

NTSE

National Talent Search Examination

MAT + SAT

[Stage II]

Time : 180 Min

Max. Marks : 200

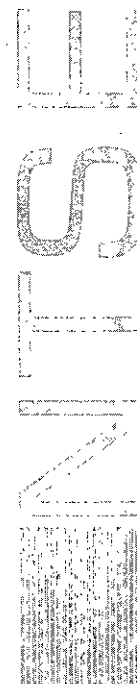
Read the following instructions carefully.

1. Answers are to be given on a separate answer sheet. Use only HB Pencil.
2. Write your Roll No. very clearly (only one digit in one block) on this booklet and on the answer sheet.
3. This test consists of 200 questions of one mark each. All the questions are compulsory.
4. Answer to each question by filling the correct alternative among the four choices on the answer sheet.

Example

	Q. No.	Alternatives			
Correct way	1	①	②	●	④
	Q. No.	Alternatives			
Wrong way	1	⊗	②	③	④

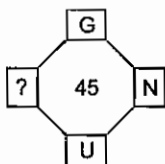
5. Now, turn to the next page and start answering the questions.



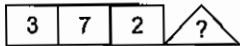
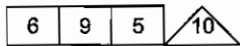
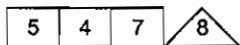
Paper I : Mental Ability Test

Section A Reasoning

- Which group of letter is different from others?
a. LAZO *b.* HCXS *c.* GHIJ *d.* FEVU
- If in a certain code language 'POEM' is written as 'OQNPDFLN', how would 'WIND' be written in same code?
a. VXHJMOCE *b.* ECDGFJLA *c.* LMNOPABC *d.* ECOMJHXV
- Some words are translated from an artificial language below
 'goh rat pee' is 'my school bag'
 'nie jee goh' is 'black colour bag'
 'pee jee goh' is 'my black bag'
 Which word could possibly mean 'colour'?
a. Pee *b.* Nie *c.* Jee *d.* Goh
- Find the missing character in the following figure.



- a.* A *b.* D *c.* B *d.* C
- Find the next number in the given sequence.
 1000, 100, 729, 81, 512, 64, 343, ?
a. 25 *b.* 49 *c.* 64 *d.* 36
 - In the following letter sequence, some of the letters are missing. These are given in order as one of the alternatives below. Choose the correct alternative.
 z _ y _ _ x _ wz _ _ w _ _
a. wyzyxwww *b.* xwzyxyzx *c.* xzyxyzwx *d.* xwwwxyzyw
 - Which alternative replace the 'question mark'?



- a.* 6 *b.* 12 *c.* 8 *d.* 10
- Find out the number in the position of 'question mark'.

A ₂	C ₄	E ₈
G ₃	I ₅	?
M ₅	O ₉	Q ₁₄

- a.* K₅ *b.* K₁₂ *c.* K₇ *d.* K₈

9. Find the next number in the series.

1, 2, 6, 15, 31, 56, 92, ?

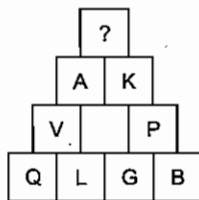
a. 49

b. 56

c. 92

d. 141

10. Which number will replace the question mark?



a. G

b. H

c. F

d. E

11. In the question, if $5 + 3 + 2 = 30$ and $4 + 7 + 5 = 140$, then how $13 + 5 + 2 = ?$

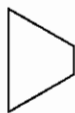
a. 130

b. 140

c. 135

d. 125

12. Identify which among the pieces given below will not be required to complete the square.



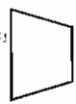
(p)



(q)



(r)



(s)

a. p

b. q

c. r

d. s

13. Sara lives in a large city on the East coast. Her younger cousin Marlee lives in the mid-West in a small town with fewer than 1000 residents. Marlee has visited Sara several times during the past 5 yr. In the same period of time, Sara has visited Marlee only once. Find the correct statement from given alternatives, according to the passage.

a. Marlee likes Sara better than Sara likes Marlee

b. Sara thinks small towns are boring

c. Sara is older than Marlee

d. Marlee wants to move to the East coast

14. The pacific yew is an evergreen tree that grows in the pacific North-West. The pacific yew has a fleshy, poisonous fruit. Recently, taxol, a substance found in the bark of the pacific yew, was discovered to be a promising new anti-cancer drug. Find the correct statement from given alternatives, according to the passage.

a. Taxol is poisonous when taken by healthy people

b. Taxol has cured people from various diseases

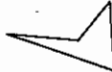
c. People should not eat the fruit of the pacific yew

d. The pacific yew was considered worthless until taxol was discovered

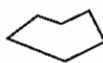
15. Identify which would among the pieces given will not be required to complete the triangular pattern shown below.



(A)



(B)



(C)



(D)

a. A

b. B

c. C

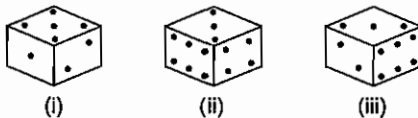
d. D

16. Identify which alternate replace the question mark?



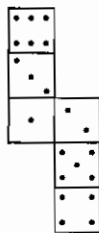
- a. 5 b. 3 c. 6 d. 4

17. On the basis of the three positions of a dice, which number will be appear on the face opposite the four dots?



- a. 1 b. 5 c. 3 d. 2

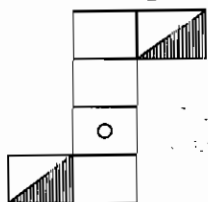
18. How many dots lie opposite to the face having three dots, when the given figure is folded to form a cube?



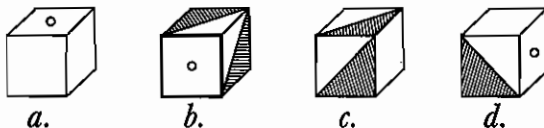
- a. Five b. Four c. Two d. Six

19. Choose the box that is similar to the box formed from the given figure of paper.

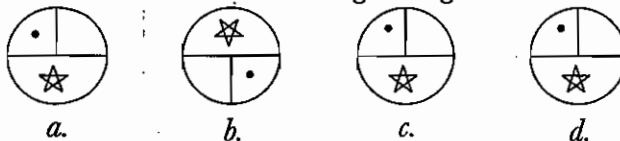
Problem Figure



Answer Figures

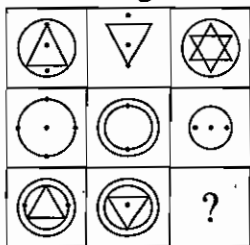


20. Choose that alternative which odd in the given figure.

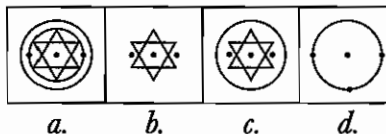


21. Select a suitable figure from the four alternatives that would complete the figure matrix.

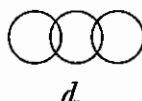
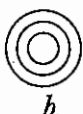
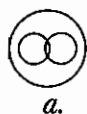
Problem Figures



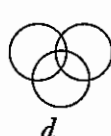
Answer Figures



22. Which of the following diagrams indicate the best relation between earning, dividend and bonus?



23. Which of the following diagrams indicate the best relation between author, lawyer and singer?



24. Pointing to Diwaker, Karuna says, "I am the daughter of only son of his grandfather". How Karuna is related to Diwaker?

a. Anti b. Uncle c. Brother d. Sister

25. 1. B5D means B is the father of D.
2. B9D means B is the sister of D.
3. B4D means B is the brother of D.
4. B3D means B is the wife of D.

Which of the following means F is the mother of K?

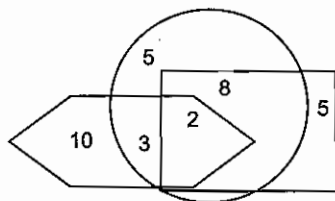
a. F3M5K b. F5M3K c. F9M4N3K d. F3M5N3K

26. Choose the alternative which is closely resembles the water image of the given combination.

V A Y U 8 4 3 6
M ~~~~~ N

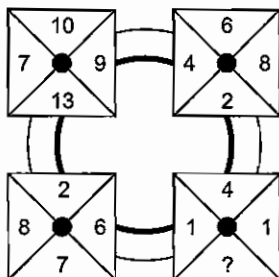
a. VAYU8436 b. AYU8436 c. VAYU8430 d. VAYU8436

27. In the given figure, the circle represents jobs, the square represents candidates and hexagon represents company. How many candidates are doing job but not in a company?



a. 2 b. 10 c. 5 d. 8

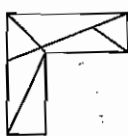
28. Which number replaces the question mark?



