

**STAFF SELECTION COMMISSION**  
**SUB-INSPECTOR IN DELHI POLICE AND**  
**CENTRAL ARMED POLICE FORCES EXAMINATION (PAPER-I)**

**SOLVED PAPER**

**(1<sup>st</sup> July 2017: Shift-1)**

**Time Allotted- 2 hours**

**Max marks- 200**

**General Intelligence and Reasoning**

1. In the following question, select the related word from the given alternatives.  
Influenza : Virus : Ringworm : ?  
1. Bacteria    2. Fungi    3. Parasite    4. Protozoa
2. In the following question, select the related word from the given alternatives.  
FAN:BLADES::?:?  
1. Bonnet : Car                              2. Room : House  
3. Arc : Circle                                4. Book : Chapter
3. In the following question, select the related letters from the given alternatives.  
LSFW : NTHX :: PKWE : ?  
1. RYLF    2. RLYE    3. RLYF    4. RLGf
4. In the following question, select the related letters from the given alternatives.  
LMNO : NQTW :: GHJ : ?  
1. ILOR    2. ILRO    3. ILMO    4. LRMO
5. In the following question, select the related number from the given alternatives.  
11 : 120 :: 13 : ?  
1. 165    2. 168    3. 170    4. 169
6. In the following question, select the related number from the given alternatives.  
103 : 10609 :: 106 : ?  
1. 10606    2. 10306    3. 11236    4. 13636
7. In the following question, select the odd word from the given alternatives.  
1. Newspaper    2. Journal    3. Novel    4. Magazine
8. In the following question, select the odd word from the given alternatives.  
1. Definite    2. Specific    3. Doubtful    4. Distinct
9. In the following question, select the odd letters from the given alternatives.  
1. BEHK    2. JMPS    3. PSVY    4. EHKM
10. In the following question, select the odd letters from the given alternatives.  
1. AD    2. PT    3. EH    4. JM
11. In the following question, select the odd number pair from the given alternatives.  
1. 12 – 48    2. 7 – 28    3. 5 – 20    4. 11 – 55
12. In the following question, select the odd number pair from the given alternatives.  
1. 12 – 28    2. 20 – 36    3. 42 – 58    4. 72 – 90
13. Arrange the given words in the sequence in which they occur in the dictionary.  
1. Ale                              2. Align                              3. Amend  
4. Anatomy                        5. Alpine  
1. 51342    2. 35412    3. 12354    4. 12534
14. Arrange the given words in the sequence in which they occur in the dictionary.  
1. Den                              2. Dragon                              3. Drop  
4. Desk                              5. Doom  
1. 54312    2. 14523    3. 31245    4. 13245
15. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.  
A, B, D, G, ?  
1. K                              2. J                              3. L                              4. I
16. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.  
VWR, TUP, RSN, ?  
1. PLQ                              2. PQL                              3. LPQ                              4. PRM
17. In the following question, select the missing number from the given series.  
3, 10, 31, 94, ?  
1. 197    2. 127    3. 283    4. 317
18. In the following question, select the missing number from the given series.  
3, 4, 12, 48, 576, ?  
1. 27648    2. 13824    3. 23040    4. 28166
19. Sunita walks 45 metres towards south. Then turns right and walk another 45 metres. Then turn right and walks for 20 metres to reach point L. She then again turns to her right and walks for 45 metres. How far (in metres) is she from point L?  
1. 50    2. 45    3. 25    4. 60
20. Priyank ranks 6<sup>th</sup> from the bottom and 28<sup>th</sup> from the top in a class. How many students are there in the class?  
1. 31    2. 32    3. 33    4. 34
21. In a row of people Manu is 7<sup>th</sup> from bottom end of row. Shrey is 10 ranks above Manu. If Shrey is 8<sup>th</sup> from top, then how many people are there in this row?  
1. 25    2. 26    3. 24    4. 23
22. In the following question, select the word which cannot be formed using the letters of the given word.  
INSTRUCTOR  
1. Rust    2. Tort    3. Stop    4. Stint
23. In the following question, select the word which cannot be formed using the letters of the given word.  
Encourage  
1. Courage    2. Court    3. Race    4. Encore
24. In a certain code language, "SURGEON" is written as "QLHDURV" and "CORNER" is written as "OHKULF". How is "SHADOW" written in that code language?  
1. DRTERS    2. TRADEV    3. UQBCFU    4. TFBCPX
25. In a certain code language, "SUN" is written as "54" and "PUT" is written as "57". How is "CAT" written in that code language?  
1. 28    2. 24    3. 52    4. 36
26. In the following question, by using which mathematical operators will the expression become correct?  
14 ? 2 ? 4 ? 6 ? 4  
1. ×, ÷, > and ×                              2. ÷, ×, > and ×  
3. ÷, +, = and ×                              4. ÷, +, > and ×
27. In the following question, correct the equation by interchanging two signs.  
43 + 9 – 6 ÷ 3 × 8 = 50  
1. ÷ and ×    2. + and ÷    3. – and +    4. – and ×

28. If  $4 \times 9 \% 2 = 47$  and  $9 \times 0 \% 6 = 84$ , then  $5 \times 3 \% 7 = ?$   
 1. 38      2. 51      3. 42      4. 46  
 29. If  $1/4/3 = 254$  and  $3/6/8 = 479$ , then  $5/2/7 = ?$   
 1. 416      2. 461      3. 368      4. 638  
 30. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

7	3	2
6	11	5
5	1	8
72	?	50

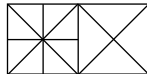
1. 38      2. 40      3. 42      4. 44  
 31. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

1	7	2
8	6	4
9	2	5
4	7	?

1. 9      2. 10      3. 11      4. 12  
 32. How many quadrilaterals are there in the given figure?



1. 2      2. 3      3. 4      4. 5  
 33. How many triangles are there in the given figure?



1. 24      2. 26      3. 28      4. 30  
 34. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

**Statements:**

- I. All women are hardworking.
- II. All intelligent are advocate.
- III. Some intelligent are women.

**Conclusions:**

- I. Some advocates are women.
  - II. Some hardworking are women.
  - III. Some women are advocate.
  - IV. Some hardworking are intelligent.
1. Only conclusion (II), (III) and (IV) follow  
 2. Only conclusion (I), (II) and (III) follow  
 3. Only conclusion (I), (III) and (IV) follow  
 4. All conclusions follow

35. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

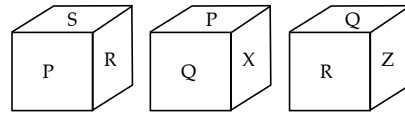
**Statements:**

- I. Some pins are cups.
- II. No cup is book.

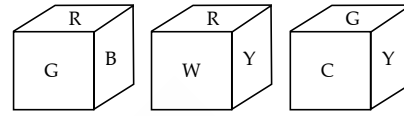
**Conclusions:**

- I. Some pins are books.
  - II. Some pins are not books.
1. Only conclusion (I) follows  
 2. Only conclusion (II) follows  
 3. Both conclusion follow  
 4. Neither conclusion (I) nor conclusion (II) follows

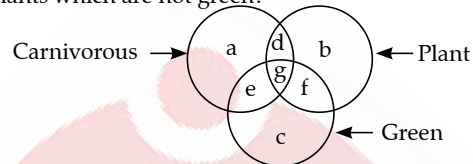
36. Three positions of a cube are shown below. What will come opposite to face containing 'Q'?



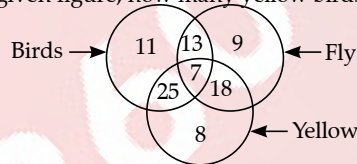
1. P      2. R      3. S      4. Z  
 37. Three position of a cube are shown below. What will come opposite to face containing 'R'?



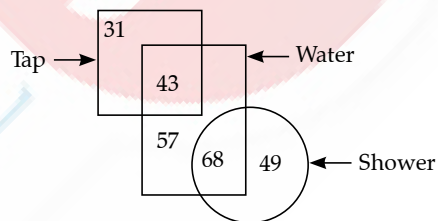
1. Y      2. G      3. W      4. C  
 38. In the given figure, which letter represents carnivorous plants which are not green?



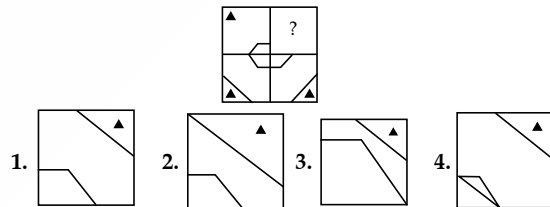
1. d      2. g      3. e      4. f  
 39. In the given figure, how many yellow birds are there?



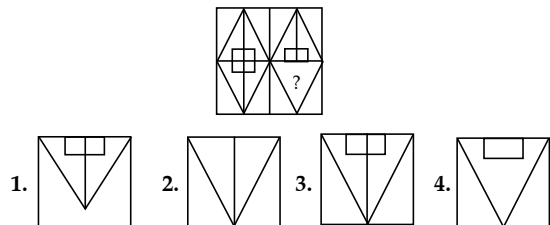
1. 25      2. 32      3. 18      4. 20  
 40. In the given figure, how many water are either tap or shower?



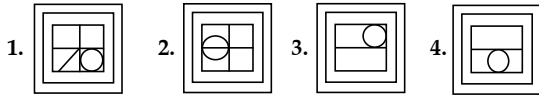
1. 168      2. 111      3. 125      4. 108  
 41. Which answer figure will complete the pattern in the question figure?



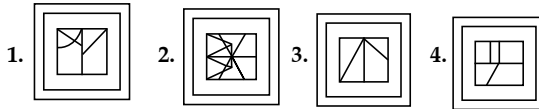
42. Which answer figure will complete the pattern in the question figure?



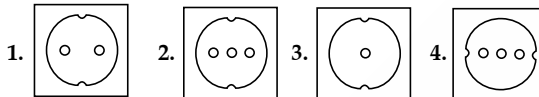
43. From the given answer figures, select the one in which the question figure is hidden/embedded?



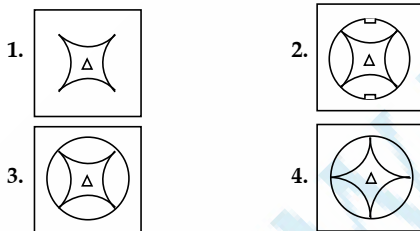
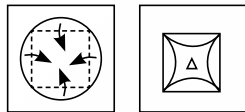
44. From the given answer figures, select the one in which the question figure is hidden/embedded?



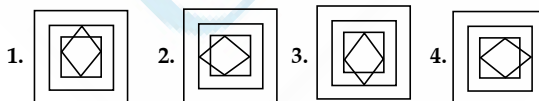
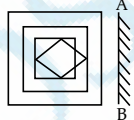
45. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



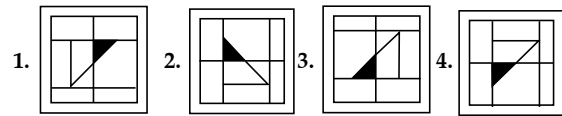
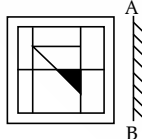
46. A piece of papers is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



47. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?



48. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?



49. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, I can be represented by 12, 44, etc. and 'D' can be represented by 75, 97, etc. Similarly, you have to identify the set for the word "CHEAT".

Matrix-I

Matrix-II

	0	1	2	3	4
0	H	I	G	C	N
1	C	N	I	G	H
2	I	H	C	N	G
3	N	G	H	I	C
4	G	C	N	H	I

	5	6	7	8	9
5	T	D	S	A	E
6	S	A	T	E	D
7	D	E	A	S	T
8	A	T	E	D	C
9	E	S	D	T	A

- 1. 10, 21, 68, 77, 56
- 2. 34, 43, 95, 85, 96
- 3. 41, 14, 76, 99, 79
- 4. 22, 00, 87, 67, 67

50. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'Q' can be represented by 12, 43, etc. and 'M' can be represented by 67, 99, etc. Similarly, you have to identify the set for the word 'PRICE'.

Matrix-I

Matrix-II

	0	1	2	3	4
0	Q	T	S	R	P
1	R	P	Q	S	T
2	S	Q	T	P	R
3	P	S	R	T	Q
4	T	R	P	Q	S

	5	6	7	8	9
5	I	M	E	C	D
6	E	C	M	D	I
7	C	D	I	M	E
8	M	E	D	I	C
9	D	I	C	E	M

- 1. 23, 03, 55, 66, 99
- 2. 42, 24, 88, 56, 65
- 3. 11, 10, 96, 97, 85
- 4. 04, 41, 69, 75, 57

**General Knowledge and General Awareness**

- 51. What is the full form of FDI?
  - 1. Foreign Direct Input
  - 2. Foreign Direct Investment
  - 3. Fiscal Direct Investment
  - 4. Fiscal Direct Input
- 52. In which situation, wages and prices chase each other at a very quick speed?
  - 1. Disinflation
  - 2. Reflation
  - 3. Stagflation
  - 4. Hyper-inflation
- 53. Banking comes under which of the following sector?
  - 1. Primary sector
  - 2. Secondary sector
  - 3. Tertiary sector
  - 4. Both Secondary and Tertiary sectors
- 54. Which of the following is a basic characteristic of 'Oligopoly'?
  - 1. Many sellers, many buyers
  - 2. Few sellers, few buyers
  - 3. Few sellers, many buyers
  - 4. Many sellers, few buyers

