंग क्षेत्र से जुड़ी लक्ष्मी रामकृष्ण श्रीनिवास को साउथ इंडियन बैंक के अतिरिक्त निदेशक के रूप में नियुक्त किया गया है. उन्हें 20 नवंबर, 2023 से तीन साल की अवधि के लिए बैंक के गैर-कार्यकारी स्वतंत्र निदेशक के रूप में नियुक्त किया गया है. लक्ष्मी के पास बैंकिंग क्षेत्र में 38 साल का अनुभव है. इससे पहले वह भारतीय स्टेट बैंक की मुख्य महाप्रबंधक थीं. Lakshmi Ramakrishna Srinivas, associated with the banking sector, has been appointed as Additional Director of South Indian Bank. He has been appointed as non-executive independent director of the bank for a period of three years with effect from November 20, 2023. Lakshmi has 38 years of experience in the banking sector. Before this she was the Chief General Manager of State Bank of India.

Ques 75. ANS (A) Solution:

हिमाचल प्रदेश के मुख्यमंत्री सुखविंदर सिंह सुक्खू ने शिमला में 'विद्या समीक्षा केंद्र' (Vidhya Samiksha Kendra) का उद्घाटन किया, जो एक डेटा भंडार है जिसमें शिक्षा मंत्रालय (एमओई) द्वारा संचालित सभी योजनाओं का डेटा होगा. हिमाचल प्रदेश के शिक्षा विभाग ने राज्य में विद्या समीक्षा केंद्र स्थापित करने के लिए एड-टेक कंपनी कॉन्वेजीनियस से हाथ मिलाया है. Himachal Pradesh Chief Minister Sukhwinder Singh Sukhu inaugurated 'Vidya Samiksha Kendra' in Shimla. (Vidhya Samiksha Kendra), which is a data repository that will contain data of all the schemes run by the Ministry of Education (MOE). The Education Department of Himachal Pradesh has joined hands with ed-tech company Convegenius to set up Vidya Samiksha Kendra in the state.

Ques 76. ANS (B) Solution: The Indian Opinion was a newspaper established by Indian leader Mahatma Gandhi. The publication was an important tool for the political movement led by Gandhi and the Indian National Congress to fight racial discrimination and win civil rights for the Indian immigrant community in South Africa.

Ques 77. ANS (C) Solution: Cabinet Mission of 1946 to India aimed to discuss and plan for the transfer of power from the British government to Indian leadership to provide India with independence. Formulated at the initiative of Clement Attlee, the Prime Minister of the United Kingdom, the mission had Lord Pethick Lawrence, Sir Stafford Cripps and A. V. Alexander.

Ques 78. ANS (B) Solution: The concept of passive resistance was highlighted by Aurobindo Ghosh.

Ques 79. ANS (C) Solution: Ghulamgiri is wriiten by Jyotiba Phule.

Ques 80. ANS (B) Solution: Government of India Act 1858 provided that India was to be governed directly and in the name of the crown. This act abolished the company rule, abolished the Court of directors and abolished the Board of control. The act provided the Crown will govern India directly through a Secretary of State for India, who was to exercise the powers which were being enjoyed by the Court of Directors and Board of control.

Ques 81. ANS (D) Solution: Shaikh Abu al-Faiz ibn Mubarak, popularly known by his pen-name, Faizi was a yemenite Arab poet and scholar of late medieval India. In 1588, he became the Malik-ush-Shu'ara (poet laureate) of Akbar's Court.

Ques 82. ANS (D) Solution: Emperor Shah Jahan commissioned construction of the Red Fort on 12 May 1639, when he decided to shift his capital from Agra to Delhi and its design is credited to architect Ustad Ahmad Lahauri, who also constructed the Taj Mahal.

Ques 83. ANS (A) Solution: Harsha Vardhan ascended the throne in 606 AD.After his accession, King Harshavardhan united the two kingdoms of Thanesar (now Kurukshetra) and Kannauj. He also shifted his capital from Thanesar to Kannauj.

Ques 84. ANS (A) Solution: The area under a Velocity-Time graph represents displacement.

Ques 85. ANS (D) Solution: According to Ohm's law

Voltage (V) = Current (I) × Resistance(R)

R = V/I

= 20/0.5 = 40 Ω.

Ques 86. ANS (B) Solution: A lactometer is an instrument used to check purity of milk.

Ques 87. ANS (D) Solution: When an Object is dropped from height and when there is no air resistance the speed of object will increase.