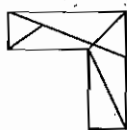
a. 2 b. 3 c. 4 d. 5

29. The age of Tushar is less than Vishal but more than Suraj. Suraj is younger than Saroj but elder than only Sandeep. Vishal is younger than Saroj. Among them who is eldest?
 a. Sandeep b. Suraj c. Saroj d. Vishal
30. What is the mirror image of the given figure?

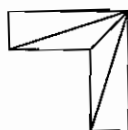
Problem Figure



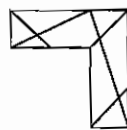
Answer Figures



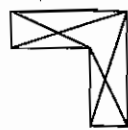
a.



b.



c.



d.

Directions (Q. Nos. 31-35) Study the following information carefully and answer the questions given below.

There are six friends named as D, E, F, G, H and I sitting around a circular table in a canteen but not necessary in the same order.

'I' sits between H and F but third to the left E. H is second to the right of E but third to the left of D. G sits between H and E.

31. What is the position of G in respect of D?
 a. Second to the left b. Second to the right c. Fourth to the right d. Third to the left
32. Who sits between F and E?
 a. D b. G c. I d. H
33. How many persons sit between G and D?
 a. 3 b. 2 c. 1 d. 4
34. If G and D position interchange their position then, who are the neighbours of E?
 a. G and H b. G and F c. H and F d. G and D
35. What is the position of 'I' in respect of 'H'?
 a. Immediate right b. Immediate left c. Second to the right d. Second to the left

Directions (Q. Nos. 36-37) Read the statements and mark the appropriate conclusion as per the given options.

- a. I and II follow b. II and III follow c. Only III follows d. All follow

36. **Statements**

- All trees are green.
- Some green are yellow.
- All yellow are mango.

Conclusions

- I. Some trees are yellow.
- II. Some mango are trees.
- III. No yellow is tree.

37. **Statements**

- Some peanuts are almonds.
- Some almonds are expensive.
- No expensive is luxurious.

Conclusions

- I. Some luxurious is expensive.
- II. No peanuts is luxurious.
- III. Some almonds are peanuts and expensive.

38. Complete the given sequence.

A, Y, C, W, E, U, G, ?

a. T

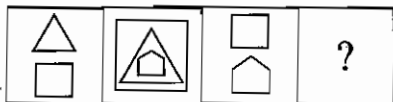
b. S

c. H

d. V

39. Find the figure which having same relation with third figure as relation between first and two figures.

Problem Figures



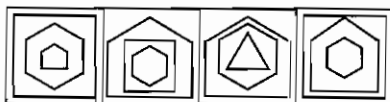
(A)

(B)

(C)

(D)

Answer Figures



a.

b.

c.

d.

Directions (Q. Nos. 40-42) Read the following information carefully and answer the question given below.

- A goldsmith has five gold articles named V, W, X, Y and Z each having a different weight.
- V weights twice as much as W.
- W weights four and half time as much as X.
- X weights half as much as Y.
- Y weights half as much as Z.
- Z weights less than a but more than X.

40. Which of the following article is heaviest in weight?

a. Z

b. W

c. V

d. X

41. Z is heavier than which of two articles?

a. X and Y

b. V and W

c. W and X

d. Y and V

42. How many articles are less heavy in weight from W?

a. 4

b. 3

c. 2

d. 1

43. Reema wants to go near to her mom, read the given points and find in which direction her mother is from her present position.

- Firstly she will have go 6 km in East.
- From here turn left and walk 8 km.
- After that a turn right then left and walk 6 km and 4 km, respectively.

a. North-West

b. North-East

c. South-East

d. South-West

44. There 6 flats on a floor of a building named P, Q, R, S, T and U. Half of them facing North and the remains facing South.

- 'Q' is North facing flat but not neighbour of 'S' flat.
- 'S' and 'P' are opposite to each other.
- R is next to U and facing South.
- T is North facing flat and opposite to R.

In the given alternatives, which flats are the North facing flats?

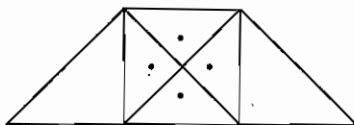
a. STQ

b. PRU

c. PRQ

d. SQR

45. How many triangles are in the figure?

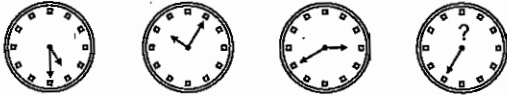


a. 10

b. 9

c. 12

d. 13

46. A man covered a certain distance at some speed. Had he moved 3 km/h faster, he would have taken 40 min less. If he had moved 2 km/h slower, he would have take 40 min more. The distance (in Km) is
 a. 38 b. $37\frac{1}{2}$ c. 36 d. 40
47. Mac has £ 3 more than Ken but, then Ken wins on the horses and trebles his money, so that he now has £ 2 more than the original amount of money that the two boys had between them. How much money did Mac and Ken have between them before Ken's win?
 a. £ 9 b. £ 11 c. £ 13 d. £ 15
48. In a game of billiards, A can give B 15 points in 60 and A can give C to 20 points in 60. How many points can B give C in a game of 90?
 a. 10 points b. 30 points c. 20 points d. 45 points
49. Where should the missing hour hand point to on the bottom clock?

 a. To the 4 b. To the 5 c. To the 6 d. To the 7
50. Neeraj is facing North-West. He moves 180° in clockwise direction and 45° in the anti-clockwise direction, which direction Neeraj is facing now?
 a. North b. South c. East d. West

Section A General English

Directions (Q. Nos. 51-65) Read the following passages carefully and answer the questions that follows.

Passage I

There are dull, mechanic fellows who turn out runs with as little emotion as a machine turns out pins. There is no colour, no enthusiasm, no character in their play. Cricket is not an adventure to them, it is a business. It was so with Shrewsbury. His technical perfection was astonishing; but the soul of the game was wanting in him. There was no sunshine in his play, no shift surprise of splendid unselfishness. And without these things, without gaiety, daring and the spirit of sacrifice cricket is a dead thing.

51. It was so with Shrewsbury. In this sentence Shrewsbury refers to
 a. a city where cricket was played b. an annual cricket match
 c. a finer bowler d. a famous cricketer
52. Which of the following expressions best reflects the general idea of the passage?
 a. Machine versus man
 b. The technically perfect cricketer
 c. The style of a famous cricket player
 d. The need of enthusiasm and daring in cricket
53. Which of the following may be assumed to be acceptable to the writer?
 a. Cricket is a business to many batsmen
 b. Technical perfections the most important quality of a cricketer
 c. The soul of cricket is adventure rather than dead perfectionism
 d. Risk-taking is unwise in cricket

54. Which one of the following statements best conveys to the reader the writer's idea?
- a. The batsman's technical perfection should be astonishing and it is most important in cricket
 - b. Without the spirit of sacrifice cricket is a dead thing
 - c. There was no sunshine in Shrewsbury's play, but that was not necessary
 - d. A good batsman must be able to turn out runs as quickly as a machine produces pins
55. In the above passage which of the following definitions of 'mechanic fellows who turn out runs' is most appropriate?
- a. Skilled workmen who play cricket
 - b. Persons who repair or adjust machinery to turn out runs
 - c. Batsmen whose technical perfection is admirable and who scores many runs
 - d. Unskilled batsmen securing runs easily

Passage II

The night was cold and dark. There was a great storm, thunder and lightning also. Most men and animals, adequately protected, were asleep in their homes. They were warm and happy. But some monkeys were running through the forest. They had no warm home and there was cold. Worried monkeys looked everywhere for shelter. They had almost resigned themselves to be flattened out by the cold. Suddenly, they saw some fireflies. Now, fireflies have a light in their tails, as all our children know. The monkeys took the light for fire. Poor things, they did not know any better. They said, 'We will go near the fire and warm ourselves.'