55. What was the main objective of the 5<sup>th</sup> Five Year Plan?
1. Removal of poverty and achievement of self-reliance
  2. Faster, more inclusive and sustainable growth
  3. Inclusive growth
  4. None of these
56. \_\_\_\_\_ is a form of government in which the rulers are elected by the people.
1. Autocratic
  2. Monarchic
  3. Democratic
  4. Authoritarian
57. Who said 'The God, who gave us life, gave us the liberty at the same time'?
1. Marx
  2. Plato
  3. Jefferson
  4. Locke
58. What is 'Patriarchic Society'?
1. System that values women more than men
  2. System that values men more than women
  3. System that values both men and women equally
  4. System that values elders
59. Members of Rajya Sabha are elected for how many years?
1. Two years
  2. Three years
  3. Five years
  4. Six years
60. Under which pardoning power of the President, duration of sentence is reduced without changing its character?
1. Commutation
  2. Remission
  3. Respite
  4. Reprieve
61. In Pocket Veto, the President of India can keep a bill for how much duration?
1. 1 month
  2. 6 months
  3. 12 months
  4. Indefinite period
62. The President's seat can be left vacant for how much duration?
1. 6 Months
  2. 3 Months
  3. 9 Months
  4. 12 Months
63. Which constitutional Amendment Act of India reduced voting age from 21 years to 18 years?
1. 42<sup>nd</sup> Amendment Act 42
  2. 61<sup>st</sup> Amendment Act 61
  3. 74<sup>th</sup> Amendment Act 74
  4. 83<sup>rd</sup> Amendment Act 83
64. In which year East India Company was ceased to work and India was completely undertaken by British Govt.?
1. 1838
  2. 1919
  3. 1858
  4. 1898
65. At which location, a sculptor of chariot of Harappan time was found?
1. Lothal
  2. Banawali
  3. Daimabad
  4. Kalibangan
66. First Satyagrah started from Champaran for opposing the cultivation of \_\_\_\_\_.
1. Cotton
  2. Indigo
  3. Silk
  4. Kesar
67. Who was the founder of 'Vikramshila University'?
1. Vijay Sen
  2. Atisa
  3. Dharampal
  4. Ballal Sen
68. When India got Independence, who was the Prime Minister of England?
1. William Bentick
  2. Warren Hasting
  3. Margaret Thatcher
  4. Climent Atlee
69. Match the following.
- | Mountain               | Continent              |
|------------------------|------------------------|
| 1. Mount Etna          | a. Asia                |
| 2. Mount K2            | b. Africa              |
| 3. Mount Kilmanjaro    | c. Europe              |
| 1. 1 - a, 2 - b, 3 - c | 2. 1 - b, 2 - a, 3 - c |
| 3. 1 - c, 2 - a, 3 - b | 4. 1 - a, 2 - c, 3 - b |
70. Which of the following mountain range separates Europe and Asia?
1. Rocky Mountain Range
  2. Himalayan Mountain Range
  3. Ural Mountain Range
  4. Appalachian Mountain Range
71. Suez Canal connects which of the following water bodies?
1. Mediterranean Sea and Black Sea
  2. Mediterranean Sea and Red Sea
  3. Pacific Ocean and Atlantic Ocean
  4. Mediterranean Sea and Arctic Ocean
72. Which of the following Indian state does not share International land border?
1. Jammu and Kashmir
  2. Uttar Pradesh
  3. Bihar
  4. Madhya Pradesh
73. In which of the following city, world's second longest beach is located?
1. Mumbai
  2. Kolkata
  3. Puducherry
  4. Chennai
74. Which of the following brings back deoxygenated blood from different parts of human body to heart?
1. Veins
  2. Arteries
  3. Nerves
  4. Lungs
75. Which of the following is a warm blooded animal?
1. Turtle
  2. Snake
  3. Ape
  4. Lizard
76. Where is bile stored?
1. Liver
  2. Kidney
  3. Gall bladder
  4. Spleen
77. Which of the following is not a connective tissue?
1. Adipose Tissue
  2. Compact Bone
  3. Cardiac Muscle
  4. Areolar Tissue
78. Normally how many times the human heart beats in a minute?
1. 82
  2. 75
  3. 72
  4. 85
79. Muscle fatigue occurs due to accumulation of \_\_\_\_\_.
1. ATP
  2. ADP
  3. Lactic Acid
  4. Carbonic Acid
80. The inexhaustible source of energy of stars is due to \_\_\_\_\_.
1. Conversion of hydrogen to helium
  2. Conversion of helium to hydrogen
  3. Decay of radioactive elements
  4. Excess of oxygen
81. Which of the following waves has the highest frequency?
1. Radio
  2. Infrared
  3. Microwaves
  4. Gamma-rays
82. Why the clear nights are cooler than the cloudy nights?
1. Conductance
  2. Condensation
  3. Radiation
  4. Insulation
83. The subatomic particle that does not have any electric charge is a/an \_\_\_\_\_.
1. Electron
  2. Proton
  3. Neutron
  4. All options are correct.
84. Dot-Matrix is an example of which of the following?
1. A software
  2. Scanner
  3. Printer
  4. Keyboard
85. Which of the following pair is INCORRECT?
1. 10 MB - 10240 KB
  2. 1 GB - 10240 MB
  3. 1 TB - 1024 GB
  4. 1 KB - 1024 Bytes
86. Which of the following gas is used in bulb?
1. Hydrogen
  2. Carbon-dioxide
  3. Carbon-mono-oxide
  4. Argon
87. Chlorine gas is a major component of which of the following?
1. Water
  2. Tear gas
  3. Liquefied Petroleum Gas
  4. Gobar gas
88. What is Brine solution?
1. Excess salt + water
  2. Silver
  3. Excess Ethanol + water
  4. Excess starch + water

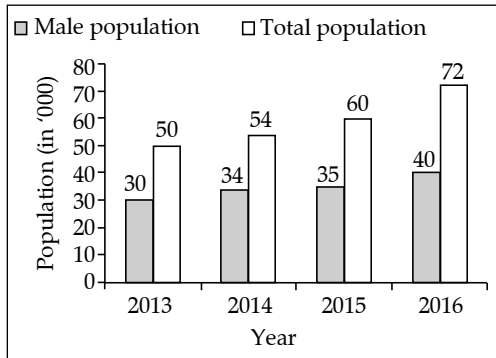
89. pH scale ranges from \_\_\_\_\_ .  
1. 1 to 14    2. 1 to 7    3. 0 to 14    4. 0 to 7
90. Which of the following primarily causes lead pollution?  
1. CFL Lamp    2. Automobile Battery  
3. Polymer    4. Diesel Engine
91. What was the main aim of Montreal Protocol?  
1. Protection of Ozone layer  
2. Bio-diversity Conservation  
3. Global Warming  
4. Climate Change
92. Supersonic jets cause thinning of which layer?  
1. O<sub>2</sub> layer    2. O<sub>3</sub> layer    3. CO<sub>2</sub> layer    4. SO<sub>2</sub> layer
93. What is the name of the app launched by the Union Ministry of Power to provide real time information sharing on power supply?  
1. URJAMITRA 2. BHIM    3. URJA    4. UMANG
94. Who discovered 'Portland cement'?  
1. Michael Faraday    2. Guglielmo Marconi  
3. Joseph Aspdin    4. Isaac Newton
95. Nitin Thimmaiah is related to which sport?  
1. Table Tennis    2. Boxing  
3. Cricket    4. Hockey
96. Match the following.
- | Temple                | Religion              |
|-----------------------|-----------------------|
| 1. Dilwara Temple     | a. Bahai              |
| 2. Golden Temple      | b. Hinduism           |
| 3. Lotus Temple       | c. Sikhism            |
| 4. Sun Temple         | d. Jainism            |
| 1. 1-d, 2-c, 3-a, 4-b | 2. 1-c, 2-d, 3-a, 4-b |
| 3. 1-b, 2-a, 3-d, 4-c | 4. 1-d, 2-a, 3-b, 4-c |
97. Which Chief Minister has been awarded with the 'Transformative Chief Minister Award' on May 8, 2017?  
1. Yogi Adityanath, Uttar Pradesh  
2. Chandrababu Naidu, Andhra Pradesh  
3. Arvind Kejriwal, Delhi  
4. Vasundhara Raje Scindia, Rajasthan
98. Who wrote the book named 'Exile'?  
1. Barkha Dutt    2. Valmik Thapar  
3. Tasleema Nasreen    4. Ranbir Singh Sindhu
99. Pakistan has leased Gwadar port to state-run firm of which country for 40 years?  
1. Iran    2. China  
3. Afghanistan    4. India
100. Which neighbouring country of India is not among the founding members of SAARC?  
1. Nepal    2. Bangladesh  
3. Afghanistan    4. Bhutan
105. If 34N is divisible by 11, then what is the value of N?  
1. 1    2. 3    3. 4    4. 9
106. P is four times as efficient as Q. P can complete a work in 45 days less than Q. If both of them work together, then in how many days the work will be completed?  
1. 10    2. 12    3. 15    4. 30
107. Two inlet pipes can fill a cistern in 10 and 12 hours respectively and an outlet pipe can empty 80 gallons of water per hour. All the three pipes working together can fill the empty cistern in 20 hours. What is the capacity (in gallons) of the tank?  
1. 360    2. 300    3. 600    4. 900
108. What will be the net discount (in percentage) after two successive discounts of 40% and 20%?  
1. 60    2. 68    3. 52    4. 42
109. An article is sold for Rs 6552 after a discount of 22%. What is the marked price (in Rs) of the article?  
1. 8450    2. 8425    3. 8400    4. 8750
110. If 2A = 3B and 3B = 2C, then what is A : B : C?  
1. 3 : 2 : 3    2. 2 : 3 : 2    3. 1 : 3 : 1    4. 2 : 3 : 2
111. Raman, Manan and Kamal are partners and invest in a business such that Raman invests 2/5th of total and Manan invest 3/8th of the total. What is the ratio of profit of Raman, Manan and Kamal respectively?  
1. 16 : 15 : 9    2. 16 : 15 : 31    3. 2 : 3 : 5    4. 15 : 16 : 9
112. What is the average of the squares of the first 19 natural numbers?  
1. 124    2. 127.5    3. 130    4. 133.5
113. In a match, average of runs scored by 5 players is 49. If the runs scored by four players are 75, 30, 62 and 21 respectively, then how many runs did the 5th player had scored?  
1. 43    2. 49    3. 57    4. 89
114. A man bought 15 mangoes for a rupee. How many mangoes were sold for a rupee so that there is a loss of 25%?  
1. 10    2. 12    3. 18    4. 20
115. By selling a fan for Rs 1900 a man has a loss of 5%, then at what price (in Rs) should he sell the fan to gain 20%?  
1. 2000    2. 2400    3. 2600    4. 2800
116. If 40% of a number is 290, then what is the number which is 20% more than the initial number?  
1. 870    2. 725    3. 825    4. 680
117. The price of table depreciates every year by 20%. If the value of the table after 2 years will be Rs 32000, then what is the present price (in Rs) of the table?  
1. 48000    2. 44000    3. 50000    4. 51000
118. A motorcyclist left  $6\frac{6}{9}$  minutes later than the scheduled time but in order to reach its destination 21 km away in time, he had to increase his speed by 12 km/hr from the usual speed. What is usual speed (in km/hr) of the Motorcyclist?  
1. 28    2. 35    3. 42    4. 64
119. A bus starts running with the initial speed of 33 km/hr and its speed increases every hour by certain amount. If it takes 7 hours to cover a distance of 315 km, then what will be hourly increment (in km/hr) in the speed of the bus?  
1. 1    2. 2    3. 3    4. 4
120. What is the compound interest (in Rs) on Rs 12500 at the rate of 12% per annum compounded yearly for 2 years?  
1. 3000    2. 2980    3. 3050    4. 3180
121. An amount was lent for two years at the rate of 20% per annum compounding annually. Had the compounding been done half yearly, the interest would have increased by 241. What was the amount (in Rs) lent?  
1. 10000    2. 12000    3. 20000    4. 24000

### Quantitative Aptitude

101. If  $N = (\sqrt{7} - \sqrt{3})/(\sqrt{7} + \sqrt{3})$ , then what is the value of  $N + (1/N)$ ?  
1.  $2\sqrt{2}$     2. 5    3. 10    4. 13
102. What is the simplified value of  $(2 + 1)(2^2 + 1)(2^4 + 1)(2^8 + 1)$ ?  
1.  $2^8 - 1$     2.  $2^{16} - 1$     3.  $2^{32} - 1$     4.  $2^{64} - 1$
103. Which one among  $\sqrt{10} + \sqrt{4}$ ,  $\sqrt{11} + \sqrt{3}$ ,  $\sqrt{7} + \sqrt{7}$  is the smallest number?  
1.  $\sqrt{10} + \sqrt{4}$     2.  $\sqrt{11} + \sqrt{3}$   
3.  $\sqrt{7} + \sqrt{7}$     4. All are equal
104. What is the smallest value that must be added to 709, so that the resultant is a perfect square?  
1. 8    2. 12    3. 20    4. 32

**Directions for questions (122 to 125):**

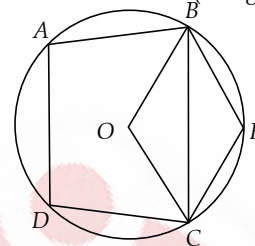
The bar graph given below represents the total population and male population (in 000) of a city, during the period of 2013 to 2016.



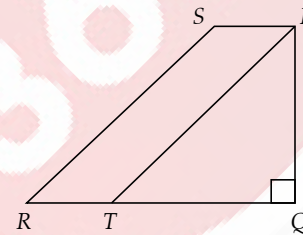
122. What is the ratio of male and female population respectively in 2015?  
 1. 12 : 7      2. 5 : 7      3. 7 : 5      4. 5 : 3
123. In 2016 male population is how much percent more than the female population?  
 1. 25      2. 20      3. 23      4. 28
124. In 2014 female population is what percent of total population?  
 1. 62.96      2. 37.03      3. 20      4. 31.13
125. Female population in 2015 is what percent of female population in 2014?  
 1. 25      2. 80      3. 150      4. 125
126. If diagonals of a rhombus are 16 cm and 30 cm. then what is the perimeter (in cm) of the rhombus?  
 1. 32      2. 64      3. 34      4. 68
127. The ratio of curved surface area of two cones is 1 : 4 and the ratio of slant height of the two cones is 2 : 1. What is the ratio of the radius of the two cones?  
 1. 1 : 2      2. 1 : 4      3. 1 : 8      4. 1 : 1
128. Radius of hemisphere is twice that of a sphere. What is the ratio of total surface area of hemisphere and sphere?  
 1. 3 : 1      2. 12 : 1      3. 4 : 1      4. 6 : 1
129. A solid cylinder having radius of base as 7 cm and length as 20 cm is bisected from its height to get two identical cylinders. What will be the percentage increase in the total surface area?  
 1. 29.78      2. 25.93      3. 27.62      4. 32.83
130. If the perimeter of a rhombus is 80 cm and one of its diagonal is 24 cm, then what is the area (in cm<sup>2</sup>) of the rhombus?  
 1. 218      2. 192      3. 384      4. 768
131. If  $(p^2 + q^2)/(r^2 + s^2) = (pq)/(rs)$ , then what is the value of  $(p - q)/(p + q)$  in terms of  $r$  and  $s$ ?  
 1.  $(r + s)/(r - s)$       2.  $(r - s)/(r + s)$   
 3.  $(r + s)/(rs)$       4.  $(rs)/(r - s)$
132. If the expression  $(px^3 - 8x^2 - qx + 1)$  is completely divisible by the expression  $(3x^2 - 4x + 1)$ , then what will be the value of  $p$  and  $q$  respectively?  
 1.  $(21/4, 15/8)$       2.  $(6, 1)$   
 3.  $(33/4, 5/4)$       4.  $(1, 6)$
133. If  $a = 2017$ ,  $b = 2016$  and  $c = 2015$ , then what is the value of  $a^2 + b^2 + c^2 - ab - bc - ca$ ?  
 1. -2      2. 0      3. 3      4. 4
134. If  $x^2 - 3x + 1 = 0$ , then what is the value of  $x^3 + \frac{1}{x^3}$ ?  
 1. 3      2. 7      3. 11      4. 18

135. If  $\frac{6x-1}{x} + \frac{7y-1}{y} + \frac{8z-1}{z} = 0$ , then what is the value of  $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$ ?

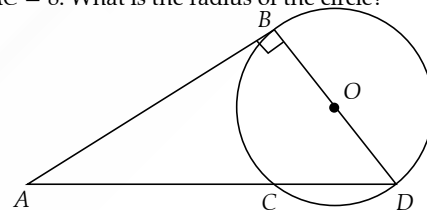
1. 1      2. 3      3. 0      4. 21
136. In  $\Delta PQR$ ,  $\angle P : \angle Q : \angle R = 2 : 2 : 5$ . A line parallel to  $QR$  is drawn which touches  $PQ$  and  $PR$  at  $A$  and  $B$  respectively. What is the value of  $\angle PBA - \angle PAB$ ?  
 1. 60      2. 30      3. 24      4. 36
137. In the given figure,  $O$  is the center of the circle,  $\angle DAB = 110^\circ$  and  $\angle BEC = 100^\circ$ . What is the value (in degrees) of  $\angle OCB$ ?