Ques 88. ANS (C) Solution: Kerosene oil rising in the wick of the stove is due to the surface tension of oil. The wick of the lamp has many holes which act as capillaries. So kerosene keeps on rising in the capillaries.

Ques 89. ANS (B) Solution: Only carbon-dioxide is produced when alcohol is added with petrol and used as a fuel.

Ques 90. ANS (B) Solution: Isotopes are atoms of the same element having the same numbers of protons (atomic number), but different numbers of neutrons.

Ques 91. ANS (B) Solution: Phosphorus is a chemical element with symbol P Phosphorus is a non-metal and atomic number is 15.

Ques 92. ANS (B) Solution: An atom bomb is a devastating device, which is based on the principle of uncontrolled nuclear fission reaction. When uranium 235 nucleus is hit by a slow neutron it splits into barium and krypton nuclei and three neutrons and a large amount of heat energy is released.

Ques 93. ANS (B) Solution: Gunpowder, also known as black powder to distinguish it from modern smokeless powder, is the earliest known chemical explosive. It consists of a mixture of sulfur (S), charcoal (C), and potassium nitrate (saltpeter, KNO3). The sulfur and charcoal act as fuels while the saltpeter is an oxidizer.

Ques 94. ANS (B) Solution: Under the Kingdom Animalia, cockroaches belong to the Phylum Arthropoda, Class Insecta, and Order Blattodea. The Order name is derived from the Greek blatta.

Ques 95. ANS (A) Solution: The apical meristem is the growth region in plants found within the root tips and the tips of the new shoots and leaves. Apical meristem is one of three types of meristem, or tissue which can differentiate into different cell types. Meristem is the tissue in which growth occurs in plants.

Ques 96. ANS (A) Solution: This tissue provides support to plants and also stores food. In some situations, a parenchyma contains

chlorophyll and performs photosynthesis, in which case it is called a chlorenchyma. In aquatic plants, large air cavities are present in parenchyma to give support to them to float on water.

Ques 97. ANS (D) Solution: Guard cells are specialized cells in the epidermis of leaves, stems and other organs that are used to control gas exchange. They are produced in pairs with a gap between them that forms a stomata pore. Guard cells are kidney shaped structures which have stomata as their opening.

Ques 98. ANS (B) Solution: The Small Intestine is the largest and longest part of the alimentary canal.

Ques 99. ANS (A) Solution: The modern economy is not characterized by self-sufficient village system.

Ques 100. ANS (D) Solution: An imperfect market refers to any economic market that does not meet the rigorous standards of a hypothetical perfectly (or "purely") competitive market. Market imperfections of a country are reflected in Price rigidity, Factor immobility & Lack of specialization.

Ques 101. ANS (B) Solution:

On applying C and D

$=\sqrt{\frac{1+\sin A}{1-\sin A}}\times\sqrt{\frac{1+\sin A}{1+\sin A}}$

$=\frac{1+\sin A}{\cos A}=\frac{1}{cosA}+\frac{sinA}{cosA}=$ secA+tanA

Now, secA + tanA=$\frac{4}{3}$.....(i)

And we know $sec^2A-tan^2A=1$.....(ii)

From (i) and (ii)

secA-tanA=3/4.....(iii)

from (i) and (ii)

2secA=25/12

secA=25/24

cosA=24/25

Ques 102. ANS (D) Solution:

$a=(0.06)^2=0.0036$

$b=\frac{1}{0.06^2}=278(approx)$

$c=\{(0.5-0.06)^2-1\}=-0.8064$

so, c<a<b

Ques 103. ANS (C) Solution:

(A + B)'s 1 day's work = $\left(\frac{1}{15}+\frac{1}{10}\right)=\frac{1}{6}$

Work done by A and B in 2 days = $\left(\frac{1}{6}\times 2\right)=\frac{1}{3}$

Remaining work = $\left(1-\frac{1}{3}\right)=\frac{2}{3}$

Now, $\frac{1}{15}$ work is done by A in 1 day.

$\therefore \frac{2}{3}$ work will be done by A in $\left(15\times\frac{2}{3}\right)$ = 10 days.

Hence, total time taken = (10 + 2) = 12 days.