There was a flock of birds in a tree nearby. One bird had a kind heart and it felt sorry for the monkeys. It called out, 'That is not fire, my friends! Those are fireflies. They give no heat. It is futile to run after them.' The monkeys got furious, their rage knew no bounds. They did not thank the bird. One monkey said rudely, 'Is it so? We do not want unsolicited advice. I will teach you to say there is no fire.' He jumped up the tree and pulled the poor bird out of its nest. 'Alas!' said the poor bird, 'Why did I try to help a fool?'

56. The monkeys were running through the forest because
- a. they were in search of food
 - b. monkeys like running about
 - c. they were in search of a warm place
 - d. they wanted to kill birds and eat them away
57. Why were the monkey angry?
- a. The birds spoke to the monkey rudely
 - b. The monkeys did not like the advice of the bird
 - c. The monkeys could not get heat from the fireflies
 - d. It was very cold and they could not find a warm place
58. What happened finally to the bird?
- a. The bird flew away from the tree
 - b. The bird was killed by the monkey
 - c. The bird managed to escape from the monkey's hold
 - d. None of the above
59. Which of the following is not true in the context of the passage?
- a. The night was cold and dark
 - b. The bird had a kind heart
 - c. Fireflies have a light in their tails
 - d. Most of the monkeys were in search of food

60. What did the monkeys see in the jungle?
 a. The monkeys saw the bird in a tree
 b. The monkeys saw fire in the wood
 c. The monkeys saw some warm place to rest in the jungle
 d. None of the above

Passage III

At Mangalore, Tipu inflicted a crushing defeat on the large English army under Campbell. Then, Tipu left for Cuddapah to join his commander Qamar-ud-din. There he defeated the troops under traitor Sayyad Mohammad and then routed the English army sent under Montgomery to assist Sayyad Mohammad.

At the end of the battle, Tipu looked down on Sayyad Mohammad who surrendered before him and begged for mercy. His cold calm figure glowed in splendid armour. He listened attentively but without change of expression. Every onlooker thought that he could forecast what the answer would be, for Sayyad Mohammad had added to his treachery by killing in cold blood hundreds of Tipu's loyalists. Tipu replied 'I grant you your life, not in forgetfulness of what you did but in remembrance of who your father was.' Sayyad Mohammad's father was a man of religion, attached to the tomb of Gisu Daraz at Gulbarga.

The reply almost led to a quarrel between Tipu Sultan and his trusted commander, Qamar-ud-din. The quarrel ended only when Tipu Sultan cried 'You call me a king but question each act. It seems, I am your king only when I command to kill. But I cannot, it seems, command to spare a life, if I choose.'

This was not a kingly act, Qamar-ud-din thought of himself. We are only increasing the number of wolves against us, he wanted to say. But after this outburst, he knew, it was no use arguing further.

61. Why did Sayyad Mohammad Beg Tipu Sultan for mercy?
 a. Sayyad was an honest man
 b. The English captain had advised him accordingly
 c. His father had suggested him likewise
 d. None of the above
62. Why did Tipu grant mercy to Sayyad Mohammad?
 a. Sayyad was a man of religion
 b. Tipu forgot the acts of Sayyad
 c. It was a kingly act
 d. None of these
63. According to Qamar-ud-din, what was not a kingly act?
 a. To defeat English army twice in succession
 b. To spare a dangerous traitor
 c. Demanding explanation from a king
 d. Killing hundreds of loyalists
64. Who had come to help Sayyad Mohammad?
 a. Campbell
 b. His father
 c. Qamar-ud-din
 d. Montgomery
65. According to Tipu's commander, Tipu's decision would
 a. support the loyalists
 b. defeat Qamar-ud-din's army
 c. encourage the traitors
 d. bring back Sayyad to Tipu's camp

Directions (Q. Nos. 66-67) *In the following questions, each passage consists of five sentences. The first sentence (S_1) and last sentence (S_5) are given. The remaining three sentences are labelled P, Q and R. You are required to find out the proper sequence of the three sentences.*

66. S_1 : White cement is the basic raw material for producing tiles and cement paint
 S_2 :
 S_3 :
 S_4 :

- S₅: because of a significant increase in the price of white cement during a short period.
 P: the main consumers of white cement are therefore, cement tiles and cement paint manufacturing units
 Q: which are extensively used in building constructions
 R: these consumers, mostly in the small scale sectors are today facing major crisis
- The proper sequence should be
- a. PQR b. QPR c. RPQ d. QRP

67. S₁: A recent report in News Week says that in American colleges
 S₂:
 S₃:
 S₄:
 S₅: and their achievement is something we can be proud of.
 P: but the majority whites as well
 Q: students of Asian origin outperform not only the minority group students
 R: many of these students must be of Indian origin
- The proper sequence should be
- a. PQR b. RPQ c. QPR d. RQP

Directions (Q. Nos. 68-69) Following questions have the second sentence missing. Choose the appropriate sentence from the given options to complete it.

68. (A) India has been a land
 (B)
 (C) not indeed in the sense that education has been universal.
- a. but in the sense that learning has always been very highly valued
 b. of learning throughout the ages
 c. than the warrior or the administrator
 d. and the learned man has been held in higher esteem
69. (A) Religion has been used
 (B)
 (C) and as morphia.
- a. to dull awareness b. like education, health and employment
 c. both as a weapon of isolation d. about real problems

Directions (Q. Nos. 70-79) Choose the word which best fills the blank from the following given options.

70. The pilot was injured, he died within half an hour.
 a. seriously b. fatally c. fatefully d. vitally
71. His directions misled us, we did not know which road to take.
 a. complex b. obscure c. mingled d. vague
72. The police the mob.
 a. scattered b. disbanded c. drove d. dispersed
73. The soldiers were instructed to restraint and handle the situation peacefully.
 a. exercise b. control c. prevent d. enforce

74. Since one cannot read every book, one should be content with making a selection.
a. normal *b.* standard *c.* moderate *d.* judicious
75. The shepherd was looking after the of sheep.
a. crew *b.* gang *c.* fleet *d.* flock
76. I cannot to know much about it.
a. imagine *b.* conceive *c.* pretend *d.* contemplate
77. It has now been that fifty-two people died in the crash.
a. assured *b.* confirmed *c.* counted *d.* ensured
78. A certain sailor was on voyage in his ship when a arose.
a. storm *b.* tempest *c.* gale *d.* wave
79. an accident the train will arrive in time.
a. Besides *b.* Accepting *c.* Despite *d.* Barring

Directions (Q. Nos. 80-89) *In the following passage, there are blanks, each of which has been numbered. For each blank four words are suggested, one of which fits the Blank. Find the appropriate word in each case.*

For generation man has **80** against the wilds to create a world where only be **81** whether animals and plants survive or are **82** out. Earlier we accepted as self-evident that any **83** in our environment brought about by science and technology must be improvements **84** the world of our **85**. However, many people all over the world have begun to feel that **86** are going too far and that we should try to **87** some of the world's original life before we find it **88** too late. The same science which had led us away from nature is now **89** the miracle of creation.

80. *a.* faced *b.* stood *c.* struggled *d.* challenged
81. *a.* decides *b.* thinks *c.* advice *d.* observes
82. *a.* taken *b.* wiped *c.* put *d.* thrown
83. *a.* differences *b.* increment *c.* changes *d.* replacements
84. *a.* in *b.* at *c.* over *d.* for
85. *a.* oborigins *b.* ancients *c.* successors *d.* ancestors
86. *a.* ourselves *b.* we *c.* us *d.* some
87. *a.* demdish *b.* cherish *c.* save *d.* renovate
88. *a.* accurs *b.* sounds *c.* seems *d.* gets
89. *a.* unfolding *b.* discussing *c.* arguing *d.* narrating

Directions (Q. Nos. 90-95) *Select the correct meansing of the idioms and phrases out of the four choices given.*

90. Cutt off
a. Discontinue *b.* Reduce *c.* Sell off *d.* Eradicate
91. Get on
a. Escape *b.* Rise from bed *c.* Progress *d.* To stop
92. Round up
a. Come across *b.* To arrest *c.* Criticise *d.* Pursue
93. Add fuel to the flame
a. To keep unchained *b.* Keep the fire burning *c.* To make matter worse *d.* In disorder

94. Bite the dust
a. To be defeated *b.* To argue *c.* Very untidy *d.* A worthless
95. Cry for the Moon
a. To win a victory *b.* To give a poor show
c. To wish for something impossible *d.* To repent

Directions (Q. Nos. 96-100) *In these questions a keyword is followed by four choices. Choose the one opposite to it in the meaning.*