1. 5      2. 10      3. 15      4. 20
138. If  $\Delta DEF$  is right angled at  $E$ ,  $DE = 15$  and  $\angle DFE = 60^\circ$ , then what is the value of  $EF$ ?  
 1.  $5\sqrt{3}$       2. 5      3. 15      4. 30
139. In the given figure, area of isosceles triangle  $PQT$  is 128 cm<sup>2</sup> and  $QT = PQ$  and  $PQ = 4PS$ ,  $PT \parallel SR$ , then what is the area (in cm<sup>2</sup>) of the quadrilateral  $PTSR$ ?



1. 80      2. 64      3. 124      4. 72
140. In the given figure,  $BD$  passes through centre  $O$ ,  $AB = 12$  and  $AC = 8$ . What is the radius of the circle?

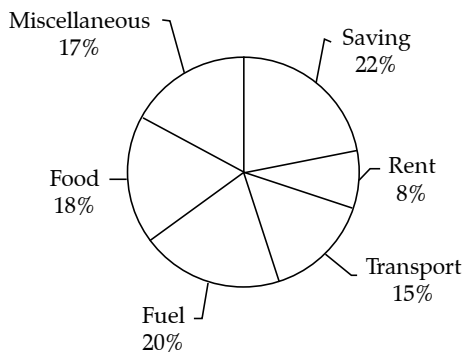


1.  $3\sqrt{2}$       2.  $4\sqrt{3}$       3.  $3\sqrt{5}$       4.  $3\sqrt{3}$
141. If  $\sec \theta + \operatorname{cosec} \theta = \sqrt{2} \sec(90 - \theta)$  then what is the value of  $\cot \theta$ ?  
 1.  $\sqrt{2}$       2. 2      3.  $\sqrt{2} - 1$       4.  $\sqrt{2} + 1$
142. What is the simplified value of  $\left( \frac{1}{\operatorname{cosec} \theta + \cot \theta} \right)^2$ ?  
 1.  $\operatorname{cosec} \theta + \tan \theta$       2.  $\sin \theta + \cos \theta$   
 3.  $(1 - \cos \theta) / (1 + \cos \theta)$       4.  $(1 - \sin \theta) / (1 + \sin \theta)$
143. If  $\sin(\theta + 23^\circ) = \cos 58^\circ$ , then what is the value of  $\cos 5\theta$ ?  
 1. 1/2      2.  $1/\sqrt{2}$       3.  $\sqrt{3}/2$       4. 0
144. If  $x \sin \theta = \frac{5\sqrt{3}}{2}$  and  $x \cos \theta = \frac{5}{2}$  then what is the value of  $x$ ?  
 1.  $\sqrt{3}$       2. 1/2      3.  $\sqrt{3}/2$       4. 5

145. If  $\theta + \phi = \frac{2}{3}\pi$  and  $\cos \theta = \frac{\sqrt{3}}{2}$ , then what is the value of  $\sin \phi$ ?
1. 0      2.  $1/2$       3.  $1/\sqrt{2}$       4. 1

**Directions for questions (146 to 150):**

The pie chart given below shows the expenditure (in percentage) of Mahesh. The monthly income of Mahesh is Rs. 26000.



146. How much does he spend (in Rs) on Rent?  
1. 2080      2. 2275      3. 2470      4. 2840
147. How much more does he spend (in Rs) on the Saving and Fuel taken together than Transport?  
1. 5850      2. 6060      3. 7020      4. 8420
148. Had his income been Rs 22,000, how much less he would have spent on Miscellaneous (in Rs)?  
1. 510      2. 680      3. 765      4. 935
149. If he invests 65% of his savings on purchasing gold, then how much amount (in Rs) does he spend on gold?  
1. 3312      2. 4124      3. 3522      4. 3718
150. What will be the approximate difference (in Rs) between the average expenditure on Saving, Rent and Fuel and average expenditure on Food, Transport and Savings?  
1. 433      2. 444      3. 417      4. 467

### English Comprehension

151. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.
- Several visitors are (1)/ expected to visit the (2)/ trade fair this weekend. (3)/ No Error (4)
1. 1      2. 2      3. 3      4. 4
152. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.
- Our professor taught us that (1)/ one should respect the (2)/ religions of others as much as his own. (3)/ No Error (4)
1. 1      2. 2      3. 3      4. 4
153. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.
- No sooner had she arrive that her (1)/ friends arranged a reception in her (2)/ honour in the best resort in the town. (3)/ No Error (4)
1. 1      2. 2      3. 3      4. 4

154. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

Tell me (1)/ what all you know about it (2)/ before I take a decision in the matter. (3)/ No Error (4)

1. 1      2. 2      3. 3      4. 4

155. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

During India's struggle for (1)/ freedom many brilliant students (2)/ gave up their studies by Bhagat Singh's call. (3)/ No Error (4)

1. 1      2. 2      3. 3      4. 4

156. In the following question, the sentence given with a blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Suman has \_\_\_\_\_ for the final round of the competition.

1. superior      2. decided      3. declared      4. qualified

157. In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Her supporters began to \_\_\_\_\_ and she was left alone.

1. fall over      2. fall away      3. fall off      4. fall on

158. In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

No \_\_\_\_\_ than fifteen boys failed in a class of forty. Options:

1. little      2. less      3. few      4. fewer

159. In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Sania was compensated \_\_\_\_\_ the loss of her belongings at the airport.

1. for      2. of      3. against      4. over

160. In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Suraj is acquainted \_\_\_\_\_ Kapil.

1. of      2. with      3. from      4. to

161. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

1. timid      2. beginner      3. weary      4. dispirited

162. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

1. acumen      2. starry      3. futile      4. fallow

163. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

1. shrewd      2. whim      3. climax      4. concise

164. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

1. hesitant      2. terminal      3. ridicule      4. deception

165. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

1. climax      2. systematic      3. improper      4. glorious

166. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

1. rustic      2. dull      3. tranquil      4. fierce

167. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.  
1. expansion 2. reference 3. precis 4. outline
168. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.  
1. praise 2. resist 3. prefer 4. repel
169. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.  
1. rejoice 2. encourage 3. decrease 4. discard
170. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.  
1. hideous 2. victorious  
3. conscious 4. advantageous
171. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.  
An iron will  
Options:  
1. A widely debated issue 2. A fair bargain  
3. An impracticable plan 4. A firm opinion
172. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.  
Get into a soup  
Options:  
1. To make things difficult 2. To be worrisome  
3. To be familiar of 4. To get an advantage
173. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.  
Haul over the coals  
Options:  
1. Talk irrelevantly 2. Laugh heartily  
3. To scold 4. Without hope
174. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.  
To carry the day  
Options:  
1. to run away 2. to die while in service  
3. to take an unimportant task 4. to succeed
175. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.  
Go over  
Options:  
1. continue 2. review 3. harmonize 4. terminate
176. Improve the bracketed part of the sentence.  
Neha was too clever to (see through Rohan's tricks).  
1. see at Rohan's tricks. 2. see into Rohan's tricks.  
3. see Rohan's tricks. 4. no improvement
177. Improve the bracketed part of the sentence.  
He has been working (off and on) for several years on this theory.  
1. regularly 2. on or off  
3. on and off 4. no improvement
178. I am definitely late, the bus (will have left) the bus stop by the time i reach there.  
1. would have left 2. will be leaving  
3. will leave 4. no improvement
179. Improve the bracketed part of the sentence.  
(Having had) in the USA Embassy for a long time, Mr. Gupta has met many prominent personalities.  
1. he has been 2. having been  
3. had he been 4. no improvement
180. Improve the bracketed part of the sentence. The guest stood quietly for (few) moments.  
1. a few moments 2. the few moments  
3. few time 4. no improvement
181. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.  
Government by a few people  
Options:  
1. aristocracy 2. oligarchy  
3. dictatorship 4. bureaucracy
182. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.  
The state of living unmarried  
Options:  
1. celibacy 2. neogamist 3. chaperon 4. implorer
183. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.  
An event which happens once in five years.  
Options:  
1. septennial 2. quinquennial  
3. interregnum 4. pun
184. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.  
A person who looks after horses at an inn:  
Options:  
1. matron 2. Chandler 3. ostler 4. effeminate
185. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.  
To struggle helplessly  
Options:  
1. implorer 2. yokel 3. flounder 4. chum
186. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.  
Options:  
1. adherent 2. aeronaut 3. adversary 4. admissible
187. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.  
1. passenger 2. quarrelled 3. remittance 4. attendance
188. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.  
1. beautisian 2. bilingual 3. barbarian 4. balloon
189. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.  
1. embarrassment 2. exasperation  
3. emanicipation 4. fermentation
190. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.  
1. gorgeous 2. granduer 3. gratuitous 4. glutton
- Directions for questions (191 to 195):**  
In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.  
Youth is the \_\_\_\_\_ gift of the god, says an old "upanishad". Let us \_\_\_\_\_ in it. It is the great formative \_\_\_\_\_ of our life, brief but powerful. We are then able to \_\_\_\_\_ the world with feelings pure and with \_\_\_\_\_ unworldly.



191. Youth is the \_\_\_\_\_ gift of the god, says an old "upanishad".  
1. inexpensive 2. best 3. useless 4. small
192. Let us \_\_\_\_\_ in it. It is the great formative  
1. rejoice 2. live 3. dance 4. sleep
193. \_\_\_\_\_ of our life, brief but powerful.  
1. lesson 2. resource 3. period 4. idea
194. We are then able to \_\_\_\_\_ the world with feelings pure  
1. challenge 2. roam 3. target 4. face
195. and with \_\_\_\_\_ unworldly.  
1. ambitions 2. passively 3. religiously 4. resources

#### Directions for questions (196 to 200):

A passage is given with five questions following it. Read the passage carefully and select the best answer to each question out of the given four alternatives.

Antarctica is a mostly unpopulated continent. It is the coldest, driest and most remote place in the world. And it is the world's only continent that does not have a native population. No single country owns the Antarctic. However a number of countries, including Argentina, Australia, Chile, New Zealand, France and the United Kingdom, have already laid claim to the Antarctic and others will probably follow. In some areas of the continent, two countries claim the same land.

The Antarctic Treaty was signed in 1959 and creates the rules for the exploration of the Antarctic. The treaty forbids military activity in the Antarctic, as well as mining. Many countries, however, think that there are valuable materials and minerals locked up under the frozen Antarctic ice. In addition, the treaty bans nuclear testing as well as dumping nuclear waste. The Antarctic Treaty was made to protect the continent and avoid further disputes. By 2048, the treaty must be renewed. New rules and regulations could be imposed by then.

Currently, almost all of the 70 bases in the Antarctic are used for research and scientific activity. The snow-covered continent is perfect for tracking satellites and space research because it offers clear blue, cloudless skies. Climatologists are studying

the development of the ozone layer with growing concern. It was here that a hole in the layer was discovered for the first time. More than 4000 scientists operate the research stations in the Antarctic summer, while only about a thousand populate the continent during the harsh and severe winters.

Environmentalists fear that exploiting Antarctica for military and economic reasons will damage the environment. At present, there is no economic activity in Antarctica, except for cruise ships that travel around the continent. This could change, if a new treaty allows mining in the Antarctic. As mineral resources are dwindling in other areas, nations could turn to Antarctica to find and exploit valuable raw materials.

Some geologists say that there are over 200 billion barrels of oil under the Antarctic ice. At the moment getting at these reserves would be very expensive. In addition, economic experts claim that there are large amounts of coal, nickel and copper under the Antarctic ice.

196. Which country's name is not being mentioned in the passage?  
1. Argentina 2. Chile  
3. New Zealand 4. Austria
197. When was the Antarctic Treaty signed?  
1. 1959 2. 1958 3. 1960 4. 1969
198. Why was Antarctic Treaty signed?  
1. to protect the continent  
2. to ban dumping of nuclear waste  
3. to create rules for its exploration  
4. all of these.
199. Why did environmentalists have fear of exploiting Antarctica for military and economic reasons?  
1. unfavourable weather conditions  
2. high involvement of cost  
3. damage to environment  
4. none of these
200. According to the passage, the reserves of which mineral is not found under the Antarctic ice?  
1. coal 2. iron 3. nickel 4. copper

### Answer Key

1.	(2)	2.	(4)	3.	(3)	4.	(1)	5.	(3)	6.	(3)	7.	(3)	8.	(3)	9.	(4)	10.	(2)
11.	(4)	12.	(4)	13.	(4)	14.	(2)	15.	(1)	16.	(2)	17.	(3)	18.	(1)	19.	(4)	20.	(3)
21.	(3)	22.	(3)	23.	(2)	24.	(2)	25.	(2)	26.	(2)	27.	(3)	28.	(4)	29.	(4)	30.	(4)
31.	(3)	32.	(1)	33.	(2)	34.	(4)	35.	(2)	36.	(3)	37.	(4)	38.	(1)	39.	(2)	40.	(2)
41.	(1)	42.	(3)	43.	(2)	44.	(2)	45.	(2)	46.	(1)	47.	(2)	48.	(4)	49.	(3)	50.	(4)
51.	(2)	52.	(4)	53.	(3)	54.	(3)	55.	(1)	56.	(3)	57.	(3)	58.	(2)	59.	(4)	60.	(2)
61.	(4)	62.	(1)	63.	(2)	64.	(3)	65.	(3)	66.	(2)	67.	(3)	68.	(4)	69.	(3)	70.	(3)
71.	(2)	72.	(4)	73.	(4)	74.	(1)	75.	(3)	76.	(3)	77.	(3)	78.	(3)	79.	(3)	80.	(1)
81.	(4)	82.	(3)	83.	(3)	84.	(3)	85.	(2)	86.	(4)	87.	(2)	88.	(1)	89.	(3)	90.	(2)
91.	(1)	92.	(2)	93.	(1)	94.	(3)	95.	(4)	96.	(1)	97.	(2)	98.	(3)	99.	(2)	100.	(3)
101.	(2)	102.	(2)	103.	(2)	104.	(3)	105.	(1)	106.	(2)	107.	(3)	108.	(3)	109.	(3)	110.	(1)
111.	(1)	112.	(3)	113.	(3)	114.	(4)	115.	(2)	116.	(1)	117.	(3)	118.	(3)	119.	(4)	120.	(4)
121.	(1)	122.	(3)	123.	(1)	124.	(2)	125.	(4)	126.	(4)	127.	(3)	128.	(1)	129.	(2)	130.	(3)
131.	(2)	132.	(3)	133.	(3)	134.	(4)	135.	(4)	136.	(1)	137.	(2)	138.	(1)	139.	(2)	140.	(3)
141.	(4)	142.	(3)	143.	(2)	144.	(4)	145.	(4)	146.	(1)	147.	(3)	148.	(2)	149.	(4)	150.	(1)
151.	(4)	152.	(3)	153.	(1)	154.	(3)	155.	(3)	156.	(4)	157.	(2)	158.	(4)	159.	(4)	160.	(2)
161.	(2)	162.	(1)	163.	(4)	164.	(2)	165.	(1)	166.	(4)	167.	(1)	168.	(1)	169.	(2)	170.	(3)
171.	(4)	172.	(2)	173.	(1)	174.	(4)	175.	(2)	176.	(4)	177.	(3)	178.	(4)	179.	(2)	180.	(3)
181.	(2)	182.	(1)	183.	(2)	184.	(3)	185.	(3)	186.	(2)	187.	(4)	188.	(1)	189.	(3)	190.	(2)
191.	(2)	192.	(1)	193.	(3)	194.	(4)	195.	(1)	196.	(4)	197.	(1)	198.	(4)	199.	(3)	200.	(2)

### Answers with Explanations

#### 1. Option (2) is correct.

Influenza is caused by Virus in the same way Ringworm is caused by Fungus.