Ques 104. ANS (B) Solution:

Total score of 12 students=12x80=960

Correct sum=960-(71+65)+(53+64)=941

Correct average=941/12=$78\frac{5}{12}$

Ques 105. ANS (D) Solution:

Let total work be 20 units (LCM of 5 and 4)

Efficiency of Amit= 4 units/day

Efficiency of Chiru= 5 units/day

Starting with Chiru, we have

In 4 days, they will do 18 units

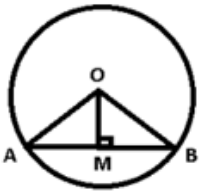
So, required number of days=$4+\frac{2}{5}=4\frac{2}{5}$ days

Ques 106. ANS (B) Solution:

Cost price of the article=$\frac{1200}{80}\times 100=Rs\ 1500$

Required selling price=$1500\times 1.3=Rs\ 1950$

Ques 107. ANS (C) Solution:



Here, AB=18 cm and OM=$3\sqrt{3}$ cm

MB=9 cm

Let ∠AOB be x

Then, ∠MOB=$\frac{x}{2}$ ..... (i)

Now in triangle OMB,

Tan (x/2)=$\frac{MB}{OM}=\frac{9}{3\sqrt{3}}=\sqrt{3}=\tan 60^0$

i.e. $x/2=60^0$

$x=120^0$

Ques 108. ANS (A) Solution:

Let the number be 100x

Then the new number=$100x\times 1.2\times 0.7=84x$

Percentage change in the value=$\frac{100x-84x}{100x}\times 100=16\%$

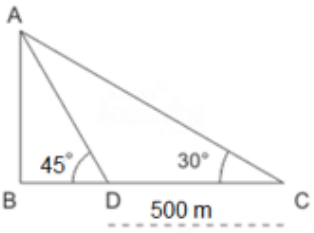
Ques 109. ANS (D) Solution:

Quantity of milk in vessel B=$10+4=14\ lit$

Quantity of water in vessel B=$8+1.5=9.5\ lit$

Required ratio=$\frac{14}{9.5}=28:19$

Ques 110. ANS (C) Solution:



Let height of bird be h meters

In Δ ABD,

tan 45°=$\frac{AB}{BD}$

i.e. AB=BD

BC=(h+500) m

In Δ ABC,

tan 30°=$\frac{AB}{BC}$

$=\frac{1}{\sqrt{3}}=\frac{h}{h+500}$

$h(\sqrt{3}-1)=500$

h=683 m

Ques 111. ANS (C) Solution:
Here, a+b+c=21
On squaring both the side
$a^2+b^2+c^2+2(ab+bc+ca)=441$
$199+2(ab+bc+ca)=441$
ab+bc+ca=121
Now, $a^3+b^3+c^3-3abc=$
$(a+b+c)(a^2+b^2+c^2-ab-bc-ca)=21x(199-121)=1638$

Ques 112. ANS (B) Solution:
$\sin^2\theta-3\sin\theta+2=0$
$\sin\theta(\sin\theta-2)-1(\sin\theta-2)=0$
$(\sin\theta-2)(\sin\theta-1)=0$
$\sin\theta=2$ is not possible
so, $\sin\theta=1$
i.e. $\theta=90^0$

Ques 113. ANS (B) Solution:
Required average
$=\frac{155\times20+165\times16+175\times18+185\times14}{20+16+18+14}=169$ cm (approx)

Ques 114. ANS (D) Solution:
Required difference
$=(15+20+16+18)-(14+10)=45$

Ques 115. ANS (B) Solution:
$\text{Required }\%=\frac{16+18+14+10}{11+15+20+16+18+14+10}\times100$
$=\frac{58}{104}\times100=\frac{725}{13}=55\frac{10}{13}\%$

Ques 116. ANS (D) Solution:
Let initial speed be s km/h and initial time be t hours
$s\times t=s\left(1-\frac{1}{3}\right)\times\left(t+\frac{5}{2}\right)$
$t=\frac{2}{3}\times\left(t+\frac{5}{2}\right)$
$t=5\ hours$

Ques 117. ANS (A) Solution:
Let the fraction be $\frac{x}{y}$
x+y=25.....(i)
and $\frac{x+3}{y+2}=\frac{1}{2}$
2x-y=-4.....(ii)
From (i) and (ii)
x=7 and y=18
so the fraction=$\frac{7}{18}$
reciprocal of the fraction=$\frac{18}{7}$

Ques 118. ANS (D) Solution:
Let the thickness of the original wire be 2x cm
Then, radius of the original wire=x cm
ATQ
$\Pi x^2\times20=\Pi(1)^2\times80$
$x^2=4$
x=2 cm
so, thickness of the original wire=2x=4 cm