96. Occupant
a. Outsider *b.* Resident *c.* Citizen *d.* Promptness
97. Boldness
a. Arrogance *b.* Haughtiness *c.* Humility *d.* Unreal
98. Disperse
a. Dissipate *b.* Accumulate *c.* Abate *d.* Flattery
99. Fault
a. Purity *b.* Stigma *c.* Bright *d.* Pleasant
100. Benevolence
a. Humanity *b.* Unkindness *c.* Charity *d.* Upbraid

Paper II : Scholastic Aptitude Test

101. The size of colloidal particles in a colloid range
a. 10^{-8} - 10^{-7} cm *b.* 10^{-7} - 10^{-5} cm *c.* 10^{-5} - 10^{-3} cm *d.* 10^{-7} - 10^{-6} cm
102. For dilution of a concentrated acid, we should add
a. water into the concentrated acid
b. concentrated acid into water
c. Both the above are correct
d. first water into acid and then more acid
103. The soil for healthy growth of plants should be
a. highly acidic *b.* highly alkaline
c. Neither alkaline nor highly acidic *d.* Neither acidic nor highly alkaline
104. How many times a solution of pH=3 be diluted to get a solution of pH=6 ?
a. 2 times *b.* 10 times *c.* 100 times *d.* 1000 times
105. When a base is dissolved in water
a. concentration of OH^- ions per unit volume increases
b. concentration of OH^- ions per unit volume decreases
c. concentration of OH^- ions per unit volume may increase or decrease depending upon the nature of the base
d. no change in concentration of OH^- ions per unit volume occurs
106. A 10^{-4} M NaOH solution will have a pH of
a. 4 *b.* 6 *c.* 8 *d.* 10

107. pH of sodium carbonate (Na_2CO_3) solution will be
a. 7 *b.* > 7 *c.* < 7 *d.* 1
108. On electrolysis of brine solution, the products formed are
a. sodium and chlorine *b.* hydrogen, chlorine and oxygen
c. hydrogen, chlorine and sodium hydroxide *d.* sodium hydroxide, chlorine and oxygen
109. Washing soda ($\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$) on exposure to air gives
a. $\text{Na}_2\text{CO}_3 \cdot 9 \text{H}_2\text{O}$ *b.* $\text{Na}_2\text{CO}_3 \cdot 7 \text{H}_2\text{O}$ *c.* $\text{Na}_2\text{CO}_3 \cdot 5 \text{H}_2\text{O}$ *d.* $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$
110. The bleaching action of bleaching powder (CaOCl_2) is due to
a. Ca present *b.* oxygen present *c.* Cl_2 present *d.* All of these
111. The milkiness produced on passing CO_2 gas through lime water is due to formation of
a. calcium carbonate *b.* calcium bicarbonate *c.* calcium carbide *d.* calcium oxide
112. Sound waves of wavelength greater than that of audible sound are called
a. seismic waves *b.* sonic waves *c.* ultrasonic waves *d.* infrasonic waves
113. Sonar emits which of the following waves?
a. Radio waves *b.* Ultrasonic waves *c.* Light waves *d.* Magnetic waves
114. Quality depends on
a. intensity *b.* loudness *c.* timbre *d.* frequency
115. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then in parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combination would be
a. 1 : 2 *b.* 2 : 2 *c.* 1 : 4 *d.* 4 : 2
116. The site of a hydroelectric plant should be chosen carefully because it
a. produces a large amount of carbon mono-oxide and carbon dioxide
b. produces a large amount of electricity
c. affects the organism of region
d. is expensive
117. When we use biomass to generate electricity, we convert which form of energy locked in the biomass to electrical energy?
a. Chemical energy *b.* Kinetic energy *c.* Nuclear energy *d.* Muscular energy
118. Electricity from the ocean can be generated based on utilising
a. kinetic energy of the waves but not stored thermal energy
b. stored thermal energy but not kinetic energy of the waves
c. kinetic energy of the waves as well as stored thermal energy
d. neither kinetic energy of the waves nor stored thermal energy
119. In a hydroelectric power plant, more electrical power can be generated if water falls from a greater height because
a. its temperature increases
b. higher amount of potential energy is converted into kinetic energy
c. the electrical content of water increases with height
d. more water molecules dissociate into ions

120. In India, uranium is found in
a. Madhya Pradesh *b.* Jharkhand *c.* Odisha *d.* Uttar Pradesh
121. If the temperature of the atmosphere is increased the following character of the sound wave is effected
a. amplitude *b.* frequency *c.* velocity *d.* wavelength
122. Which of the following is the longitudinal wave?
a. Sound waves *b.* Waves on plucked string
c. Water waves *d.* Light waves
123. Frequency range of the audible sounds is
a. 0 Hz – 30 Hz *b.* 20 Hz – 20 kHz *c.* 20 kHz – 20,000 kHz *d.* 20 kHz – 20 MHz
124. In a medium sound travels 2 km in 3 s and in air, it travels 3 km in 10 s. The ratio of the wavelength of sound in the two media is
a. 1 : 8 *b.* 1 : 18 *c.* 8 : 1 *d.* 20 : 9
125. In chloroplasts, chlorophyll is present in the
a. outer membrane *b.* inner membrane *c.* thylakoids *d.* stroma
126. Banana is vegetatively propagated by
a. tuber *b.* leaves *c.* bulb *d.* sucker
127. Which one of the following species of bee is used for the commercial production of honey?
a. *Apis dorsata* *b.* *Apis indica* *c.* *Apis florea* *d.* *Apis mellifera*
128. Gonorrhoea is a disease transmitted by sexual contact. It is caused by
a. virus *b.* bacteria *c.* protozoan *d.* fungus
129. AIDS virus has
a. single-stranded DNA *b.* double-stranded DNA *c.* single-stranded RNA *d.* double-stranded RNA
130. An animal with a diet deficient in atleast one essential nutrient is said to be
a. starving *b.* undernourished
c. malnourished *d.* suffering from kwashiorkor disease
131. Biologist observe 5th June as
a. Darwin's birthday *b.* World Environment Day
c. World Population Day *d.* World Hygiene Day
132. DDT is
a. non-degradable pollutant *b.* degradable pollutant
c. greenhouse gas *d.* None of these
133. The effect caused by non functioning of islets of langerhans is
a. heart beat rate increase *b.* increased BMR
c. hyper glycaemia *d.* tetany
134. Vestigial organ of the human body is/are
a. appendix *b.* eyelid *c.* eyes *d.* ears
135. Bombay duck and hilsa are examples of
a. freshwater fish *b.* marine fish *c.* breeds of sheep *d.* breeds of ducks
136. BCG vaccine is used against
a. TB *b.* leprosy *c.* food poisoning *d.* AIDS

137. Bacteria cannot survive in a highly salted pickle because
a. bacteria get plasmolysed and are consequently killed
b. salt inhibits reproduction
c. the pickle does not contain nutrients necessary for bacteria to live
d. bacteria do not get enough light for photosynthesis
138. Which of the following yields double calories as per gram of carbohydrate?
a. Fat *b.* Protein *c.* Mineral *d.* Vitamin
139. The common and immediate source of energy for cellular activity is
a. NAD *b.* ATP *c.* DNA *d.* RNA
140. Match the following

List I (Branch of Biology)	List II (Field of Study)
A. Palynology	1. Silkworms
B. Oncology	2. Pollens
C. Phycology	3. Cancer
D. Sericulture	4. Algae

Codes

A B C D

a. 4 3 2 1

A B C D

b. 3 2 4 1

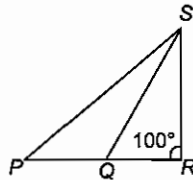
A B C D

c. 4 2 3 1

A B C D

d. 2 3 4 1

141. A horse and two cows together cost ₹ 680. If a horse costs ₹ 80 more than a cow, then the cost of horse is
a. ₹ 170 *b.* ₹ 280 *c.* ₹ 200 *d.* ₹ 250
142. There are four prime numbers written in ascending order. The product of the first three is 385 and that of the last three is 1001. The last number is
a. 11 *b.* 13 *c.* 17 *d.* 19
143. If $(x + y) = 12$ and $xy = 32$, then $\left(\frac{1}{x} + \frac{1}{y}\right) = ?$
a. $\frac{2}{8}$ *b.* $\frac{1}{8}$ *c.* $\frac{1}{2}$ *d.* $\frac{3}{8}$
144. In the figure below, $PQ = QS$, $QR = RS$ and $\angle SRQ = 100^\circ$. Find the value of $\angle QPS$.