Hence, Fungi is the correct answer.

#### 2. Option (4) is correct.

We know that a fan has blades; in the same way a book has chapters in it.

Hence, Book : Chapter is the correct answer.

**3. Option (3) is correct.**

The pattern is as follows:

L	S	F	W
+2	+1	+2	+1
N	T	H	X

Similarly,

P	K	W	E
+2	+1	+2	+1
R	L	Y	F

Hence, RLYF is the correct answer.

**4. Option (1) is correct.**

The pattern is as follows:

L	M	N	O
+2	+4	+6	+8
N	Q	T	W

Similarly,

G	H	I	J
+2	+4	+6	+8
I	L	O	R

Hence, ILOR is the correct answer.

**5. Option (3) is correct.**

The pattern is  $11^2 - 1 = 121 - 1 = 120$

Similarly,  $13^2 - 1 = 168$

Hence, 168 is the correct answer.

**6. Option (3) is correct.**

The pattern is  $103^2 = 10609$

Similarly,  $106^2 = 11236$

Hence, 11236 is the correct answer.

**7. Option (3) is correct.**

Newspaper, Journal and Magazine are sources of articles and Novel is a long story in the form of chapters.

Hence, Novel is the correct answer.

**8. Option (3) is correct.**

The words Definite, Specific and Distinct defines the specific position whether No or Yes but doubtful is neither Yes nor No.

Hence, Doubtful is the correct answer.

**9. Option (4) is correct.**

The pattern is:

BEHK →	B + 3 = E	E + 3 = H	H + 3 = K
JMPS →	J + 3 = M	M + 3 = P	P + 3 = S
PSVY →	P + 3 = S	S + 3 = V	V + 3 = Y
EHKM →	E + 3 = H	H + 3 = K	K + 2 = M

Hence, EHKM is the correct answer.

**10. Option (2) is correct.**

The pattern is:

A + 3	D
P + 4	T
E + 3	H
J + 3	M

Hence, PT is the correct answer.

**11. Option (4) is correct.**

The pattern is as follows:

2nd number =  $4 \times$  1st number.

Other than option (4), all other options follow this rule.

Hence, 11 – 55 is the correct answer.

**12. Option (4) is correct.**

The pattern is:

28 – 12 = 16
36 – 20 = 16
58 – 42 = 16
90 – 72 = 18

Hence, 72 – 90 is the correct answer.

**13. Option (4) is correct.**

The first letter of all the words is the same which is a. The second letter of the words Ale, Align, Alpine is l which is the 12<sup>th</sup> letter of the alphabetical series. The 3<sup>rd</sup> letter of the Ale is e which is the 5<sup>th</sup> letter of the alphabetical series. So, the word Ale will be placed first. The third letter of the word Align is i which is the 9<sup>th</sup> letter of alphabetical series and will be placed in the second place. The third letter of the word Alpine is p which is the 16<sup>th</sup> letter of the alphabetical series so Alpine will be placed at 3<sup>rd</sup>. The 2<sup>nd</sup> letter of word Amend is m which is the 13<sup>th</sup> letter of alphabetical series so amend will be placed 4<sup>th</sup>. The 2<sup>nd</sup> letter of the word Anatomy is n which is the 14<sup>th</sup> letter of the alphabetical series so Anatomy will be placed 5<sup>th</sup>.

Hence, 12534 is the correct answer.

**14. Option (2) is correct.**

The first letter of all the words is the same which is 'D'. The second letter of the words 'Den, Desk' is 'e' which is the 5<sup>th</sup> letter of the alphabetical series.

The 3<sup>rd</sup> letter of the word 'Den' is 'n' which is the 14<sup>th</sup> letter of the alphabetical series. So, 'Den' will be placed first.

The third letter of the word 'Desk' is 's' which is the 19<sup>th</sup> letter of the alphabetical series. So, the word 'desk' will be placed in the second place.

The 2<sup>nd</sup> letter of the word 'Doom' is 'o' which is the 15<sup>th</sup> letter of the alphabetical series. So, the word 'Doom' will be placed third. The second letter of the words 'Dragon, Drop' is 'r' which is the 18<sup>th</sup> letter of the alphabetical series. The 3<sup>rd</sup> letter of the word 'Dragon' is 'a' which is the first letter of the alphabetical series. So, 'Dragon' will be placed fourth. The third letter of the word 'Drop' is 'o' which is the 15<sup>th</sup> letter of the alphabetical series. So, the word 'Drop' will be placed fifth.

Therefore, the order will be Den, Desk, Doom, Dragon, Drop

Hence, 14523 is the correct answer.

**15. Option (1) is correct.**

The pattern is A + 1 B + 2 D + 3 G + 4 K

Hence, K is the correct answer.

**16. Option (2) is correct.**

The pattern is as follows:

V	W	R
-2	-2	-2
T	U	P
-2	-2	-2
R	S	N
-2	-2	-2
P	Q	L

Hence, PQL is the correct answer.

**17. Option (3) is correct.**

The pattern is 1<sup>st</sup> number  $\times 3 + 1 =$  2<sup>nd</sup> number.

$3 \times 3 + 1 = 10$                        $10 \times 3 + 1 = 31$

$31 \times 3 + 1 = 94$                        $94 \times 3 + 1 = 282 + 1 = 283$

Hence, 283 is the correct answer.

**18. Option (1) is correct.**

The pattern is multiplication of previous two numbers.

$3 \times 4 = 12$

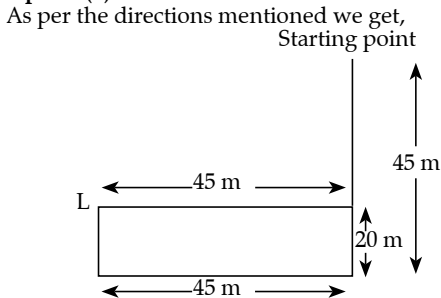
$12 \times 4 = 48$

$48 \times 12 = 576$

$576 \times 48 = 27648$

Hence, 27648 is the correct answer.

19. Option (4) is correct.



It can be clearly seen that Sunita is 45 m away from the point L.

20. Option (3) is correct.

The total number of students is  $28 + 6 - 1 = 33$ . We subtract 1 because Priyank comes 2 times one time from bottom and 2nd time from the top.

Hence, 33 is the correct answer.

21. Option (3) is correct.

The rank of Manu from bottom = 7<sup>th</sup>.

Shrey is 10<sup>th</sup> above Manu.

Shrey from bottom =  $(10 + 7) = 17$  bottom end.

Shrey is 8<sup>th</sup> from the top end.

Therefore, total number of people =  $17 + 8 - 1 = 24$ .

Hence, total number of people is 24.

22. Option (3) is correct.

We know Stop need four letters S, t, o, p.

So, in the word Instructor, we don't have the letter p; hence, Stop cannot be formed.

Hence, Stop is the correct answer.

23. Option (2) is correct.

In the word Court, we have the letters C, o, u, r, t.

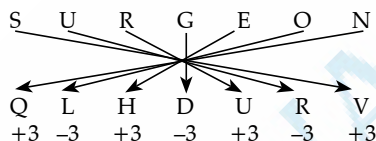
We have all the letters in the word Encourage but not t.

Since, Encourage does not contain t.

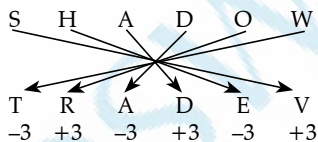
Hence, Court is the correct answer.

24. Option (2) is correct.

The pattern is:



Similarly,



Hence, TRADEV is the correct answer.

25. Option (2) is correct.

The pattern is the sum of letters in English alphabetical numbers.  $S = 19$   $U = 21$   $N = 14$

So,  $SUN = 19 + 21 + 14 = 54$ .

Similarly in CAT,  $C = 3$   $A = 1$   $T = 20$

Therefore,  $CAT = 3 + 1 + 20 = 24$ .

Hence, 24 is the correct answer.

26. Option (2) is correct.

Using option 2 we get

$14 \div 2 \times 4 > 6 \times 4$

$7 \times 4 > 24 \Rightarrow 28 > 24$

Hence,  $\div$ ,  $\times$ ,  $>$  and  $\times$  is the correct answer.

27. Option (3) is correct.

Using option 1, we get,

$$43 - 9 + 6 \div 3 \times 8$$

(Hint:  $\div$  cannot be exchanged because if we exchange divide with  $\times$ , then 3 cannot be divided by 8).

$$= 43 - 9 + 16$$

$$= 43 + 16 - 9 = 50$$

Therefore, LHS=RHS.

Hence, option - and + is the correct answer.

28. Option (4) is correct.

The pattern is  $49 - 2 = 47$

and  $90 - 6 = 84$

Similarly,  $5 \times 3\%7 = 53 - 7 = 46$ .

Hence, 46 is the correct answer.

29. Option (4) is correct.

$$1/4/3 = 254 \Rightarrow 1 + 1 = 2, 4 + 1 = 5, 3 + 1 = 4.$$

$$3/6/8 = 479 \Rightarrow 3 + 1 = 4, 6 + 1 = 7, 8 + 1 = 9.$$

$$5/2/7 = ? \Rightarrow 5 + 1 = 6, 2 + 1 = 3, 7 + 1 = 8.$$

$$= 638.$$

Hence, 638 is the correct answer.

30. Option (4) is correct.

The pattern is on taking column-wise we get,

$$\text{Column 1: } (7 + 5) \times 6 = 72.$$

$$\text{Column 2: } (3 + 1) \times 11 = 44.$$

$$\text{Column 3: } (8 + 2) \times 5 = 50.$$

Therefore, the value of ? is 44.

Hence, 44 is the correct answer.

31. Option (3) is correct.

On taking column-wise we get,

$$\text{Column 1: } 1 + 8 + 9 + 4 = 22$$

$$\text{Column 2: } 7 + 6 + 2 + 7 = 22$$

$$\text{Column 3: } 2 + 4 + 5 + ? = 22$$

$$11 + ? = 22 \Rightarrow ? = 22 - 11$$

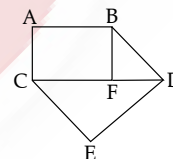
$$\Rightarrow ? = 11$$

Hence, 11 is the correct answer.

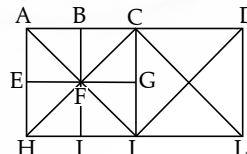
32. Option (1) is correct.

ABCE, ACDB.

Hence, 2 is the correct answer.



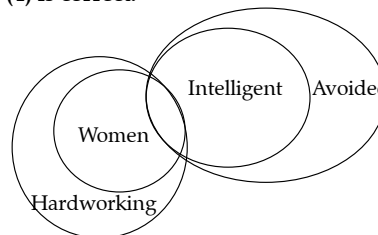
33. Option (2) is correct.



We know that when we have a rectangle with two diagonals, then we have  $2 \times 4 = 8$ , So, if we have such 2 rectangles, then we have 16 triangles. We also know that when we have a triangle with one perpendicular, then we have 3 triangles. So, we have such 4 triangles and total number of triangles will  $4 \times 3 = 12$ . So, the total we have  $16 + 12 = 28 - 2 = 26$ .

Hence, 26 is the correct answer.

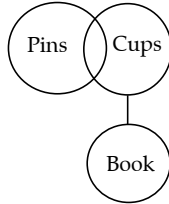
34. Option (4) is correct.



From the above Venn diagram, it is clearly shown that all the conclusions follow.

Hence, All Conclusions follow is the correct answer.

35. Option (2) is correct.



From the above diagram, it is clearly shown that only conclusion II follows.

36. Option (3) is correct.

We know that Z, R, P, X are adjacent to Q and no letter among them can be the opposite to Q. Now, only one letter is left which is S.

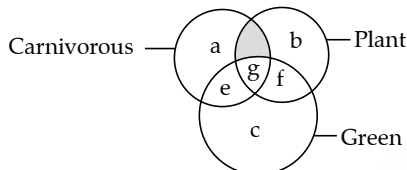
Hence, S is the opposite of Q.

37. Option (4) is correct.

We know that G, B, Y, W are adjacent to R and therefore cannot be the opposite to R. Now, only one letter is remaining which is C.

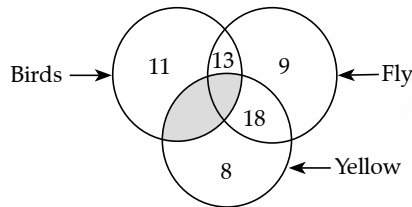
Hence, C is opposite to the letter R.

38. Option (1) is correct.



The highlighted part is a carnivorous plant. Hence, d is the correct answer which is option 1.

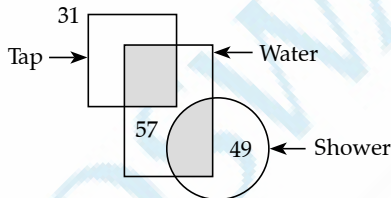
39. Option (2) is correct.



The highlighted part is the yellow Birds which is 32. Hence, 32 is the correct answer which is option 2.

40. Option (2) is correct.

The water which are either tap or shower is the highlighted part in the given figure.



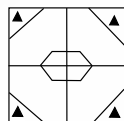
The part of tap which comes under water part and the part of shower which comes under water is the required part.

Therefore, Water either tap or shower =  $43 + 68 = 111$ .

Hence, 111 is the correct answer.

41. Option (1) is correct.

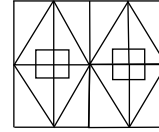
The option figure is shown in the figure and how it is embedded in the question figure



Hence, option 1 is the correct answer.

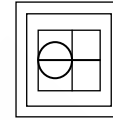
42. Option (3) is correct.

The option figure is shown in the figure which shows how it is embedded in the question figure.



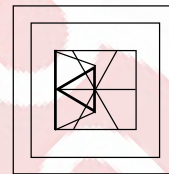
43. Option (2) is correct.

The question figure is shown and shows how it is embedded in the option figure.



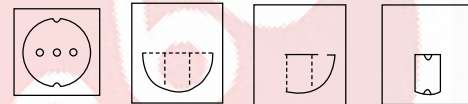
44. Option (2) is correct.

The question figure is shown below and shows how it is embedded the option figure.



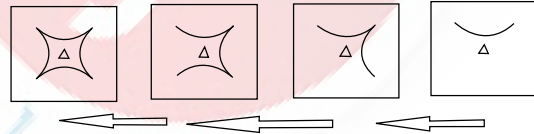
45. Option (2) is correct.

The process of unfolding a paper is shown below.



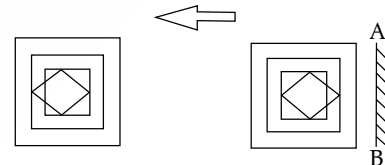
46. Option (1) is correct.

The process of unfolding is shown below in the figures.



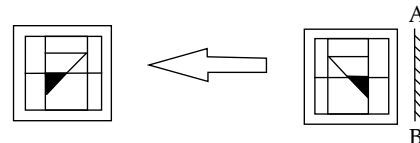
47. Option (2) is correct.

From the figure shown below, we can say that a figure will be rotated by 180°. When we place a mirror on the right-hand side, then the objects which appear on the left-hand side will appear on the right-hand side and objects which appear on the right-hand side will appear on the left-hand side.