Ques 119. ANS (C) Solution: Let the first term and common difference be 'a' and 'd' respectively
So, a+3d=11.....(i)
And a+8d=26.....(ii)
From (i) and (ii)
a=2 and d=3
sum of first 15 terms=2+(15-1)x3=44
sum of first 27 terms=2+(27-1)x3=80
required ratio=11: 20

Ques 120. ANS (D) Solution:
Let the amount invested at 11% rate of interest be Rs x
Then the amount invested at 13% rate of interest= Rs (12000-x)
ATQ,
$\frac{x\times t\times11}{100}=\frac{(12000-x)\times t\times13}{100}$
$24x=156000$
$x=6500$
SI received from the first part=$\frac{6500\times11\times3}{100}=Rs\ 2145$

Ques 121. ANS (A) Solution:
Let amount invested by A and B be Rs 5x and 4x respectively
Investment of C= Rs 5x
Profit share ratio

A	:	B	:	C
$5x\times4+\left(5x-\frac{9x}{12}\right)\times8$	:	$4x\times12$	:	$5x\times12$

$=9:8:10$
Profit share of A=$\frac{12150}{27}\times9=Rs\ 4050$

Ques 122. ANS (A) Solution:
Let total production of the company be x
$\text{Required percent}=\frac{(0.60x-0.10x)}{0.60x}\times100=83\frac{1}{3}\%$

Ques 123. ANS (D) Solution: Required difference = 40% of 1,50,000 – 20% of 1,50,000 = 30000

Ques 124. ANS (C) Solution: Let total production be x in each year
ATQ
35% of x=70000
x=200000
required average=45% of 200000=90000

Ques 125. ANS (B) Solution: total sum of 11 numbers=528
total of first 6 numbers=291
total of last 6 numbers=294
sixth number=(291+294)-528=57

Ques 126. ANS (C) Solution:
Total number of natural numbers less than 500 which are divisible by 3=$\frac{498-3}{3}=165$
Total number of natural numbers less than 500 which are divisible by 5=$\frac{495-5}{5}=98$
And total number of natural numbers less than 500 which are divisible by 15=$\frac{495-15}{15}=32$
So, required number =165+98-32=231

Ques 127. ANS (A) Solution:
1 man's 1 day's work = $\frac{1}{108}$
12 men's 6 day's work = $\left(\frac{1}{9}\times6\right)=\frac{2}{3}$
Remaining work = $\left(1-\frac{2}{3}\right)=\frac{1}{3}$
18 men's 1 day's work = $\left(\frac{1}{108}\times18\right)=\frac{1}{6}$
$\frac{1}{6}$ work is done by them in 1 day.
$\therefore\frac{1}{3}$ work is done by them in $\left(6\times\frac{1}{3}\right)=2$ days.

Ques 128. ANS (C) Solution:
$[15-\{-2\text{ of }7+3(12-4\times4+15)+6\}\div5]\times14\text{ of }14\ \div\ 14\text{ of }(14+196\div14\text{ of }14)$
$=[15-\{-14+3(12-16+15)+6\}\div5]\times196\ \div\ 14\text{ of }(14+196\div14\text{ of }14)$
$=[15-\{-14+33+6\}\div5]\times196\ \div\ 14\text{ of }(14+1)$
$=[15-5]\times196\div14\text{ of }(14+1)$
$=\frac{28}{3}=9\frac{1}{3}$

Ques 129. ANS (C) Solution: Let income of Arun be Rs 9x
Then the income of Binay= Rs 12x
Let the savings of Arun and Binay be Rs 3y and Rs 4y respectively
ATQ
9x-3y=9000
3x-y=3000.....(i)
Expenditure of Binay = 12x-4y=4(3x-y)=Rs 12000 (using (i))
Ques 130. ANS (A) Solution:

$\left(\frac{x}{a}+\frac{y}{b}\right)=3$
$bx+ay=3ab$
$3bx+3ay=9ab \ldots\ldots\ldots(i)$
And $\left(\frac{x}{b}-\frac{y}{a}\right)=9$
$ax-by=9ab \ldots\ldots\ldots(ii)$
From (i) and (ii)
3bx+3ay=ax-by
x(3b-a)=y(-b-3a)
y/x=(a-3b)/(3a+b)
x/y=(3a+b)(a-3b)