- a.* 20° *b.* 40° *c.* 15° *d.* 35°
145. If α and β are the roots of the equation $x^2 - 5x + 6 = 0$, then the value of $(\alpha^2 - \beta^2)$ is equal to
a. 5 *b.* -5 *c.* ± 5 *d.* None of these
146. The mean of 78 numbers is 27. If each observation is divided by 3, the new mean is
a. 9 *b.* 18 *c.* 27 *d.* None of these
147. What is the remainder when $(4x^3 - 3x^2 + 2x - 1)$ is divided by $(x + 2)$?
a. 48 *b.* 49 *c.* -48 *d.* -49

148. If cost price of a fan is ₹ 720. If there is a profit of $16\frac{2}{3}\%$. Then, sale price is
 a. ₹ 840 b. ₹ 940 c. ₹ 1050 d. None of these
149. If the length and breadth of a rectangular plot are increased by 50% and 20% respectively, then the new area is how many times the original area?
 a. $\frac{5}{9}$ b. 10 c. $\frac{9}{5}$ d. $\frac{1}{2}$
150. If the mean and median of a set of numbers are 8.9 and 9 respectively, then the mode will be
 a. 7.2 b. 8.2 c. 9.2 d. 10.2
151. If an alphabet is selected from English alphabet, then probability of selecting a vowel is
 a. $\frac{21}{26}$ b. $\frac{5}{21}$ c. $\frac{5}{26}$ d. $\frac{16}{26}$
152. If $\angle A = (3x - 5)$, $\angle B = (5x + 8)$ and $\angle C = (7x - 3)$, then value of x in $\triangle ABC$ is
 a. 12° b. 24° c. 28° d. 30°
153. If cost price of 20 articles is equal to selling price of 12 articles, then the profit percentage is
 a. 33.3% b. 66.6% c. 50% d. 28%
154. If $\tan A = \frac{5}{6}$ and $\tan B = \frac{1}{11}$, then $(A + B)$ is equal to
 a. $\frac{\pi}{2}$ b. $\frac{\pi}{4}$ c. $\frac{3\pi}{2}$ d. None of these
155. $\cos 4x$ is equal to
 a. $1 + 2\sin^2 2x$ b. $2\cos^2 2x$ c. $1 - 8\sin^2 x \cdot \cos^2 x$ d. $1 + 8\sin^2 x \cdot \cos^2 x$
156. A horse is tied to a post by a rope. If the horse moves along a circular path always keeping the rope tight and describes 88 m when it has traced out 72° at the centre, then the length of the rope is
 a. 72 m b. 70 m c. 85 m d. 80 m
157. If the length of shadow of a pole on a level ground is twice the length of that pole, then the angle of elevation of the sun is
 a. 30° b. 45° c. 60° d. None of these
158. If $x = 5$, $y = 3$ and $z = 2$, then the value of $x^2 + y^2 + z^2 - 2xy + 2yz - 2zx$ is equal to
 a. 0 b. 10 c. 25 d. 125
159. If the rate of simple interest is 12% per annum, the amount that would fetch interest of ₹ 6000 per annum is
 a. ₹ 7200 b. ₹ 50000 c. ₹ 72000 d. ₹ 45000
160. The value of $\frac{2.48 \times 2.48 - 1.52 \times 1.52}{0.96}$ is equal to
 a. 4 b. 16 c. 0.96 d. None of these
161. The head of the state under Parliamentary Government
 a. is an elected representative b. is a hereditary person
 c. is a nominated person d. may be any of these
162. The High Court comes under
 a. state list b. union list c. concurrent list d. None of these

- 163.** The Constitution provides for the nomination of two members of Lok Sabha by the President to represent
- a.* the Parsis *b.* men of Eminence
c. the Business Community *d.* the Anglo-Indian Community
- 164.** India is a federal state because
- a.* dual judiciary *b.* dual citizenship
c. written Constitution *d.* share of power between the centre and the states
- 165.** The residuary subjects are those which are
- a.* contained in the state list *b.* contained in the union list
c. contained in the concurrent list *d.* not covered by any of the three list
- 166.** Decisions regarding disqualification of members of the Lok Sabha are taken by
- a.* The Speaker *b.* The Prime Minister
c. The Minister for Parliamentary affairs *d.* The Parliamentary Secretary
- 167.** Which among the following statements about India's Constitution is wrong? It
- a.* prohibits discrimination on grounds of religion
b. gives official status to one religion
c. provides to all individuals freedom to profess any religion
d. ensures equality of citizen within religious communities
- 168.** Invisible Export meanse export of
- a.* services *b.* prohibited goods *c.* restricted goods *d.* oil and gas products
- 169.** The most ideal region for the cultivation of cotton in India is
- a.* North Plain *b.* The Deccan Plateau *c.* Coastal region *d.* Red soil region

170. Match the following

List I	List II
A. Movement	1. Organisation that seeks to promote the interest of a particular section or group
B. Political parties	2. Organisation that seeks to promote common interest
C. Sectional interest group	3. Organisation that mobilise people with a view to win political power
D. Public interest group	4. Struggle launched for the resolution of a social problem with or without an organisation structure

Codes

- a.* A B C D *b.* A B C D *c.* A B C D *d.* A B C D
a. 4 3 1 2 *b.* 3 4 1 2 *c.* 1 2 3 4 *d.* 3 4 2 1

- 171.** Who was the founder of Satya Shodhak Samaj?
- a.* Raja Ram Mohan Roy *b.* Jyotiba Phule *c.* Swami Shraddhanand *d.* Lala Lajpat Rai

- 172.** Mamulk dynasty is also known as
- a.* Tughlaq dynasty *b.* Lodhi dynasty *c.* Slave dynasty *d.* None of these

173. Match the following

List I	List II
A. Fataullah Imad	1. Qutab Shahi
B. Yusuf Adil Khan	2. Imad Shahi
C. Malik Ahmad	3. Adil Shahi
D. Qnli Shah	4. Nizam Shahi

Codes

- a.* A B C D *b.* A B C D *c.* A B C D *d.* A B C D
a. 4 3 2 1 *b.* 2 3 4 1 *c.* 1 4 3 2 *d.* 3 2 4 1

174. Rearrange the followings in chronological order
 I. Chandragupta II II. Skandagupta
 III. Kumaragupta IV. Samudragupta
 a. IV, I, III, II b. I, III, II, IV c. II, I, III, IV d. III, I, II, IV
175. Which one of the following is not a pastoral community of Africa?
 a. The Massai b. The Dhangars c. The Bedouins d. The Berbers
176. When was the land enclosed for food production in England?
 a. 16th b. 17th c. 18th d. 20th
177. Who is the author of 'Titash Ekli Nadir Naam'?
 a. Sarat Chandra Chattopadhyay b. Advaita Malla Burman
 c. Samaresh Basu d. Ritwik Ghatak
178. Who was Martin Luther?
 a. Religious reformer of Africa b. Religious reformer of Germany
 c. Religious reformer of France d. Religious reformer of Holland
179. Consider the following statements
 I. Till the 1780s, white American settlements were confined to a small narrow strip of coastal land in the East.
 II. Several groups of native Americans were nomadic.
 III. Native Americans lived in central America.
 IV. Native Americans lived only by hunting.
 Which of the above statement(s) is/are correct?
 a. I and II b. I, II and III c. II and IV d. I and IV
180. Who are the people who move from one place to the other to tend their sheep, goats and cattle?
 a. Forest dwellers b. Pastoralists c. Shifting cultivators d. Food gatherers
181. Which of the following factors required for the production of goods and services?
 a. Land b. Labour c. Physical capital d. All of these
182. When people are not able to find jobs during some months of the year. This refers to as
 a. disguised unemployment b. seasonal unemployment
 c. unemployment d. urban unemployment

183. Match the following

List I	List II
A. Fixed capital	1. Land, labour, capital
B. Working capital	2. Tools, machinery, buildings
C. Human capital	3. Raw materials
D. Forces of production	4. Knowledge and enterprise

Codes

- A B C D A B C D A B C D A B C D
 a. 3 2 1 4 b. 2 3 4 1 c. 2 3 1 4 d. 4 1 2 3

184. A payment that a government makes to a producer to supplement the market price of a commodity is called
 a. market price b. fair price c. subsidy d. competitive price