48. Option (4) is correct.

The process is shown in the figure given below. We can simply rotate the figure by 180°. When we place the mirror on the right-hand side, then objects which appear on the left-hand side will appear on the right-hand side and the objects which appear on the right-hand side will appear on the left-hand side.



**49. Option (3) is correct.**

The given word is CHEAT. Using option 3, the first number is 41 and we will search 4 in the row and 1 in the column so at address 41, we have letter C and similarly for 14, we search for 1 in the row and 4 in the column on that address. We have H similarly as shown in the given matrix.

Therefore, C H E A T  
41 14 76 99 79

	0	1	2	3	4
0	H	I	G	C	N
1	C	N	I	G	
2	I	H	C	N	G
3	N	G	H	I	C
4	G		N	H	I

41  
C

	5	6	7	8	9
5	T	D	S	A	E
6	S	A	T	E	D
7	D		A	S	
8	A	T	E	D	S
9	E	S	D	T	

76  
E

**50. Option (4) is correct.**

The given word is PRICE. Using option 4, we have first 04 so the address for 04 in the Matrix is P and the address for 41 is R and the address for I is 69 as show in the matrix in which the highlighted address are having the given letters.

**51. Option (2) is correct.**

Foreign Direct Investment is abbreviated as FDI. It is an investment made by an individual or a company from the rest of the world for their long-term interest. It usually happens when an investor buys foreign business assets or establishes foreign business operations in a foreign company. In an open market, FDI is actively used.

**52. Option (4) is correct.**

In Hyper-inflation, wages and prices race against each other at breakneck speed. In simple terms, it is defined as rapidly rising inflation. Disinflation is the temporary slowing of the rate of inflation. Reflation is a policy that aims to reduce the effects of deflation, stimulate spending, and increase output. Stagflation is characterized by relatively high unemployment and slow or stagnant economic growth.

**53. Option (3) is correct.**

Banking is classified under the tertiary sector in an economy. The tertiary sector, also known as the service sector, includes economic activities such as transportation, banking, storage, and communication. The primary sector is reliant on nature and uses raw materials. Agriculture, fishing, mining, and other related activities are included. Manufacturing, construction, and processing are examples of secondary industries.

**54. Option (3) is correct.**

A basic feature of 'Oligopoly' is few sellers and a large number of buyers. Oligopoly occurs when only a few sellers sell different or identical products and dominate the market because they control the price of the product. Oligopoly characteristics include high barriers to new entry, price-setting ability, the interdependence of firms, maximized revenues, product differentiation, and non-price competition.

**55. Option (1) is correct.**

The Fifth Five-Year Plan emphasized the abolition of poverty and the attainment of self-sufficiency. The fifth Five Year Plan lasted from 1974 to 1978. Garibi Hatao, employment, justice, agricultural production, and defense were prioritized in this plan. The newly elected Moraji Desai government scrapped this plan in 1978. In 1975, the Electricity Supply Act was amended, a Twenty-Point Program (TPP) was launched, and the Indian National Highway System was established.

**56. Option (3) is correct.**

A democratic government is one in which the rulers are elected by the people. An autocratic government is one in which one person wields absolute power. Monarchic or monarchy refers to a state ruled by a monarch, who is born into the position and serves as the head. Authoritarian government is distinguished by blind submission to authority and restricted political freedom. As a result, it is clear that in a democratic government, the people choose their rulers.

**57. Option (3) is correct.**

'The God who gave us life also gave us liberty,' said Thomas Jefferson. He was one of the country's founding fathers. He was the third President of the United States and the author of the Declaration of Independence. Karl Max was an economist and historian who wrote Das Kapital. Plato was an ancient Greek philosopher and Aristotle's teacher. John Locke was a philosopher from England.

**58. Option (2) is correct.**

A 'Patriarchal Society' is a system that prioritizes men over women. It represents a male-dominated power structure in both individual relationships and organized society. It stifles societal development as a whole. Obsession with control, male centeredness, male identification, and male dominance are all characteristics of patriarchy.

**59. Option (4) is correct.**

Article 80 of the constitution specifies a maximum of 250 Rajya Sabha members, out of which 12 are nominated by the President and 238 are representatives of the Member States and Union Territories. Members nominated by the President must have special knowledge or practical experience in subjects such as literature, science, the arts, and social service. The Rajya Sabha currently has 245 members, 233 of whom are representatives of Member States and Union Territories of Delhi and Puducherry, and 12 of whom are nominated by the President. Rajya members are elected for a six-year term. The allocation of Rajya Sabha seats is outlined in the Fourth Schedule of the Constitution.

**60. Option (2) is correct.**

According to Article 72 of the Indian constitution, the President may grant pardon, reprieve, respite, or remission of punishment, or commute any person's sentence. Remission reduces the severity of the punishment without changing its character. For example, a two-year rigorous punishment could be reduced to a one-year rigorous punishment.

**61. Option (4) is correct.**

In the case of a Pocket veto, the President does not ratify, reject, or return the bill, but simply keeps it pending indefinitely. The President can use his veto power because the Constitution does not specify a time limit for deciding on a bill presented to him for his assent. President Zail Singh used his pocket veto to block the Indian Post Office (Amendment) Bill in 1986.

**62. Option (1) is correct.**

According to Article 62 of the Indian constitution, an election to fill a vacancy in the office of President caused by his death, resignation, or removal should be held as soon as possible after the occurrence of the vacancy, but no later than six months later. According to the article, this election should be completed before the term expires.

**63. Option (2) is correct.**

By the 61st Constitutional Amendment Act of 1988, Parliament reduced the voting age from 21 to 18 in 1989. The 61st Amendment to the Indian Constitution, officially

known as The Constitution (Sixty-first Amendment) Act, 1988, reduced the voting age for elections to the Lok Sabha and state legislatures from 21 to 18 years. This was accomplished by amending Article 326 of the Constitution, which pertains to Lok Sabha and Assemblies elections. The Universal Adult Franchise is the basis for elections to the Lok Sabha and State legislative assemblies in India, according to the Indian constitution.

**64. Option (3) is correct.**

In 1858, the East India Company ceased operations, and the British government took over complete control of India. On August 2, 1858, the UK Parliament passed the Government of India Act 1858. The British East India Company's operations were halted, and its functions were transferred to the Crown of British. The East India Company's main trading partners were Qing China and the Indian subcontinent.

**65. Option (3) is correct.**

A Harappan chariot sculpture was discovered in Daimabad, Maharashtra. Daimabad is a 1958 archaeological site that was discovered. Excavations were carried out here between 1976 and 1979. Lothal is a prehistoric Indus site in Gujarat. Banawali is an ancient Harappan site located on Saraswati's dry river bed. Kalibangan, which translates to "black bangles," is an ancient Indus site in Rajasthan.

**66. Option (2) is correct.**

The first Satyagraha began in Champaran to protest the cultivation of Indigo. Mahatma Gandhi started the movement to protest the injustice done to farmers in Bihar. Champaran district was part of the permanent settlement area and consisted of large Zamindari estates.

**67. Option (3) is correct.**

The Pala emperor Dharmapala (783–820 AD) established Vikramashila in response to a perceived decline in the quality of scholarship at Nalanda. Vikramashila, along with Nalanda, was one of the two most important centers of learning in India during the Pala Empire. It is now located in the Antichak village of the Bhagalpur district of Bihar. Around 1193, Muhammad bin Bakhtiyar Khalji's forces attacked it.

**68. Option (4) is correct.**

Clement Attlee was Prime Minister of England from July 26, 1945, until India gained independence on October 26, 1951. He oversaw the partition of India into India and Pakistan in 1947. He also contributed to the independence of Burma (Myanmar) and Ceylon (Sri Lanka).

**69. Option (3) is correct.**

Mount Etna is an active volcano and the highest active volcano in Europe. Mount Etna is an iconic site encompassing 19,237 uninhabited hectares on the highest part of Mount Etna, on the eastern coast of Sicily. Mount Etna is the highest Mediterranean island mountain and the most active stratovolcano in the world. Mount K2 is the world's second-highest peak. K2, at 8,611 meters above sea level, is the second-highest mountain on Earth, after Mount Everest. Mount Kilimanjaro is an inactive volcano and the tallest mountain in Africa. Mount Kilimanjaro is a dormant volcano in Tanzania. It has three volcanic cones: Kibo, Mawenzi, and Shira. It is the highest mountain in Africa and the highest single free-standing mountain above sea level in the world.

**70. Option (3) is correct.**

Europe and Asia are separated by the Ural Mountain Range. The Ural Mountains run along Kazakhstan's border from the Kara Sea to the Kazakh Steppe. They cover approximately 2500 kilometers. The Rocky Mountain Range is located on the continent of North America. The Himalayan Mountain Range, also known

as the Himalayas, is located in Asia. The Appalachian Mountain Range is the Rocky Mountain Range's eastern counterpart.

**71. Option (2) is correct.**

The Suez Canal is a well-known artificial sea-level waterway in Egypt. It connects two bodies of water, the Mediterranean Sea and the Red Sea, via the Suez Canal. The Suez Canal was considered for use in defining the border between Africa and Asia. The canal's construction begins in 1859 and is completed in ten years. On November 17, 1869, it was formally opened. Until 1956, the United Kingdom and France controlled the Suez Canal. The canal was returned to Egyptian control in 1956. The Suez Canal Authority (SCA) of Egypt owns and maintains the Canal. The Panama Canal links the Atlantic and Pacific oceans.

**72. Option (4) is correct.**

Madhya Pradesh has no coastline and no international frontier. It is located in the center of India. Jammu and Kashmir share borders with Pakistan, China, and Afghanistan. Uttar Pradesh and Nepal share an international border. Bihar and Nepal share an international border.

**73. Option (4) is correct.**

Marina Beach, a natural urban beach along the Bay of Bengal in Chennai, is the country's longest urban beach and the world's second-longest. The beach stretches 6.45 kilometers from near Fort St. George in the north to Foreshore Estate in the south. It is one of the busiest beaches in the country.

**74. Option (1) is correct.**

Veins transport deoxygenated blood from various parts of the body to the heart. The pulmonary veins transport oxygen-rich blood from the lungs to the left atrium. The superior vena cava and inferior vena cava are the two major types of veins that carry deoxygenated blood from various body parts. Arteries transport oxygen-rich blood from the heart to various body parts and tissues. Nerves transmit messages and signals from one body part to the next. Lungs play an important role in respiration.

**75. Option (3) is correct.**

The ape is a warm-blooded creature. Warm-blooded animals can generate their body heat. Warm-blooded animals include birds and mammals. Cold-blooded animals are those whose body temperature is affected by the outside temperature. Cold-blooded animals include fish, reptiles, and amphibians.

**76. Option (3) is correct.**

The gall bladder is where bile is stored. It is made by the liver and transported to the gallbladder via the bile duct. It aids in the breakdown of fatty acids and food digestion. The liver filters the blood that enters the body from the digestive tract. Kidneys aid in the removal of waste from the body in the form of urine. The Spleen is an organ fluid that acts as a blood filter.

**77. Option (3) is correct.**

Cardiac Muscle isn't a type of connective tissue. Cardiac muscle can only be found in the heart. Connective tissues are those that keep the body in shape and provide internal support. Connective tissue includes adipose tissue, reticular tissue, compact bone, and areolar tissue.

**78. Option (3) is correct.**

When blood flows through the valves and the valves close, a distinct sound called the heartbeat is produced. A normal healthy adult's heart beats 72 times per minute. Adults have a normal resting heart rate of 60 to 100 beats per minute. In general, a lower resting heart rate indicates more efficient heart function and

better cardiovascular fitness. A well-trained athlete, for example, may have a normal resting heart rate of closer to 40 beats per minute.

**79. Option (3) is correct.**

Muscle fatigue occurs as a result of lactic acid buildup. Muscle fatigue occurs in the body as a result of any physical activity or exercise. Soreness, cramps, shortness of breath, and other symptoms of muscle fatigue can occur. Adenosine triphosphate is ATP, and adenosine diphosphate is ADP. They are both organic compounds.

**80. Option (1) is correct.**

The conversion of hydrogen to helium is an inexhaustible source of energy for stars. The energy released by the gas's collapse into a star causes the star's core to become extremely hot. This, in turn, causes nuclear fusion to begin. The fusion reaction occurs when two hydrogen atoms combine to form a helium atom.

**81. Option (4) is correct.**

Gamma rays are the most common. They have the highest energies as well as the shortest wavelengths. Radio waves have the longest wavelengths and the lowest frequencies. From highest to lowest energy, these waves are as follows: Gamma rays > X rays > UV rays > visible light > infrared radiation > radio waves.

**82. Option (3) is correct.**

Clear nights are cooler than cloudy nights because clouds act as a blanket for the earth, trapping some of the hot day air, whereas cloudless nights have no protection, so all of the hot air rises into the sky. This is the radiation process in which energy waves travel through a vacuum as electromagnetic waves. The flow of electricity through an electrical element along a specific path is measured by conductance. Condensation is the transformation of water vapors into liquids.

**83. Option (3) is correct.**

Atoms are the smallest particles of any element that have all of the chemical and physical properties of that element. The atom contains three subatomic particles: the electron, the proton, and the neutron. The proton and neutron remain in the nucleus, while the electron follows a specific path around the nucleus. The electron is negatively charged, while the proton is positively charged. The Neutron is a neutral particle. Based on the preceding discussion, we can conclude that the subatomic particle with no electric charge is a neutron.

**84. Option (3) is correct.**

A printer is an example of Dot-Matrix. It is a type of printer that creates illustrations and characters by using pins. Printer types include dot matrix, laser, ink-jet, non-impact, and others. A printer is an output device that converts electronic data from a computer into a hard copy. A scanner is a device that takes images from physical objects and converts them to digital formats. A keyboard is an input device that allows you to type numbers, and letters, and perform other tasks. A piece of software is a set of instructions that allows a user to interact with a computer.

**85. Option (2) is correct.**

A bit is the smallest unit of memory. A bit is an abbreviation for a binary digit. A computer's memory is measured in Bytes. A hard disk's storage capacity is measured in Megabytes, Gigabytes, and Terabytes. 1 Gigabyte equals 1024 Megabytes. 1 Megabyte equals 1024 Kilobytes. 1 Terabyte equals 1024 Gigabytes. 1 Kilobyte equals 1024 Bytes.

**86. Option (4) is correct.**

Argon is a gas that is commonly used to fill incandescent light bulbs. It extends the life of the bulb by preventing the tungsten filament from deteriorating too quickly. Other gases used in lightning include helium, neon

nitrogen, and krypton. Inert gases react with the burning filament of the light bulb. As a result, we must use inert gases such as Argon or inactive nitrogen. Thomas Edison began serious research into developing a practical incandescent lamp in 1878, and Edison filed his first patent application for Improvement In Electric Lights on October 14, 1878.

**87. Option (2) is correct.**

Tear gas contains a significant amount of chlorine gas. Tear gas is made up of substances that irritate the eyes and mucous membranes, causing tears and stinging sensations. Tear gas is primarily composed of o-chlorobenzylidenemalononitrile (CS) and -chloroacetophenone (CN). Liquefied Petroleum Gas (LPG) is made up of butane or propane. Biogas is another name for gobar gas. It is created by decomposing organic matter in the absence of oxygen.

**88. Option (1) is correct.**

Excess salt + water = brine solution. It is a highly concentrated common saltwater solution found in salt lakes, seawater, and underground. It is used as a preservative in a variety of products, including pickles and meat packaging. Brine is also high in potassium, magnesium, sulfates, and chlorides.