Ques 131. ANS (B) Solution:
ATQ,
$P\left(\frac{R}{100}\right)^2=45$
$12500\left(\frac{R}{100}\right)^2=45$
$R^2=\frac{45\times100\times100}{12500}$
$R=6\%$

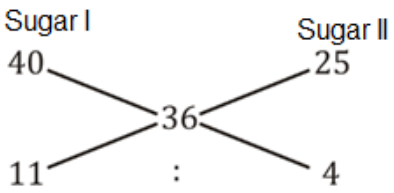
Ques 132. ANS (D) Solution:
Let height of the cylinder be h cm
ATQ,
Volume of sphere = 16x(Volume of a cylinder)
$=\frac{4}{3}\pi(16)^3=16\times\pi(8)^2\times h$
$h=\frac{16}{3}=5\frac{1}{3}cm$

Ques 133. ANS (B) Solution:
$4\times\left\{6\frac{1}{3}+2\frac{4}{9}-6\frac{1}{2}-3\frac{1}{4}+15\frac{2}{9}-13\frac{1}{4}+6\frac{1}{2}\right\}$
$=4\times\left\{(6+2-6-3+15-13+6)+\frac{1}{3}+\frac{4}{9}-\frac{1}{2}-\frac{1}{4}+\frac{2}{9}-\frac{1}{4}+\frac{1}{2}\right\}$
$=4\times\left\{7+\frac{1}{2}\right\}=30$

Ques 134. ANS (B) Solution:
Let $\frac{x}{4}=\frac{y}{5}=\frac{z}{3}=k$
Then, x=4k, y=5k and z=3k
(x+y): (y+z): (x+z)=(4k+5k): (5k+3k): (4k+3k)=9: 12: 7

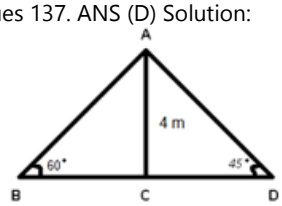
Ques 135. ANS (A) Solution:
Let S.P. of each article be Rs. 100.
Total S.P. = Rs 200
Total C.P. $=\frac{100}{120}\times100+\frac{100}{75}\times100=$Rs. $\frac{650}{3}$
Overall loss percent= $\frac{\left(\frac{650}{3}-200\right)}{\frac{650}{3}}\times100=7\frac{9}{13}\%\ loss$

Ques 136. ANS (C) Solution:
CP of the mixture=$\frac{45}{100+25}\times100=Rs\ 36$ per kg



Required ratio=$\frac{11}{15}$

Ques 137. ANS (D) Solution:



Height of the bridge=AC=4 m
In triangle ACD
Tan 45=$\frac{AC}{CD}$
i.e. AC=CD=4 m
in triangle ABC
tan 60=$\frac{AC}{BC}$
$=\sqrt{3}=\frac{4}{BC}$
BC=$\frac{4}{\sqrt{3}}$
BD=BC+CD=$4+\frac{4}{\sqrt{3}}=4+2.309=6.309\ m$

Ques 138. ANS (B) Solution:

$0.48=\frac{48}{100}$
$0.6=\frac{60}{100}$
$9.6=\frac{960}{100}$
$0.12=\frac{12}{100}$
LCM of numerators (48,60,960 and 12)=960
HCF of denominator=100
Required LCM=$\frac{960}{100}=9.60$

Ques 139. ANS (D) Solution:
Let the HCF and LCM be x and 64x
ATQ
x+64x=1105
x=1105/65=17
HCF=17 and LCM=1088
The other number=$\frac{17\times1088}{544}=34$
Required difference=544-34=510

Ques 140. ANS (B) Solution:
$\angle A-\angle B=16^0$.....(i)
$\angle B=\angle A-16^0$
$\angle B-\angle C=28^0$.....(ii)
Put value of $\angle B$ in (ii)
$\angle C=\angle A-44^0$
We have $\angle A+\angle B+\angle C=180^0$
i.e. $\angle A+(\angle A-16^0)+(\angle A-44^0)=180^0$
$\angle A=80^0$
$\angle C=80^0-44^0=36^0$
Required average=$\frac{80^0+36^0}{2}=58^0$