- 185.** Consider the following crops
 I. Rice II. Wheat III. Cotton IV. Groundnut
 Which of these are Kharif crops?
 a. 1 and 2 b. 1 and 3 c. 1, 3 and 4 d. 1, 2 and 3
- 186.** The sectors are classified into public and private on the basis of
 a. employment conditions
 b. the nature of the economic activity
 c. ownership of the enterprises
 d. number of workers employed in the enterprise
- 187.** GDP is the total value of ——— produced during a particular year
 a. all goods and services b. all final goods and services
 c. all intermediate goods and services d. all intermediate and final goods and services
- 188.** In a self help group most of the decisions regarding savings and loan activities are taken by?
 a. Bank b. Member's of the SHGs
 c. Governmental Financial Institution d. Non-Governmental Organisation
- 189.** World Trade Organisation basically promotes?
 a. Financial support b. Global peace c. Unilateral trade d. Multilateral trade
- 190.** In India who fomulates the Fiscal policy?
 a. Ministry of Finance b. RBI
 c. Prime Minister's Office d. Planning Commision
- 191.** Which of the following is false?
 a. Alluvial soil contain adequate proportion of potash, phosphoric acid and lime
 b. Black soil are also called 'Regur' soil
 c. Laterite soil develops in areas with high temperature
 d. Arid soil are clayey in texture

192. Match the following

List I Animals/plants	List II Category of existence
A. Pink head duck	1. Extinct
B. Andaman wild pig	2. Endangered
C. Black buck	3. Endemic
D. Asiatic elephant	4. Rare
E. Himalayan brown bear	5. Vulnerable

Codes

A B C D E A B C D E A B C D E A B C D E
 a. 2 3 4 5 1 b. 1 5 4 3 2 c. 1 3 2 5 4 d. 2 4 5 3 1

- 193.** How much per cent of Indian population is engaged in agricultural activities?
 a. One-fourth b. One-third c. Two-third d. Two-fourth
- 194.** The term rat hole mining means
 a. when coal mining takes place in the form of a long narrow tunnel known as rat hole mining
 b. when rat dig hole in mining area, then it is termed as rat hole mining
 c. the mining area where rat as well as man-made hole in the form of tunnel known as rat hole mining
 d. None of the above

195. TISCO steel plant is located in
a. West Bengal *b.* Karnataka *c.* Jamshedpur *d.* Orissa
196. Which of the following national water ways join Allahabad and Haldia?
a. National waterway-1 *b.* National waterway-2
c. National waterway-3 *d.* National waterway-4
197. The territorial boundary of Madhya Pradesh is touched by
a. Gujarat, Maharashtra, Haryana, Chhattisgarh
b. Uttar Pradesh, Rajasthan, Gujarat, Chhattisgarh
c. Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, Maharashtra
d. Rajasthan, Gujarat, Uttar Pradesh, Chhattisgarh
198. According to height, which of the following is highest amongst them all?
a. Nanda Devi *b.* Namcha Barwa *c.* Gurla Mandhata *d.* None of these
199. Brahmaputra enters in India through
a. Asom *b.* Uttrakhand *c.* Nagaland *d.* Arunachal Pradesh
200. Humidity of rainfall is measured by
a. Hydrometer *b.* Rain guage *c.* Hygrometer *d.* None of these

A
B
C
D
E

A B C D
B A C D
C B A D

A B C D
B A C D

A B C D
B A C D

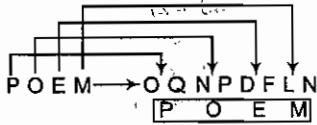
A B C D
B A C D

U 3
S
Paper I : Mental Ability Test

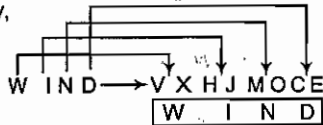
Paper I : Mental Ability Test

1. (c) Except (c) in all options first and last and middle letters are opposite.

2. (a) Given,



Similarly,



∴ In the given world's letters, both side of letters are given in the code language.

3. (b) goh rut pee means my school bag
 nie Jee goh means black colour bag
pee Jee goh means my black bag

∴ It is clear that 'nie' presents 'colour'.

4. (d) Starting from G add 7 in every next letter but in clockwise direction as, $G + 7 = N + 7 = U + 7 = C = U$

∴ Total of all letters is in the centre.

5. (b) $1000 \rightarrow 10^3$, $100 \rightarrow 10^2$, $729 \rightarrow 9^3$, $81 \rightarrow 9^2$, $512 \rightarrow 8^3$, $64 \rightarrow 8^2$, $343 \rightarrow 7^3$, $49 \rightarrow 7^2$

6. (b) $z \times y \div w / z \times y \div w / z \times y \div w / z \times y$

7. (a) $5 + 4 + 7 = \frac{16}{2} = 8$

$$\Rightarrow 6 + 9 + 5 = \frac{20}{2} = 10$$

$$\Rightarrow 3 + 7 + 2 = \frac{12}{2} = 6$$

8. (d) $A \xrightarrow{+2} C \xrightarrow{+2} E$ $2 + 4 = 6$

$$G \xrightarrow{+2} I \xrightarrow{+2} K$$
 $3 + 5 = 8$

$$M \xrightarrow{+2} O \xrightarrow{+2} Q$$
 $5 + 9 = 14$

So, K_8 will be the answer.

9. (d) $1 \xrightarrow{+1^2} 2 \xrightarrow{+2^2} 6 \xrightarrow{+3^2} 15 \xrightarrow{+4^2} 31 \xrightarrow{+5^2} 56 \xrightarrow{+6^2} 92 \xrightarrow{+7^2} 141$

10. (c) Start from B add 5 in each letter in clockwise direction.

∴ When, $A + S = F$

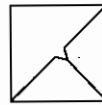
11. (a) Given, $5 + 3 + 2 = 30$ and $4 + 7 + 5 = 140$

Means $5 \times 3 \times 2 = 30$ and $4 \times 7 \times 5 = 140$

Similarly, $13 + 5 + 2 = ?$

Means $13 \times 5 \times 2 = 130$

12. (d)



13. (c) Since, the paragraph states that Marlee is the younger cousin, Sara must be older than Marlee, There is no information to support the other choices.

14. (c) Given the information presented, the only statement that could be considered true is that fruit should not be eaten because it is poisonous. There is no support that taxol is poisonous or that taxol has cured anyone (choices a and b). There is no support for choice d.

15. (a)



16. (b) In each row of diagram, the value in the central circle equal the sums of the digits in corresponding segments of the left and right hand circles.

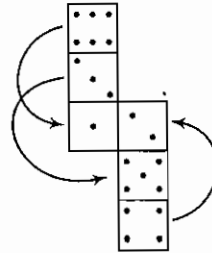
17. (d) From figure (ii) and (iii),

Common dots is 3 and 6.

From (ii) \rightarrow (6) (3) (4)

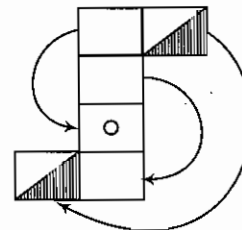
From (iii) \rightarrow (6) (3) (2)

18. (a)



So, five dots will opposite to three.

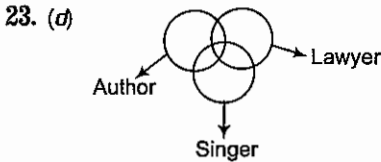
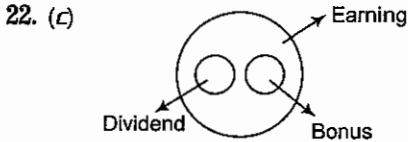
19. (d)



So, only option (d) having dice is the correct answer.

20. (b) Except figure (b) all are alike and half of 'star' is present in down circle.

21. (b) In the last box of row having the common segments which are exists in box first and second.



24. (d) Karuna is the daughter of the only son of Diwaker's grandfather. Hence, it's clear that Karuna is the sister of Diwakar.

25. (a) F3M → F is the wife of M.

M5K → M is the father of K.

Therefore, F is the mother of K.

26. (c) Option (c) is correct among them.

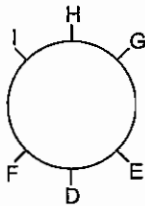
27. (d) Only 8 candidates are there who are doing job but not in company.