**89. Option (3) is correct.**

The pH scale is used to express a substance's acidity or alkalinity based on the concentration of hydrogen ions in its solution. Soren Sorensen discovered the pH scale. The pH scale ranges from 0 to 14. If the pH is 7, the solution is acidic. If the pH is greater than 7, the solution is basic. If the pH of the solution is 7, it is neutral. Hydrogen potential is represented by pH. The number of H<sup>+</sup> ions and OH<sup>-</sup> ions produced by acids and bases determines their strength. The pH range of the human body is 7.0 to 7.8. Acid rain occurs when the pH of rainwater falls below 5.6. When the pH of the mouth falls below 5.5, tooth decay begins.

**90. Option (2) is correct.**

The primary source of lead pollution is automobile batteries. It is the source of the most lead pollution. Lead is a toxic substance and an environmental pollutant that affects several body systems. Lead's chemical formula is Pb, and its atomic number is 82.

**91. Option (1) is correct.**

The Montreal Protocol's primary goal is to protect the Ozone layer. The Montreal Protocol is a treaty that was signed on September 16, 1987. Its goal is to regulate the production and use of chemicals that contribute to the depletion of the Earth's ozone layer. It was initially signed by 46 countries, but it now has nearly 200 signatories.

**92. Option (2) is correct.**

Supersonic jets pollute the environment by thinning the O3 layer. Water is produced by aircraft in the form of exhaust gases. Commercial flights are all confined to the troposphere, but high-level supersonic aircraft inject pollutants into the stratosphere, causing the ozone layer to thin. Ozone (O3) is an oxygen allotrope. It is used as an insecticide, in water purification to preserve food, in the production of artificial silk and camphor, and as a bleaching agent.

**93. Option (1) is correct.**

The Union Ministry of Power launched the URJA MITRA app to provide real-time information sharing on the power supply. It provides state power distribution utilities with a mobile app, web portal, and centralized platform. BHIM stands for Bharat Interface for Money, and it uses UPI to make transactions quick, simple, and easy. UMANG, which stands for Unified Mobile Application for New-age Governance, is a single platform through which all Indian citizens can access pan-India e-Government services.

94. **Option (3) is correct.**

The invention of portland cement is usually attributed to Joseph Aspdin of Leeds, Yorkshire, England, who received a patent in 1824 for a material made from a synthetic mixture of limestone and clay. He named the product "portland cement" after the material's supposed resemblance to portland stone, a type of limestone used in construction in England. Aspdin's product may have been too lightly burned to be a true portland cement, and the true prototype was possible that was produced around 1850 by Isaac Charles Johnson in southeastern England.

95. **Option (4) is correct.**

Thimmaiah, Nithin Nithin Thimmaiah is a Karnataka-based Indian Field Hockey player from Kodagu (Coorg). Since his debut in 2012, he has represented India in several international tournaments. In domestic hockey, he currently represents the Comptroller and Auditor General of India (CAG).

96. **Option (1) is correct.**

Temple	Religion	Place
Dilwara Temple	Jainism	Mount Abu
Golden Temple	Sikhism	Amritsar
Lotus Temple	Bahai	Delhi
Sun Temple	Hinduism	Konark

97. **Option (2) is correct.**

Former Andhra Pradesh Chief Minister Chandrababu Naidu received the 'Transformative Chief Minister Award' on May 8, 2017. He was recognized for his efforts at the state level to strengthen ties between the two countries. Aruna Sundararajan, Secretary, Ministry of Electronics and Information Technology, received the same award for distinguished public service. In 2016, Amitabh Kant, CEO of NITI Aayog, received this award. Parameswaran Iyer will be the next Niti Ayog CEO.

98. **Option (3) is correct.**

Exile: A Memoir was written by Taslima Nasrin. Despite forced exile and multiple fatwas calling for her death, Taslima Nasrin is an award-winning Bangladeshi writer, physician, secular humanist, and human rights activist known for her powerful writings on women's oppression and unflinching criticism of religion.

99. **Option (2) is correct.**

Pakistan has leased Gwadar port to a Chinese state-owned firm for 40 years. On April 20, 2017, this was completed. China will keep more than 90% of the revenue generated by Gwadar's marine operations and 85% of the revenue generated by the management of an adjacent free zone under this contract. The port is strategically important to China.

100. **Option (3) is correct.**

South Asian Association for Regional Cooperation (SAARC) is a South Asian regional intergovernmental organization and geopolitical union. Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka are its members. SAARC is an acronym that stands for South Asian Association for Regional Cooperation. Initially, there were seven members, but Afghanistan later joined. SAARC was established in Dhaka in 1985 to promote regional and economic integration.

101. **Option (2) is correct.**

$$\begin{aligned} \therefore N &= \frac{\sqrt{7} - \sqrt{3}}{\sqrt{7} + \sqrt{3}} \\ \Rightarrow N + \frac{1}{N} &= \frac{\sqrt{7} - \sqrt{3}}{\sqrt{7} + \sqrt{3}} + \frac{\sqrt{7} + \sqrt{3}}{\sqrt{7} - \sqrt{3}} \end{aligned}$$

$$\begin{aligned} &= \frac{(\sqrt{7} - \sqrt{3})^2 + (\sqrt{7} + \sqrt{3})^2}{(\sqrt{7} + \sqrt{3})(\sqrt{7} - \sqrt{3})} \\ &= \frac{7 + 3 - 2\sqrt{21} + 7 + 3 + 2\sqrt{21}}{7 - 3} = \frac{20}{4} = 5 \end{aligned}$$

$$\begin{cases} (a - b)(a + b) = a^2 - b^2 \\ (a + b)^2 = a^2 + b^2 + 2ab \\ (a - b)^2 = a^2 + b^2 - 2ab \end{cases}$$

102. **Option (2) is correct.**

$$\begin{aligned} &(2 + 1)(2^2 + 1)(2^4 + 1)(2^8 + 1) \\ &= (2 - 1)(2 + 1)(2^2 + 1)(2^4 + 1)(2^8 + 1) \quad [\because 2 - 1 = 1] \\ &= (2^2 - 1)(2^2 + 1)(2^4 + 1)(2^8 + 1) \\ & \qquad \qquad \qquad [\because (a - b)(a + b) = (a^2 - b^2)] \\ &= (2^4 - 1)(2^4 + 1)(2^8 + 1) \qquad \qquad [\because (a^m)^n = a^{mn}] \\ &= (2^8 - 1)(2^8 + 1) = 2^{16} - 1 \end{aligned}$$

103. **Option (2) is correct.**

Here, we will compare given numbers by squaring them.

$$\begin{aligned} (\sqrt{10} + \sqrt{4})^2 &= 10 + 4 + 2\sqrt{40} = 14 + 2\sqrt{40} \\ (\sqrt{11} + \sqrt{3})^2 &= 11 + 3 + 2\sqrt{33} = 14 + 2\sqrt{33} \\ (\sqrt{7} + \sqrt{7})^2 &= 7 + 7 + 2\sqrt{49} = 14 + 2\sqrt{49} \end{aligned}$$

Clearly, square of  $\sqrt{11} + \sqrt{3}$  is smallest.  
So,  $\sqrt{11} + \sqrt{3}$  is smallest among given numbers.

104. **Option (3) is correct.**

$\therefore$  Nearest perfect square to 709 is 729.  
So, we will add 20 (729 - 709) to 709 for making it a perfect square.

105. **Option (1) is correct.**

We know that, if a number is divisible by 11, then difference of sum of its odd place digits and even place digits is also divisible by 11.  
For  $34N$ , that difference is  $(3 + N) - 4$  from given options, if  $N = 1$  then  $(3 + 1) - 4 = 0$  which is divisible by 11  
 $\Rightarrow N = 1$

106. **Option (2) is correct.**

$\therefore P$  is four times efficient as  $Q$ .  
 $P$  complete a work in  $x$  days.  
 $\Rightarrow Q$  will complete same work in  $4 \times x = 4x$  days.  
When both work together, work will complete in

$$\frac{1}{\frac{1}{x} + \frac{1}{4x}} \text{ days} = \frac{4x}{5} = \frac{4}{5}x$$

Now, as per the given information

$$\begin{aligned} 4x - x &= 45 \\ \Rightarrow x &= 15 \end{aligned}$$

So, both will complete work in  $\frac{4}{5} \times 15 = 12$  days

107. **Option (3) is correct.**

Let outlet pipe can empty the tank in  $x$  hours.  
All pipes together can fill tank in 20 hours.  
According to question.

$$\begin{aligned} \frac{1}{10} + \frac{1}{12} - \frac{1}{x} &= \frac{1}{20} \\ \Rightarrow \frac{1}{10} + \frac{1}{12} - \frac{1}{20} &= \frac{1}{x} \Rightarrow \frac{6 + 5 - 3}{60} = \frac{1}{x} \end{aligned}$$



$$\Rightarrow \frac{8}{60} = \frac{1}{x} \Rightarrow x = \frac{15}{2}$$

$\therefore$  Outlet pipe can empty 80 gallons/hour.

$$\text{So, total capacity of tank} = 80 \times \frac{15}{2} = 600 \text{ gallons.}$$

**108. Option (3) is correct.**

Net discounts of two successive discounts of

$$a\% \text{ \& } b\% = a\% + b\% - \frac{ab}{100}\%$$

$$\text{Required net discount} = \left( 40 + 20 - \frac{40 \times 20}{100} \right)\%$$

$$= (60 - 8)\% = 52\%$$

**109. Option (3) is correct.**

S.P. of article = ₹ 6552

Discount % = 22 %

$$\therefore \text{S.P.} = \frac{\text{C.P.}}{100} \times (100 - \text{discount \%}) = \frac{\text{C.P.}}{100} \times 78$$

$$\Rightarrow \text{C.P.} = \frac{6552 \times 100}{78} = ₹ 8400$$

**110. Option (1) is correct.**

$$\therefore 2A = 3B$$

$$\Rightarrow A = \frac{3B}{2}$$

$$\text{Also, } 3B = 2C$$

$$\Rightarrow C = \frac{3}{2}B$$

$$\text{Now, } A : B : C = \frac{3B}{2} : B : \frac{3B}{2}$$

$$= \frac{3}{2} : 1 : \frac{3}{2} = 3 : 2 : 3$$

**111. Option (1) is correct.**

Let total investment = 40 units (LCM of 5&8)

$$\text{Investment of Raman} = \frac{2}{5} \times 40 = 16 \text{ units}$$

$$\text{Investment of Manan} = \frac{3}{8} \times 40 = 15 \text{ units}$$

Investment of Kamal = 40 - 16 - 15 = 9 units

Profit is distributed in proportion to investments.

$\therefore$  Profit will be distributed among them in ratio = 16 : 15 : 9.

**112. Option (3) is correct.**

Sum of squares of first "n" natural numbers

$$= \frac{n(n+1)(2n+1)}{6}$$

$\Rightarrow$  Sum of squares of first 19 natural numbers

$$= \frac{19 \times (19+1) \times (38+1)}{6} = \frac{10 \times 20 \times 39}{6} = 19 \times 10 \times 13$$

$$\text{Required average} = \frac{19 \times 10 \times 13}{19} = 130$$

**113. Option (3) is correct.**

$$\therefore \text{Average} = \frac{\text{Sum of observations}}{\text{Number of observations}}$$

Average of runs scored by 5 players = 49

$$\Rightarrow 49 = \frac{\text{Sum of runs scored by 5 players}}{5}$$

$\Rightarrow$  Sum of runs scored by 5 players = 245

Let runs scored by 5th player = x

$$\therefore x + 75 + 30 + 62 + 21 = 245$$

$$\Rightarrow x = 245 - 188 = 57$$

Fifth player scored 57 runs.

**114. Option (4) is correct.**

Let shopkeeper sells "x" mangoes for ₹ 1

$$\text{S.P. of one mango} = ₹ \frac{1}{x}$$

$$\text{C.P. of one mango} = ₹ \frac{1}{15}$$

Loss = 25%

$$\therefore \text{S.P.} = \frac{(100 - 25)}{100} \times \text{C.P.}$$

$$\Rightarrow \frac{1}{x} = \frac{75}{100} \times \frac{1}{15} = \frac{3}{4 \times 15} = \frac{1}{20} \Rightarrow x = 20$$

So, he sells 20 mangoes for ₹1.

**115. Option (2) is correct.**

Let C.P. of fan = ₹ x

According to first condition

$$x = \frac{1900}{95} \times 100$$

$$\left[ \therefore \text{C.P.} = \frac{\text{S.P.} \times (100 - \text{Loss}\%)}{100} \right]$$

$$x = 2000$$

So, C.P. of fan = ₹ 2000

$$\text{Now, S.P. of fan at 20\% gain} = 2000 \times \frac{120}{100} = ₹ 2400$$

**116. Option (1) is correct.**

Let the initial number be x.

According to question:

$$\frac{40}{100}x = 290$$

$$\Rightarrow x = \frac{2900}{4}$$

$$20\% \text{ more than } x = \frac{120}{100} \times x$$

$$= \frac{12}{10} \times \frac{2900}{4} = 3 \times 290 = 870$$

**117. Option (3) is correct.**

$$\text{We know that: Final value} = \text{Present value} \left[ 1 - \frac{r}{100} \right]^n$$

Where, r  $\rightarrow$  rate of depreciation

n  $\rightarrow$  number of years

Final value of table = ₹ 32000

Rate of depreciation = 20%

Number of years, n = 2

As per the problem

$$32000 = P \left[ 1 - \frac{20}{100} \right]^2$$

$$\Rightarrow 32000 = P \times \frac{4}{5} \times \frac{4}{5}$$

$$\Rightarrow P = \frac{32000 \times 5 \times 5}{4 \times 4} = 50000$$

Present value of table = ₹ 50000

**118. Option (3) is correct.**Let the usual speed =  $x$  km/hrand usual time to travel 21 km =  $\frac{21}{x}$  hr

According to question,

$$-\frac{21}{x+12} + \frac{21}{x} = \frac{1}{9} \quad \left[ \because 6\frac{6}{9} \text{ min} = \frac{60}{9} \text{ min} = \frac{1}{9} \text{ hr} \right]$$

$$\frac{-21x + 21x + 252}{x^2 + 12x} = \frac{1}{9}$$

$$\Rightarrow x^2 + 12x - 2268 = 0$$

$$\Rightarrow x^2 + 54x - 42x - 2268 = 0$$

$$\Rightarrow (x + 54)(x - 42) = 0$$

$$\Rightarrow x = -54 \text{ (speed cannot be negative)}$$

$$\Rightarrow x = 42$$

So, usual speed of motorcyclist = 42 km/hr.

**119. Option (4) is correct.**Let speed of bus increases by " $d$ " km/hr.

So, distance travel by bus in 7hr where the initial speed

$$\text{is } 33 \text{ km/hr} = \frac{7}{2}[2 \times 33 + (7-1)d]$$

According to question,

$$\frac{7}{2}[66 + 6d] = 315$$

$$\Rightarrow 33 + 3d = \frac{315}{7} = 45$$

$$\Rightarrow 3d = 45 - 33 = 12$$

$$\Rightarrow d = 4$$

So, speed of bus increases by 4 km/hr every hour.