Ques 141. ANS (A) Solution:

$$\text{Upstream speed of boat}=\frac{40.5}{13.5}=3\ \text{km/h}$$

$$\text{Downstream speed of boat}=\frac{67.5}{4.5}=15\ \text{km/h}$$

$$\text{Speed of stream}=\frac{15-3}{2}=6\ \text{km/h}$$

$$\text{Speed of boat in still water}=\frac{15+3}{2}=9\ \text{km/h}$$

$$\text{Required time}=\frac{39}{8-5}+\frac{39}{8+5}=16\ hours$$

Ques 142. ANS (C) Solution:

Let radius and height of the cone be r cm and h cm respectively

$$\text{Volume of cone}=\frac{1}{3}\times\frac{22}{7}\times r^2\times h=14872$$

$$\frac{22}{7}\times r^2\times h=44616\ldots\ldots\ldots\ldots(i)$$

Here, $r^2+h^2=85^2$

i.e. $r^2=7225-h^2$.....(ii)

from (i) and (ii)

$$44616=\frac{22}{7}\times(7225-h^2)\times h$$

h=84 cm

$$r=\sqrt{7225-7056}=13\ cm$$

curved surface area of cone

$$=\frac{22}{7}\times 13\times 85=3472\frac{6}{7}\ \text{cm}^2$$

Ques 143. ANS (B) Solution:

Total cost price= Rs 450

$$\text{Total SP}=1+2+3+\ldots\ldots\ldots\ldots+29+30=\frac{30(30+1)}{2}=\text{Rs } 465$$

$$\text{profit }\%=\frac{465-450}{450}\times 100=3\frac{1}{3}\%$$

Ques 144. ANS (C) Solution:

$$\text{Circumference of the circular wire}=2\times\frac{22}{7}\times 126=792\ cm$$

Perimeter of semi-circular wire= circumference of the circular wire=792 cm

Let the radius of the semi- circular wire be r cm

Then, $\frac{22}{7}\times r+2r=792$

$$r\left(\frac{22}{7}+2\right)=792$$

r=154 cm

diameter of the semi-circular wire=3.08 m

Ques 145. ANS (A) Solution:

$$\text{Total distance covered}=\frac{36}{5}\times 40=288\ km$$

$$\text{New speed}=\frac{288\times 3}{16}=54\ \text{km/h}$$

$$\%\ \text{increment}=\frac{54-40}{40}\times 100=35\%$$

Ques 146. ANS (B) Solution:

In triangle ABC

$AC^2=AB^2+BC^2=AB^2+(AB/2)^2=5AB^2/4$

$AC=\sqrt{5}AB/2$

$AC=\sqrt{5}BC$

$$\sin A\times\sin C=\frac{BC}{AC}\times\frac{AB}{AC}=\frac{1}{\sqrt{5}}\times\frac{2}{\sqrt{5}}=\frac{2}{5}$$

Ques 147. ANS (C) Solution:

$$\text{Required ratio}=\frac{200000\times\frac{40}{100}+300000\times\frac{45}{100}}{160000}=43:40$$

Ques 148. ANS (A) Solution:

$$\text{Required average}=\frac{200000\times 0.6+300000\times 0.55+160000\times 0.8+240000\times 0.75+270000\times 0.8}{5}=161800$$

Ques 149. ANS (B) Solution:

$$\text{Required }\%=\frac{200000\times 0.4+160000\times 0.2+270000\times 0.2}{(200000+160000+270000)}\times 100=\frac{166000}{630000}\times 100=26\%$$

Ques 150. ANS (B) Solution:

total order which are not cancelled in March and May together

$$=160000\times\frac{80}{100}+270000\times\frac{80}{100}=344000$$

Total number of orders which are not cancelled in April and Jan together

$$=240000\times\frac{75}{100}+200000\times\frac{60}{100}=300000$$

$$\text{Required percent}=\frac{(344000-300000)}{300000}\times 100=\frac{44000}{300000}\times 100=14\frac{2}{3}\%$$

Ques 151. ANS (B) Solution: Replace "have" with "has" because after "Each of" the noun or pronoun is always plural but, the verb remains singular. Hence, option (b) is the correct choice.

Ques 152. ANS (B) Solution: Replace "put up" with "put on". Put on is a phrasal verb which means to organize an event, show, performance etc. while " put up" means to stay temporarily in accommodation other than one's own home.

Ques 153. ANS (B) Solution: Replace "worst" with "worse". Here, comparative degree i.e. "is bad, if not worse" is the right usage.

Ques 154. ANS (B) Solution: When Past has effect on the Present, Present Perfect should be used. Hence, " escalated" should be replaced with " has escalated".