28. (c) Add up numbers in corresponding segments of each square. The sum of the digits in the left hand segments equals 20, the sum of the upper segments equal 22, the right hand segments equal 24 and the lower segments equal 26.

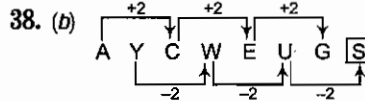
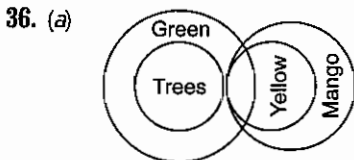
29. (c) Saroj > Vishal > Tushar > Suraj > Sandeep

30. (a) Only option (a) is correct because the opposite image will be exist in option (a).

Solutions (Q. Nos. 31-35)



31. (b) 32. (a) 33. (c) 34. (d) 35. (a)



39. (b) The lower element gets enlarged and becomes the outermost element the upper element gets slightly enlarged and becomes the middle element and a new element with one more number of sides than the lower element appears as the innermost element.

Solutions (Q. Nos. 40-42)

$$V : W = 2 : 1$$

$$W : X = 9 : 2$$

$$X : Y = 1 : 2$$

$$Y : Z = 1 : 2$$

or

$$V : W : X : Y : Z$$

$$2 : 1 : \dots$$

$$9 : 2$$

$$1 : 2$$

$$1 : 2$$

$$2 \times 9 \times 1 \times 1 : 1 \times 9 \times 1 \times 1 : 1 \times 2 \times 1 \times 1$$

$$18 : 9 : 2$$

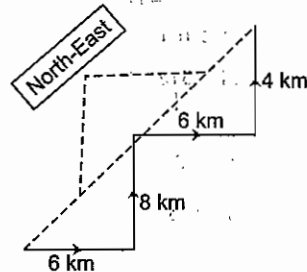
$$1 \times 2 \times 2 \times 1 : 1 \times 2 \times 2 \times 2$$

$$4 : 8$$

$$V > W > Z > X > Y$$

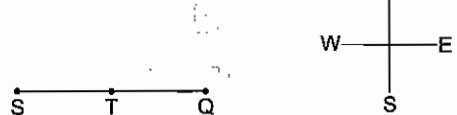
40. (c) 41. (a) 42. (b)

43. (b)

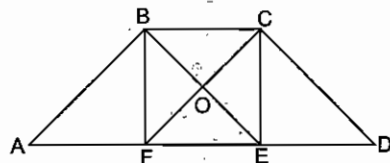


So, her mother is in North-East.

44. (a) P — R — U



45. (c)



Triangles are ABF, BFO, BOC, COE, EOF, CED, FBC, FEC, BFE, BCE, ABE and FCD.

∴ Hence, there are totally 12 triangles in the given figure.

46. (d) Let distance = x km and

Usual rate = y km/h

$$\text{Then, } \frac{x}{y} - \frac{x}{y+3} = \frac{40}{60}$$

$$\Rightarrow 2y(y+3) = 9x \quad \dots(i)$$

$$\text{and } \frac{x}{y-2} - \frac{x}{y} = \frac{40}{60}$$

$$\Rightarrow y(y-2) = 3x \quad \dots(ii)$$

On dividing Eqs. (i) by (ii), we get

$$\frac{2y(y+3)}{y(y-2)} = \frac{9x}{3x}$$

$$\Rightarrow \frac{2y+3}{y-2} = 3$$

$$\Rightarrow 2y+6 = 3y-6$$

$$\therefore y = 12$$

On putting this value in Eq. (ii), we get

$$12 \times 10 = 3x$$

$$\Rightarrow x = 40$$

47. (c) Let money with Ken be x .

Then, money with Mac = $x + \text{£}3$

$$\text{Now, } 3x = (x + x + \text{£}3) + \text{£}2$$

$$\Rightarrow x = \text{£}5$$

Therefore, total money with Mac and Ken

$$= 2x + \text{£}3 = \text{£}13$$

48. (a) $A : B = 60 : 45$

$A : C = 60 : 40$

$$\therefore \frac{C}{A} = \left(\frac{B}{A} \times \frac{A}{C} \right) = \left(\frac{45}{60} \times \frac{60}{40} \right) = \frac{45}{40} = \frac{90}{80} = 90 : 80$$

So, B can give C 10 points in a game of 90.

49. (a) The sum of the numbers pointed to by the hour and minute hands is always 11.

50. (c) Moves from North-West 180° means facing South-East and moves 45° in anti-clockwise direction is now facing East.

51. (d) In this sentence Shrewsbury refers to a famous cricketer, the author uses the pronoun 'he' and 'his' for Shrewsbury.

52. (d) The author talks about 'colour, enthusiasm' etc.

53. (c) Writer says that while playing cricket the player should put his soul and try his level best from the depth of his heart.

54. (b) Without the spirit of sacrifice cricket is a dead thing.

55. (c) 'Mechanic fellows' as he explains means those who don't have enthusiasm but only scores many runs.

56. (c) The monkeys 'had no warm home and there was cold.' So, they were running in search of a warm place.

57. (b) The monkey's 'got furious' just after the bird's advice. This implies that they did not like the advice of the bird.

58. (d) We are told by the author that the bird was pulled out of its nest and it makes statement at the end of the

passage, this states that all the above statements are not true.

59. (d) The monkeys were in search of warm place and not for food.

60. (d) None of these above statements, although monkeys saw 'some fireflies' in the jungle.

61. (d) No reason has been mentioned why Sayyed Mohammad begged for mercy. Apparently, it was the fear of death.

62. (d) The consideration that Tipu had for Sayyed was that the latter's father was a man of religion.

63. (b) 'Wolves' in the last paragraph refers to the dangerous traitors.

64. (d) Last sentence of the first paragraph (the English army sent under Montgomery to assist Sayyed Mohammad).

65. (c) According to Tipu's commander Tipu's decision would encourage the traitors.

66. (b) QPR

S_1 link with statement (Q) because tiles are used in building construction again linked with cement paint manufacturing units statement (P) and the last one (R).

67. (c) QPR

S_1 link with statement (Q) with not only and again in the next sentence (P) but the majority and last (R) come in the sequence.

68. (b) Of learning throughout the ages.

69. (c) Both as a weapon of isolation.

70. (b) Fatally means causing or ending in death.

71. (d) Vague means of uncertain or ill-defined.

72. (d) Dispersed means to dissipate in different directions.

73. (a) Exercise

74. (d) Judicious

75. (d) Flock

76. (c) Pretend

77. (b) Confirmed

78. (b) Tempest means violent windy storm.

79. (c) Despite means inspite of (outrage, injury etc).

80. (c) Struggled

81. (a) Decides

82. (b) Wiped

83. (c) Changes

84. (a) In

85. (d) Ancestors

86. (b) We

87. (c) Save

88. (d) Gets

89. (a) Unfolding

90. (a) Cut off means discontinue or die or to remove.

91. (c) Get on means progress.
 92. (b) Round up is to arrest.
 93. (c) To make matter worse.
 94. (a) To be defeated.
 95. (c) To wish for something impossible.
 96. (a) Occupant means resident or native while 'outsider' is stranger or emigrant.
 97. (c) Boldness is insolence or arrogance while 'humility' is mildness or submission.
 98. (b) Disperse means spend or scattered while 'accumulate' means gather or store.
 99. (a) Fault means smirch or stain while 'purity' means spotless or stainless.
 100. (b) Benevolence is humanity or charity while unkindness means inhumanity.