**120. Option (4) is correct.**Principal amount,  $P = ₹ 12500$ Rate of compound interest,  $r = 12\%$ Time,  $n = 2$  year

$$\therefore \text{Compound Interest} = P \left[ \left( 1 + \frac{r}{100} \right)^n - 1 \right]$$

$$= 12500 \left[ \left( 1 + \frac{12}{100} \right)^2 - 1 \right]$$

$$= 12500 \left[ (1.12)^2 - 1 \right]$$

$$= 12500 \times 0.25444 = ₹ 3180$$

**121. Option (1) is correct.**Let the amount lent =  $₹ P$ Rate of interest,  $r = 20\%$ Time,  $n = 2$ 

According to question

$$P \left[ 1 + \frac{r}{200} \right]^{2n} - P \left[ 1 + \frac{r}{100} \right]^n = 241$$

$$\Rightarrow P \left[ \left( 1 + \frac{20}{200} \right)^4 - \left( 1 + \frac{20}{100} \right)^2 \right] = 241$$

$$\Rightarrow P \left[ (1.1)^4 - (1.2)^2 \right] = 241$$

$$\Rightarrow P [1.4641 - 1.44] = 241$$

$$\Rightarrow P = \frac{241}{0.0241} = ₹ 10000$$

**122. Option (3) is correct.**

Number of males in the city in 2015 = 35000

Number of females in the city in 2015 = 60000  
- 35000 = 25000

Ratio of male and female population in 2015

$$= \frac{35000}{25000} = \frac{7}{5} = 7 : 5$$

**123. Option (1) is correct.**

Number of males in the city in 2016 = 40000

Number of females in the city in 2016 = 32000

Number of males more than females

$$= 40000 - 32000 = 8000$$

$$\therefore \text{Required percentage} = \frac{8000}{32000} \times 100 = 25\%$$

**124. Option (2) is correct.**Number of females in 2014 =  $(54 - 34) \times 1000$   
= 20000

Total population in the city in 2014 = 54000

$$\therefore \text{Required percentage} = \frac{20000}{54000} \times 100$$

$$= 37.03\%$$

**125. Option (4) is correct.**Female population in 2015 =  $(60 - 35) \times 1000 = 25000$ Female population in 2014 =  $(54 - 34) \times 1000 = 20000$ 

$$\text{Required population} = \frac{25000}{20000} \times 100 = 125\%$$

**126. Option (4) is correct.**If  $d_1$  &  $d_2$  are diagonals of rhombus then side of rhombus

$$= \frac{1}{2} \sqrt{d_1^2 + d_2^2}$$

$$\therefore \text{Side of rhombus, } a = \frac{1}{2} \sqrt{16^2 + 30^2} = \frac{1}{2} \sqrt{1156} = 17 \text{ cm}$$

$$\therefore \text{Perimeter of rhombus} = 4a = 4 \times 17 = 68 \text{ cm}$$

**127. Option (3) is correct.**Let the radii of the two cones are  $r_1$  &  $r_2$  and their slant heights be  $l_1$  &  $l_2$  respectively.C.S.A of cone =  $\pi r l$ Where,  $r$  is radius and  $l$  is slant height.

According to question.

$$\frac{\text{C.S.A} - 1}{\text{C.S.A} - 2} = \frac{\pi r_1 l_1}{\pi r_2 l_2}$$

$$\Rightarrow \frac{1}{4} = \frac{r_1 \times 2}{r_2 \times 1}$$

$$[\because l_1 : l_2 = 2 : 1 \text{ \& C.S.A-1 : C.S.A-2} = 1 : 4]$$

$$\Rightarrow \frac{r_1}{r_2} = \frac{1}{8} = 1 : 8$$

Ratio of the radius of the two cones = 1 : 8

**128. Option (1) is correct.**Let the radius of hemisphere =  $R$  unitsand the radius of sphere =  $r$  units $\therefore$  Total surface area of hemisphere =  $3\pi R^2$ and total surface area of sphere =  $4\pi r^2$ 

$$\text{Also, } R = 2r$$

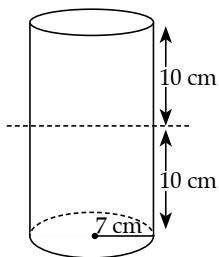
...(i)

$$\frac{\text{T.S.A of hemisphere}}{\text{T.S.A of sphere}} = \frac{3\pi R^2}{4\pi r^2} = \frac{3(2r)^2}{4r^2}$$

(using eqn. i)

$$= \frac{12r^2}{4r^2} = 3 : 1$$

**129. Option (2) is correct.**Radius of base of cylinder,  $r = 7$  cmLength of cylinder,  $h = 20$  cm



When cylinder is bisected from its height we will get two identical cylinder of radius 7 cm and height of 10 cm.

$$\begin{aligned} \text{Total surface area of bigger cylinder} &= 2\pi r(r+h) \\ &= 2\pi \times 7(7+20) = 14\pi \times 27 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Total surface area of two smaller cylinder} &= 2 \times 2\pi r(r+h) \\ &= 28\pi(7+10) = 28\pi \times 17 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Percentage increase in T.S.A} &= \left[ \frac{(28 \times 17\pi) - (14 \times 27 \times \pi)}{14 \times 27 \times \pi} \right] \times 100 \\ &= \frac{34 - 27}{27} \times 100 = \frac{700}{27} = 25.93\% \end{aligned}$$

**130. Option (3) is correct.**

Let side of rhombus =  $a$  cm  
 $\therefore$  Perimeter of rhombus =  $4a = 80$  cm  
 $\Rightarrow a = 20$  cm

If diagonals of rhombus are  $d_1$  &  $d_2$  then

$$a = \frac{1}{2} \sqrt{d_1^2 + d_2^2} \Rightarrow 20 = \frac{1}{2} \sqrt{(24)^2 + d_2^2}$$

[ $\because$  one of diagonal is 24 cm]

$$\Rightarrow 40 = \sqrt{576 + d_2^2}$$

Squaring both sides

$$\begin{aligned} \Rightarrow 1600 &= 576 + d_2^2 \\ \Rightarrow d_2 &= \sqrt{1600 - 576} = \sqrt{1024} = 32 \text{ cm} \end{aligned}$$

$$\text{Now area of rhombus} = \frac{d_1 \times d_2}{2} = \frac{24 \times 32}{2} = 384 \text{ cm}^2$$

**131. Option (2) is correct.**

$$\begin{aligned} \therefore \frac{p^2 + q^2}{r^2 + s^2} &= \frac{pq}{rs} \\ \Rightarrow \frac{p^2 + q^2}{pq} &= \frac{r^2 + s^2}{rs} \\ \Rightarrow \frac{(p+q)^2 - 2pq}{pq} &= \frac{(r+s)^2 - 2rs}{rs} \end{aligned}$$

[ $\because a^2 + b^2 = (a+b)^2 - 2ab$ ]

$$\begin{aligned} \Rightarrow \frac{(p+q)^2}{pq} &= \frac{(r+s)^2}{rs} \\ \Rightarrow (p+q)^2 &= \frac{(r+s)^2}{rs} \times pq \quad \dots(i) \end{aligned}$$

$$\text{Similarly, } (p-q)^2 = \frac{(r-s)^2}{rs} \times pq \quad \dots(ii)$$

On dividing eqn ... (i) by eqn ... (ii)

$$\begin{aligned} \frac{p+q}{p-q} &= \frac{r+s}{r-s} \\ \Rightarrow \frac{p+q}{p-q} &= \frac{r+s}{r-s} \end{aligned}$$

**132. Option (3) is correct.**

$$\begin{aligned} P(x) &= 3x^2 - 4x + 1 = 3x^2 - 3x - x + 1 \\ &= (3x-1)(x-1) \end{aligned}$$

Put  $P(x) = 0$

$$\therefore (3x-1)(x-1) = 0$$

$$\Rightarrow x = 1, \frac{1}{3} \quad \text{[zeros of } P(x)\text{]}$$

$\therefore P(x)$  divide the given expression. So, 1 &  $\frac{1}{3}$  will also

be zeros of that expression.

$$\begin{aligned} F(x) &= px^3 - 8x^2 - qx + 1 \\ F(1) &= p - 8 - q + 1 = 7 \\ \Rightarrow p - q &= 7 \quad \dots(i) \end{aligned}$$

$$\begin{aligned} F\left(\frac{1}{3}\right) &= \frac{p}{27} - \frac{8}{9} - \frac{q}{3} + 1 = 0 \\ \Rightarrow p - 24 - 9q + 27 &= 0 \\ \Rightarrow p - 9q &= -3 \quad \dots(ii) \end{aligned}$$

On solving (i) and (ii), we get

$$p = \frac{33}{4} \text{ and } q = \frac{5}{4}$$

**133. Option (3) is correct.**

$$\begin{aligned} a^2 + b^2 + c - ab - bc - ca &= \frac{2a^2 + 2b^2 + 2c^2 - 2ab - 2bc - 2ca}{2} \\ &= \frac{(a-b)^2 + (b-c)^2 + (c-a)^2}{2} \\ &= \frac{1^2 + 1^2 + (-2)^2}{2} \quad \left[ \begin{array}{l} \because a-b = 2017 - 2016 \\ b-c = 2016 - 2015 \\ c-a = 2015 - 2017 \end{array} \right] \\ &= \frac{1+1+4}{2} = \frac{6}{2} = 3 \end{aligned}$$

**134. Option (4) is correct.**

$$\begin{aligned} \therefore x^2 - 3x + 1 &= 0 \\ \Rightarrow x^2 + 1 &= 3x \\ \Rightarrow x + \frac{1}{x} &= 3 \quad \dots(i) \end{aligned}$$

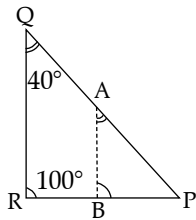
$$\begin{aligned} \text{Now, } x^3 + \frac{1}{x^3} &= \left(x + \frac{1}{x}\right)^3 - 3\left(x + \frac{1}{x}\right) \\ &= (3)^3 - 3 \times 3 \quad \text{(using eqn. (i))} \\ &= 27 - 9 = 18 \end{aligned}$$

**135. Option (4) is correct.**

$$\begin{aligned} \therefore \frac{6x-1}{x} + \frac{7y-1}{y} + \frac{8z-1}{z} &= 0 \\ \Rightarrow \frac{6x}{x} - \frac{1}{x} + \frac{7y}{y} - \frac{1}{y} + \frac{8z}{z} - \frac{1}{z} &= 0 \\ \Rightarrow 6 + 7 + 8 - \frac{1}{x} - \frac{1}{y} - \frac{1}{z} &= 0 \\ \Rightarrow 6 + 7 + 8 + \frac{1}{x} + \frac{1}{y} + \frac{1}{z} &= 21 \end{aligned}$$

**136. Option (1) is correct.**

$$\begin{aligned} \therefore \angle P : \angle Q : \angle R &= 2 : 2 : 5 \\ \text{Let } \angle P &= 2x, \angle Q = 2x \text{ \& } \angle R = 5x \\ \text{By angle sum property of triangle.} \\ \angle P + \angle Q + \angle R &= 2x + 2x + 5x = 180^\circ \\ \Rightarrow x &= 20^\circ \\ \text{So, } \angle P &= 40^\circ, \angle Q = 40^\circ \text{ \& } \angle R = 100^\circ \\ \therefore \angle P &= \angle Q \Rightarrow \Delta PQR \text{ is isosceles triangle} \end{aligned}$$



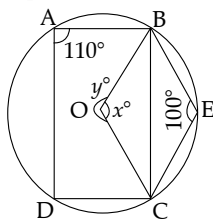
As per the given information we have drawn the figure.

$$\begin{aligned} \therefore \angle Q &= \angle PAB = 40^\circ \\ &\quad \text{[Corresponding angles]} \\ \angle R &= \angle PBA = 100^\circ \\ \angle PBA - \angle PAB &= 100^\circ - 40^\circ = 60^\circ \end{aligned}$$

137. Option (2) is correct.

From the figure,  $\angle y = 2 \times 100^\circ = 200^\circ$

[ $\therefore$  Angle subtended by an arc at the centre is twice the angle at remaining part]



Now,  $\angle x + \angle y = 360^\circ$  [Complete angle]

$$\Rightarrow \angle x + 200^\circ = 360^\circ$$

$$\Rightarrow x^\circ = 160^\circ$$

In  $\triangle OBC$   $OB = OC$  (radii of circle)

$$\Rightarrow \angle OBC = \angle OCB = m$$

[angles opposite to equal sides are also equal]

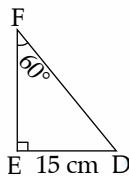
$\therefore$  By angle sum property of triangle,

$$x + m + m = 180^\circ$$

$$\Rightarrow 160 + m + m = 180^\circ \Rightarrow m = 10^\circ$$

$$\therefore \angle OCB = 10^\circ$$

138. Correct option is (1)



In right  $\triangle DEF$

$$\tan 60^\circ = \frac{ED}{EF}$$

$$\Rightarrow \sqrt{3} = \frac{15}{EF} \Rightarrow EF = \frac{15}{\sqrt{3}} = \frac{3 \times 5}{\sqrt{3}}$$

$$\Rightarrow EF = 5\sqrt{3} \text{ cm}$$

139. Option (2) is correct.

Let  $QT = PQ = x$  cm

$$\therefore \text{Area of right } \triangle PQT = \frac{1}{2} \times QT \times PQ$$

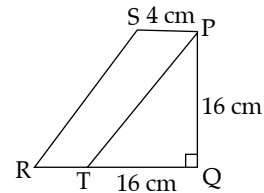
$$\Rightarrow \frac{1}{2} x^2 = 128$$

$$\Rightarrow x^2 = 256$$

$$\Rightarrow x = 16 \text{ cm}$$

Now,  $PQ = 4PS$

$$\Rightarrow PS = \frac{PQ}{4} = \frac{16}{4} = 4 \text{ cm}$$



From the figure,

$PS = RT = 4$  cm and  $PQ \perp QR$

$$\therefore \text{Area of } PTRS = PQ \times RT = 16 \times 4 = 64 \text{ cm}^2$$

140. Option (3) is correct.

As per the secant - Tangent theorem

$$AB^2 = AC \times AD$$

$$\Rightarrow 12^2 = 8 AD$$

$$\Rightarrow AD = 18 \text{ cm}$$

Now in  $\triangle ABD$

$$BD = \sqrt{AD^2 - AB^2}$$

[using Pythagoras theorem]

$$= \sqrt{324 - 144} = \sqrt{180} = 6\sqrt{5}$$

$$\text{Now, radius of circle, } r = \frac{BD}{2} = 3\sqrt{5} \text{ cm}$$

141. Option (4) is correct.

$$\therefore \sec \theta + \operatorname{cosec} \theta = \sqrt{2} \sec(90^\circ - \theta)$$

$$\Rightarrow \sec \theta + \operatorname{cosec} \theta = \sqrt{2} \operatorname{cosec} \theta$$