Ques 155. ANS (B) Solution: Comprise means be comprised of, consist of. Hence, "comprises" will replace "comprises of".

Ques 156. ANS (C) Solution: who" is a relative pronoun and as "who" is following a "plural noun", thus plural pronoun should be used for it.

Ques 157. ANS (C) Solution: Absolve' takes "of" preposition with it.

Ques 158. ANS (B) Solution: "help" is a causative verb which takes both bare infinitive and to-infinitive with it. However, "a tour guide" is a singular subject thus it will take singular verb.

Ques 159. ANS (A) Solution: "And" is a conjunction. And conjunction keeps the same sense before and after it. Thus, as there is no "intention" before the conjunction thus infinitive should not be used. If infinitive were used before the conjunction then infinitive could be used after it.

e.g.

The whole idea to construct and to decorate the puja pandals is a part of skill and creativity

Ques 160. ANS (C) Solution: "cope up with" is incorrect term. The correct term is "cope with".

Ques 161. ANS (D) Solution: Forest cover" is the correct term which is defined as an area more than 1 hectare in extent and having tree canopy density of 10 percent and above.

Ques 162. ANS (A) Solution:

Since the sentence is in passive voice hence, " made" is the correct choice among the given alternatives.

" Made up" is an adjective which means concocted; falsely fabricated or invented. It does not make any sense when used in the given sentence.

Ques 163. ANS (C) Solution: **Constitute**: be (a part) of a whole.
Compile: produce (a list or book) by assembling information collected from other sources.
Combine: join or merge to form a single unit or substance.
Compare: estimate, measure, or note the similarity or dissimilarity between.
Hence, option (c) is the correct choice here.
Ques 164. ANS (D) Solution: Correct preposition to be used here is "of".
Ques 165. ANS (B) Solution: Assessment: the action of assessing someone or something.
Ques 166. ANS (A) Solution: **Refer to** 'And the Trade Unions Act allows **any seven employees to form a union**, thereby using up a large proportion of the firm's managerial resources in dealing with several unions within itself. **Through this regulation, unions have the right to strike and represent workers in legal disputes with employers**. Last but not the least, **The Contract Labour (Regulation And Abolition) Act, 1970 restricts, and even prohibits, the use of contract workers for certain tasks.'**
Cleraly, I is correct.
As per the last highlighted fragment, II pertains to **The Contract Labour (Regulation And Abolition) Act, 1970** and not the Trade Unions Act. Thus, II is incorrect.
III is also incorrect as a minimum of 7 employees are needed to form a Union.
Hence, option A is correct.
Ques 167. ANS (D) Solution: **Refer to** 'To anyone who is aware of the **panoply** of India's restrictive labour regulations **(about 200 labour laws, with over a fourth being central acts), it does not come as a surprise that India is unable to grasp its natural comparative advantage in labour-intensive products.** The Industrial Disputes Act (IDA) requires firms with 100 or more workers to seek government permission to retrench … The Industrial Employment (Standing Orders) Act, 1946 requires employers in firms with 100 or more workers (50 or more in certain states) to seek permission … Trade Unions Act allows any seven employees to form a union, thereby using up a large proportion of the firm's managerial resources in dealing with several unions within itself…The Contract Labour (Regulation And Abolition) Act, 1970 restricts, and even prohibits, the use of contract workers for certain tasks. **Thus, these labour regulations effectively prevent firms from using labour-intensive methods of production. Also, since these laws hold above certain threshold employment levels, firms often have an incentive to remain small and "informal".'**
As per the highlighted fragments, I and III are correct.
II in incorrect. The first highlighted fragment indicates that central acts constitute only a little more than one-fourth of the total labour laws.
Hence, option D is correct.
Ques 168. ANS (B) Solution: **Refer to** 'The government's recent doubling of duties on imports of beauty aids, watches, toys, furniture, footwear, and, surprisingly **, kites and** candles shows India's lack of competitiveness even in these entry-level labour-intensive industries. Also, a similar recent doubling of import duties on **electronics**, including related ….'
As per the highlighted fragments, only statements I and II are correct.
Statement III has not been mentioned anywhere.
Hence, option B is correct.
Ques 169. ANS (A) Solution: **Refer to** 'The government's recent doubling of duties on imports of beauty aids, watches, toys, furniture, footwear, and, surprisingly, kites and candles shows **India's lack of competitiveness even in these entry-level labour-intensive industries.'**
II and III have not been mentioned in the passage. Only I can be seen in the highlighted fragment.
Hence, option A is correct.
Ques 170. ANS (C) Solution: Option A is extreme as it uses the word *intense*. Even though India's labour laws are *restrictive*, they do not give any indication of changing the production pattern so drastically.
Option B is opposite to what the paragraph states. If the labour regulations are restrictive, that should logically prevent India from using labour intensive production techniques.
Option C is the best fit here. It is *moderate in tone* and also logical in thought process.
Hence, option C is correct.
Ques 171. ANS (A) Solution: To call in question- to cause someone or something to be evaluated; to examine or reexamine the qualifications or value of someone or something.
Ques 172. ANS (C) Solution: Screw up one's courage- to build up one's courage.
Ques 173. ANS (D) Solution: At daggers drawn- be bitterly hostile towards each other.
Ques 174. ANS (A) Solution: To burn one's fingers: to harm oneself.
Ques 175. ANS (B) Solution: To strain every nerve: to make every possible effort.
Ques 176. ANS (A) Solution: **Adipose**: (especially of body tissue) used for the storage of fat.
Porcine: of, affecting, or resembling a pig or pigs.
Corpulent: (of a person) fat.
Ques 177. ANS (B) Solution: **Endure**: suffer (something painful or difficult) patiently.
Persevere: continue in a course of action even in the face of difficulty or with little or no indication of success.
Dismay: concern and distress caused by something unexpected.
Ques 178. ANS (D) Solution:
Igneous: relating to or involving volcanic or plutonic processes.

Scalding: very hot; burning.
Ques 179. ANS (C) Solution: **Conglomerate**: a thing consisting of a number of different and distinct parts or items that are grouped together.
Donation: the action of donating something.
Dole: benefit paid by the state to the unemployed.
Ques 180. ANS (A) Solution: **Shrimp**: a small, physically weak person.
Wimp: a weak and cowardly or unadventurous person.
Runt: a small pig or other animal, especially the smallest in a litter.
Ques 181. ANS (D) Solution: **Snatch** means to take something or someone away by force.
Wrench means to pull and twist something suddenly or violently away from its position.
Ques 182. ANS (C) Solution: Splinter means a small, thin, sharp piece of wood, glass, or similar material broken off from a larger piece. Hence chip is the correct choice.
Ques 183. ANS (D) Solution: Spartan means simple and severe with no comfort. Hence brave is the correct choice.
Ques 184. ANS (A) Solution: **Shrink** means become or make smaller in size or amount.
Contract means decrease in size, number, or range.
Ques 185. ANS (C) Solution: Predominantly means mainly; for the most part.
Ques 186. ANS (A) Solution: Refulgent: shining very brightly.

Ques 187. ANS (A) Solution:
Ques 188. ANS (A) Solution: **Extenuate**: to make someone or something thin.
Strengthen: make or become stronger.
Ques 189. ANS (D) Solution: Retract: withdraw (a statement or accusation) as untrue or unjustified.
Assert: to state an opinion or claim a right forcefully.
Ques 190. ANS (D) Solution: Admonish means reprimand firmly.
Ques 191. ANS (A) Solution: The correctly spelt word is collaborate The correct spellings of the other words are commemorate, collate, chocolate
Ques 192. ANS (B) Solution: The correctly spelt word is clairvoyant The correct spellings of the other words are circuitous, chivalry, cavalcade
Ques 193. ANS (D) Solution: The correctly spelt word is serenity The correct spellings of the other words are severity, sovereignty, superiority
Ques 194. ANS (D) Solution: The correctly spelt word is accommodative The correct spellings of the other words are cumulative, commemorative, accumulative
Ques 195. ANS (D) Solution: The correctly spelt word is benevolence The correct spellings of the other words are benediction, besmirch, beneficent
Ques 196. ANS (B) Solution: Here, 'out on' is the right usage.
Ques 197. ANS (D) Solution: draft (Noun): a rough written version of something that is not yet in its final form
Here, 'draft' is the right usage.
Ques 198. ANS (C) Solution:
commensurate (Adjective): matching something in size, importance, quality, etc.
Here, 'with' is the right usage.
Ques 199. ANS (C) Solution:
care about (Phr. V.): to feel that something is important and worth worrying about
Here, 'about' is the right usage.
Ques 200. ANS (D) Solution:
neither (Adv.): used for showing that a negative statement is also true of somebody/ something else.
Here, 'neither' is the right usage.