[ $\therefore \sec(90^\circ - \theta) = \operatorname{cosec} \theta$ ]

$$\Rightarrow \sec \theta = (\sqrt{2} - 1) \operatorname{cosec} \theta$$

$$\Rightarrow \frac{1}{\cos \theta} = (\sqrt{2} - 1) \frac{1}{\sin \theta}$$

$$\Rightarrow \frac{\cos \theta}{\sin \theta} = \frac{1}{\sqrt{2} - 1}$$

$$\cot \theta = \frac{1}{\sqrt{2} - 1} \times \frac{\sqrt{2} + 1}{\sqrt{2} + 1} = \frac{\sqrt{2} + 1}{2 - 1}$$

$$\Rightarrow \cot \theta = \sqrt{2} + 1$$

142. Option (3) is correct.

$$\left[ \frac{1}{\operatorname{cosec} \theta + \cot \theta} \right]^2 = \left[ \frac{1}{\frac{1}{\sin \theta} + \frac{\cos \theta}{\sin \theta}} \right]^2$$

$$= \left[ \frac{1}{\frac{1 + \cos \theta}{\sin \theta}} \right]^2 = \left[ \frac{\sin \theta}{1 + \cos \theta} \right]^2$$

$$= \frac{\sin^2 \theta}{(1 + \cos \theta)^2} = \frac{1 - \cos^2 \theta}{(1 + \cos \theta)^2}$$

$$\left[ \therefore \operatorname{cosec} \theta = \frac{1}{\sin \theta}, \cot \theta = \frac{\cos \theta}{\sin \theta} \text{ \& } \sin^2 = 1 - \cos^2 \theta \right]$$

$$= \frac{(1 - \cos \theta)(1 + \cos \theta)}{(1 - \cos \theta)^2} = \frac{1 - \cos \theta}{1 + \cos \theta}$$

143. Option (2) is correct.

We know that  $\cos(90^\circ - A) = \sin A$

$$\therefore \sin(\theta + 23^\circ) = \cos 58^\circ = \cos(90^\circ - 32^\circ)$$

$$\Rightarrow \sin(\theta + 23^\circ) = \sin 32^\circ$$

$$\Rightarrow \theta + 23^\circ = 32^\circ$$

$$\Rightarrow \theta = 9^\circ$$

$$\text{Now } \cos 5\theta = \cos 45^\circ = \frac{1}{\sqrt{2}}$$

144. Option (4) is correct.

$$\frac{x \sin \theta}{x \cos \theta} = \frac{5\sqrt{\frac{3}{2}}}{\frac{5}{2}} = \sqrt{3}$$

$$\Rightarrow \frac{\sin \theta}{\cos \theta} = \tan \theta = \sqrt{3}$$

$$\therefore \tan 60^\circ = \sqrt{3} \Rightarrow \theta = 60^\circ$$

$$x \sin 60^\circ = \frac{5\sqrt{3}}{2}$$

$$\Rightarrow x \sin \theta = \frac{5\sqrt{3}}{2} \Rightarrow x \frac{\sqrt{3}}{2} = \frac{5\sqrt{3}}{2}$$

$$\Rightarrow x = 5$$

145. Option (4) is correct.

$$\therefore \cos 30^\circ = \frac{\sqrt{3}}{2} \text{ and given that } \cos \theta = \frac{\sqrt{3}}{2}$$

$$\Rightarrow \theta = 30^\circ$$

$$\text{Now, } \theta + \phi = \frac{2}{3} \pi$$

$$\Rightarrow 30^\circ + \phi = \frac{2}{3} \times 180^\circ \quad [\pi = 180^\circ]$$

$$\Rightarrow \phi = 120^\circ - 30^\circ = 90^\circ$$

$$\sin \phi = \sin 90^\circ = 1$$

146. Option (1) is correct.

Percentage of expenditure on rent = 8%

$$\text{So, Expenditure on rent} = \frac{8}{100} \times 26000 = \text{'2080}$$

147. Option (3) is correct.

$$\text{Expenditure on Fuel} = \frac{20}{100} \times 26000 = \text{'5200}$$

$$\text{His saving} = \frac{22}{100} \times 26000 = \text{'5720}$$

$$\text{Expenditure on transport} = \frac{15}{100} \times 26000 = \text{₹ 3900}$$

$$\text{Required difference} = 5200 + 5720 - 3900 = \text{₹ 7020}$$

148. Option (2) is correct.

$$\text{Initial expenditure on miscellaneous} = \frac{17}{100} \times 26000$$

$$\text{New expenditure on miscellaneous} = \frac{17}{100} \times 26000$$

$$\text{Required difference} = \frac{17}{100} \times (26000 - 22000)$$

$$= \frac{17}{100} \times 4000 = \text{₹ 680}$$

He would spent '680 less, if his income decreases to '22000.

149. Option (4) is correct.

Investment on gold is 65% of saving.

$$\text{Saving} = \frac{22}{100} \times 26000 = \text{₹ 5720}$$

$$\text{Investment on gold} = \frac{65}{100} \times 5720 = \text{₹ 3718}$$

150. Option (1) is correct.

Expenditure on saving, rent and fuel

$$= \frac{(22 + 8 + 20)}{100} \times 26000 = \text{₹ 13000}$$

Expenditure on food, transport and saving

$$= \frac{(18 + 15 + 22)}{100} \times 26000 = \frac{55}{100} \times 26000 = \text{₹ 14300}$$

Difference of average of these expenditures

$$= \frac{14300}{3} - \frac{13000}{3} = \frac{1300}{3} = 433.33 \approx 433$$

[∵ both sums has 3 observations]

151. Option (4) is correct.

There is no grammatical error in the given sentence.

152. Option (3) is correct.

A pronoun must agree with its antecedent. Here the antecedent of "his" is "one", which is incorrect. Replace it with "one's".

153. Option (1) is correct.

'No sooner...than' is used to show that two unexpected events occur one after the other. Along with 'no sooner' conjunction 'than' is used. Thus, 'that' should be replaced with 'than'.

154. Option (3) is correct.

The preposition "in" does not belong in part 3 of the sentence and has to be substituted with "regarding." Regarding implies "related to," whereas "in" has a different meaning. Accordingly, it should say, "before I make a decision regarding the matter."

155. Option (3) is correct.

The sentence has an error in idiomatic expression. 'On call' means to be available to work if needed. The sentence requires a word that expresses the willingness to work. Thus, "by" should be replaced with "on".

156. Option (4) is correct.

To be qualified, one must be certified as having received the necessary training to carry out a specific task. Since option 4 accurately conveys that the protagonist has been formally recognised as having been certified to advance to the competition's final round, it fits here.

157. Option (2) is correct.

Fall over means to lose one's balance and collapse. Fall away means break off and drop to the ground, reduced. Fall off means to become detached and drop to the ground; a decrease in something. Fall on means depend. In the given sentence, the girl was left alone without supporters. Option 2 fits here, meaning that the supporters began to decrease.

158. Option (4) is correct.

Boys is a countable noun in this context; hence, the words "few" or "fewer" are appropriate. Uncountable nouns are used with options 1 and 2. As the construction of "no..than" usually has the adjective in comparative form, the phrase "fewer" is appropriate here.

159. Option (4) is correct.

Here, "compensate for" is the proper phrasal word to employ. The phrasal verb "compensate for" describes the deficiency that requires reparation; to make up for something.

160. Option (2) is correct.

'Acquainted' means 'to know or be familiar with something/someone'. 'With' is the preposition used alongside acquainted.

161. Option (2) is correct.

The word 'amateur' means 'non-professional' or 'novice'. Beginner means novice. Amateur and beginner are synonyms. Hence, the correct synonym is option (2). Timid means scared. Weary means tired. Dispirited means having lost enthusiasm and hope; disheartened.

**162. Option (1) is correct.**

This question tests a student's understanding of vocabulary. The word 'gumption' means 'shrewd or spirited initiative and resourcefulness.' Acumen means skill or shrewdness. Hence, the correct answer is option (1). Starry means full of or lit by stars. Futile means of no use; it yields no result. Fallow means uncultivated.

**163. Option (4) is correct.**

This question tests a student's understanding of vocabulary. The word 'laconic' means 'brief.' Concise means brief. Hence, the correct answer is option (4). Shrewd means having or acting based on a clear understanding and good judgement of a situation, resulting in an advantage. Whim means a sudden desire or change of mind, especially one that is unusual or unexplained. Climax means the most intense, exciting, or important point of something; the culmination

**164. Option (2) is correct.**

This question tests a student's understanding of vocabulary. The word 'valedictory' means 'last or final'. Terminal means end or extreme. Terminal and valedictory are synonyms. Hence, the correct answer is option (2). Hesitant means reluctant. Ridicule means to mock or make fun of someone. Deception means treachery.

**165. Option (1) is correct.**

This question tests a student's understanding of vocabulary. The word 'denouement' means 'finale or ending'. Climax means peak or towards the end. Hence, the correct answer is option (1). Systematic means arranged or methodical. Improper means unsuitable. Glorious means having, being worthy of, or bringing fame or admiration.

**166. Option (4) is correct.**

The word 'bucolic' means 'relating to the pleasant aspects of the countryside and country life.' Fierce means ferocious. Hence, the correct answer is option (4). The antonym of bucolic is fierce. Rustic means relating to the countryside; rural. Dull means boring. Tranquil means peaceful.

**167. Option (1) is correct.**

The word 'compendium' means 'collection or compilation'. Expansion means enhancement. Compendium and expansion are antonyms. Hence, the correct answer is option (1). Reference means the action of mentioning or alluding to something. Precis means a summary or abstract of a text or speech.

Outline means border.

**168. Option (1) is correct.**

The word 'chastise' means 'to criticize or rebuke.' Praise means laud or worship. Chastise and praise are antonyms. Hence, the correct answer is option (1)

Resist means to withstand the action or effect of something. Prefer means to like (one thing or person) better than another or others; to tend to choose. Repel means to loathe.

**169. Option (2) is correct.**

The word 'daunt' means 'demoralize or discourage'. 'Encourage' means support. Daunt and encourage are antonyms. Hence, the correct answer is option (2). Rejoice means to celebrate. Decrease means to reduce. Discard means to reject

**170. Option (3) is correct.**

The word 'oblivious' means 'unaware.' The meaning of conscious is being aware. Oblivious and conscious are antonyms. Hence, the correct answer is option (3). Hideous means extremely ugly. Victorious means having won a victory; triumphant. Consciousness means being aware. Advantageous means beneficial.

**171. Option (4) is correct.**

'An iron will' means 'a firm opinion'. Example: He led with an iron will that was masked by effortless charm.

**172. Option (2) is correct.**

Get into a soup means to be in trouble. Example: He got into a soup when he forgot to pay his taxes.

**173. Option (1) is correct.**

To haul (someone) over the coals means to scold, reprimand, or reprove someone severely for an error or mistake. Example: I was hauled over the coals by my boss last week for messing up the accounting software.

**174. Option (4) is correct.**

The idiom 'to carry the day' means 'to succeed.' After spending weeks constructing my project, I was thrilled to carry the day at the science fair.

**175. Option (2) is correct.**

Go over Options means to consider, examine, or check something. Example: "I want to go over these plans with you again".

**176. Option (4) is correct.**

The phrase 'see through' means 'understand something implied or indirect.' The sentence has been structured correctly.

**177. Option (3) is correct.**

The correct phrase is 'off and on' which means 'intermittently; sometimes.'

**178. Option (4) is correct.**

The given sentence is grammatically correct. Hence, no correction is required.

**179. Option (2) is correct.**

The sentence asserts that Mr.Gupta was in the USA Embassy for a long time. The pronoun 'he' cannot fit in this structure of the sentence, so option 1 is eliminated. As per the meaning conveyed by the sentence, option (2) is the correct answer.

**180. Option (3) is correct.**

'Few' means 'almost nothing or none' which does not make any sense here. 'A few' means 'small or a small amount'. The given sentence needs a positive word; thus, "a few" is the correct answer.

**181. Option (2) is correct.**

Government by a few people Oligarchy. Hence, the correct answer is option (2). Aristocracy is the highest class in certain societies, typically comprising people of noble birth holding hereditary titles and offices. Dictatorship means absolute rule. Bureaucracy is a system of government in which most of the important decisions are taken by state officials rather than by elected representatives.

**182. Option (1) is correct.**

The state of living unmarried is known as celibacy. Hence, the correct answer is option (1). A neogamist is a person who has recently married. A chaperone is a person who accompanies and looks after another person or group of people. An implorer is one who begs.

**183. Option (2) is correct.**

Quinquennial means recurring every five years. Hence, the correct answer is option (2). Septennial means lasting for or relating to a period of seven years. An interregnum is a period when normal government is suspended, especially between successive reigns or regimes. A pun is a humorous use of a word or phrase that has several meanings or that sounds like another word.

**184. Option (3) is correct.**

Ostler is a man employed to look after the horses of people staying at an inn. Hence, the correct answer is option (3). A matron is a woman in charge of domestic and medical arrangements at a boarding school or

other institution. Chandler is a dealer in supplies and equipment for ships and boats. Effeminate has womanly characteristics.

**185. Option (3) is correct.**

To struggle helplessly is called 'flounder'. Hence, the correct answer is option (3). Yokel means an uneducated and unsophisticated person from the countryside. Imploer means to beg someone earnestly or desperately to do something. Chum: [noun] animal or vegetable matter (such as chopped fish or corn) thrown overboard to attract fish or a friend.

**186. Option (2) is correct.**

The word 'aeronaut' has been incorrectly spelled. It should be astronaut.

**187. Option (4) is correct.**

The incorrectly spelt word is 'attendance'. It should be attendace.

**188. Option (1) is correct.**

The incorrectly spelt word is 'beautisian'. It is beautician.

**189. Option (3) is correct.**

The incorrectly spelt word is 'emanicipation'. It should be emancipation.

**190. Option (2) is correct.**

The incorrectly spelled word is 'granduer'. It should be grandeur.

**191. Option (2) is correct.**

As is clear from the statement, the term must have a positive connotation. Therefore, "best" fits in this context, "useless" would be incorrect. Since "inexpensive" signifies "cheap," it doesn't belong in this context.

**192. Option (1) is correct.**

Here, the word should be chosen so that it complements the preposition "in." Thus, the word "rejoice," which means "to celebrate," is appropriate. If 'in' is added, the other words become meaningless.

**193. Option (3) is correct.**

Youth is not a lesson, since the word "lesson" denotes "a teaching." The word "resource" has no relevance in this context because it refers to "a stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organisation in order to function effectively."

Period, which means "a length or portion of time," is the appropriate term to use in this context. The word "idea," which in this context denotes "a thought or suggestion as to a possible course of action," has no significance.

**194. Option (4) is correct.**

The word "challenge" is inappropriate in this context because nothing difficult is addressed. The verb "roam," which means "wander," is inappropriate here. The word "target" actually implies "aim," so it doesn't work here. The word "face," which means "to tackle or deal with," correctly communicates the idea that we can approach the world with sincere emotions.

**195. Option (1) is correct.**

As is clear from the sentence, the term in question must be a noun. Consequently, the adverbs "passively" and "religiously" are dropped. Therefore, this can fit either 1 or 4. The sentence talks about feelings and humane objects; thus, 'ambitions' fits in the context. 'Resource' is a misfit in the context.

**196. Option (4) is correct.**

Refer to the sentence: 'However, a number of countries, including Argentina, Australia, Chile, New Zealand, France, and the United Kingdom, have already laid claim to the Antarctic, and others will probably follow'. From this line, we can deduce that the country 'Austria' has not been mentioned in the passage.

**197. Option (1) is correct.**

It is mentioned in the passage, 'The Antarctic Treaty was signed in 1959 and creates the rules for the exploration of the Antarctic.'

**198. Option (4) is correct.**

The pact was signed, according to the text, to safeguard the continent, stop all kinds of destructive human activity, and establish guidelines for exploration.

**199. Option (3) is correct.**

It is mentioned in the passage 'Environmentalists fear that exploiting Antarctica for military and economic reasons will damage the environment.'

**200. Option (2) is correct.**

It is mentioned in the passage, 'In addition, economic experts claim that there are large amounts of coal, nickel, and copper under the Antarctic ice.' Thus, option 2 is the correct answer, as 'iron' is not mentioned.

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