Paper II : Scholastic Aptitude Test

101. (c) Size of colloidal particles is 10^{-5} , 10^{-3} cm.
 102. (b) For dilution of concentrated acid, we should add concentrated acid in to water.
 103. (c) Soil for healthy growth of plants should be neither alkaline nor highly acidic.
 104. (d) For pH = 3 for pH = 6
 $[H^+] = 10^{-3}$ $[H^+] = 10^{-6}$
 105. (a) When a base dissolved in water, It take H^+ ions or give OH^- hence, the concentration of OH^- ions increases.
 106. (d) Concentration of OH^- ions in 10^{-4} M NaOH solution 10^{-4}
 \therefore pOH = $-\log(OH^-) = -\log 10^{-4} = 4$
 $pH + pOH = 14$,
 $pH = 14 - pOH = 14 - 4 = 10$
 107. (b) Na_2CO_3 is a salt of strong base (NaOH) and weak acid. On hydrolysis it gives NaOH and H_2CO_3 . Hence, solution will be alkaline and PH should be > 7 .
 108. (c) Brine solution (NaCl solution) on electrolysis gives H_2 , Cl_2 and NaOH.
 109. (d) ($Na_2CO_3 \cdot 10H_2O$) on exposure to light, loses its water and gives $Na_2CO_3 \cdot H_2O$.
 110. (c) Bleaching action of bleaching powder is due to the presence of chlorine.
 111. (a) On passing CO_2 gas through lime water, formation of calcium carbonate takes place which makes lime water milky.
 112. (c) 113. (b) 114. (b)
 115. (c) Let R = resistance of each of the wires.
 when the wires are in series then net resistance = $R + R = 2R$
 when the wires are in parallel,
 then net resistance = $\frac{R^2}{2R} = \frac{R}{2}$
 None ratio of heat produced
 $\frac{H_1}{H_2} = \frac{i^2(2R)t}{i^2\left(\frac{R}{2}\right)t} = \frac{2R}{\frac{R}{2}} = 2R \times \frac{2}{R}$
 116. (c) 117. (a) 118. (a) 119. (b) 120. (b)
 121. (c) 122. (a) 123. (b)
 124. (d) Accordingly to the question
 Speed of sound in air, V_1 (let) = $\frac{2 \times 1000}{3}$
 that of in another medium, V_2 (let)
 As, $V = n\lambda$
 i.e., $V \propto \lambda$ when, n is constant
 $\Rightarrow \frac{V_1}{V_2} = \frac{\lambda_1}{\lambda_2}$
 $\Rightarrow \frac{\lambda_1}{\lambda_2} = \frac{2 \times 1000}{3} \times \frac{10}{3 \times 1000}$
 $= \frac{20}{9}$
 125. (c) Chloroplasts serves as the site of photosynthesis. Thylakoids form another membranous system within the chloroplast. Chlorophyll is found in the thylakoid membranes.
 126. (d) Banana is traditionally propagated through sucker (pups) or pieces of the rhizome. This is the most common propagation material in banana propagation.
 127. (d) The European honey bee, also known as the common or western honey bee (*Apis mellifera*) is so named because it produces large amounts of honey. European honey bees used for commercial honey production represent a potential source of competition for floral resources with native nectar and pollen feeding insects.
 128. (d) Gonorrhoea is a sexually transmitted infection (STI) caused by bacteria called neisseria gonorrhoeae or gonococcus.
 129. (c) The virus has two exact copies of single-stranded RNA as its basic genetic material (genome) in the very center of the organism.
 130. (c) Malnutrition is the condition that results from eating a diet in which certain nutrients are lacking, in excess (too high and intake) or in the wrong proportions.
 131. (b) World Environment Day (WED) is celebrated every year on 5th June to raise global awareness of the need to take positive environmental action.

132. (a) Non-degradable compounds such as dichloro diphenyl trichloroethane (DDT); dioxins, polychlorinated biphenyls (PCBs) and radioactive materials can reach dangerous levels of accumulation as they are passed up the food chain into the bodies of progressively larger animals.

133. (c) Hyper glycaemia (diabetes mellitus) is caused due to non-functioning of beta cells of islets of langerhans (i.e., secretion of insulin).

134. (a) Vestigial organs are body structures considered to have been better developed and functional in the past but to have now lost most or all of their function and some or most of their structure. Darwin called them rudimentary. Examples of vestigial organs in humans usually include the appendix, the coccyx (tail bone), and the tonsils.

135. (b) Bombay duck and hilsa are examples of marine fish. Marine fishery deals with the fishery of the sea water or ocean.

136. (a) BCG vaccine is used against TB (Tuberculosis), which is a bacterial disease caused by Mycobacterium tuberculosis. BCG vaccine was developed by Calmette and Guerin.

137. (a) Bacteria cannot survive in a highly salted pickle because due to exosmosis, water will move from cytoplasm of bacteria to their outer salty environment, this leads to plasmolysis of bacteria and finally death.

138. (a) When fats are oxidised, they release a large amount of energy as compared to proteins and carbohydrates because they have maximum number of carbon atoms in their skeleton.

139. (b) Organisms are able to use only biologically usable form of chemical energy like ATP (adenosine triphosphate). ATP molecules act as energy currency in the cells and provide energy for various biological reactions.

140. (d) Palynology - Pollens Oncology - Cancer
Phycology - Algae Sericulture - Silk worm

141. (b) Let the cost of one horse be ₹ x.
and the cost of one cow be ₹ y.

$$\begin{aligned} \text{So,} \quad & x+2y = 680 && \dots (i) \\ \text{and} \quad & x-y = 80 && \dots (ii) \end{aligned}$$

On subtracting Eq. (ii) from Eq. (i), we get

$$3y = 600 \Rightarrow y = 200$$

$$\therefore \text{Cost of one horse} = 200 + 80 = ₹ 280$$

Hence, cost of one horse is ₹ 280.

142. (b) Let the given prime numbers be a, b, c and d.

$$\begin{aligned} \text{Then,} \quad & a \times b \times c = 385 && \dots (i) \\ & b \times c \times d = 1001 && \dots (ii) \end{aligned}$$

On dividing Eq. (i) by Eq. (ii), we get

$$\frac{a \times b \times c}{b \times c \times d} = \frac{385}{1001}$$

$$\Rightarrow \frac{a}{d} = \frac{35}{91} = \frac{5}{13} \Rightarrow \frac{a}{d} = \frac{5}{13}$$

Hence, last number is 13.

143. (d) $x + y = 12$ and $xy = 32$

$$\Rightarrow y = \frac{32}{x}$$

$$\therefore x + \frac{32}{x} = 12$$

$$\Rightarrow x^2 - 12x + 32 = 0$$

$$\Rightarrow x^2 - 8x - 4x + 32 = 0$$

$$\Rightarrow x(x-8) - 4(x-8) = 0$$

$$\Rightarrow (x-8)(x-4) = 0$$

$$\Rightarrow x = 8, 4$$

$$\therefore y = 4, 8$$

$$\therefore \frac{1}{x} + \frac{1}{y} = \frac{1}{8} + \frac{1}{4} = \frac{1+2}{8} = \frac{3}{8}$$

144. (a) $QR = RS$

$$\therefore \angle RQS = \angle RSQ = \frac{1}{2} (\angle 180^\circ - \angle SRQ) = 40^\circ$$

$$\begin{aligned} \Rightarrow \angle PQS &= 180^\circ - \angle SQR \\ &= 180^\circ - 40^\circ = 140^\circ \end{aligned}$$

Again, $PQ = QS$

$$\therefore \angle QPS = \angle QSP = \frac{1}{2} (180^\circ - \angle PQS)$$

$$= \frac{1}{2} (180^\circ - 140^\circ) = \frac{1}{2} \times 40^\circ = 20^\circ$$

145. (c) Given equation is $x^2 - 5x + 6 = 0$

$$\therefore \alpha + \beta = 5 \text{ and } \alpha\beta = 6$$

$$\therefore (\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta$$

$$(\alpha - \beta)^2 = (5)^2 - 4 \times 6 = 25 - 24 = 1$$

$$\therefore (\alpha - \beta) = \pm 1 \text{ and } (\alpha + \beta) = 5$$

$$\therefore (\alpha^2 - \beta^2) = (\alpha + \beta)(\alpha - \beta) = (5)(\pm 1) = \pm 5$$

$$(\alpha^2 - \beta^2) = \pm 5$$

146. (a) Here, $\bar{x} = 27$ and $n = 78$

$$\therefore \text{Total of observations} = 78 \times 27 = 2106$$

$$\therefore \text{New total of observations} = \frac{2106}{3} = 702$$

$$\therefore \text{New mean} = \frac{702}{78} = 9$$

147. (d) Let $f(x) = 4x^3 - 3x^2 + 2x - 1$

$$\text{Put } x = -2$$

$$\begin{aligned} \therefore f(-2) &= 4(-2)^3 - 3(-2)^2 + 2(-2) - 1 \\ &= -32 - 12 - 4 - 1 = -49 \end{aligned}$$

Hence, remainder is -49.

148. (a) Here, $r = 16\frac{2}{3}\%$ and $CP = ₹ 720$

$$\begin{aligned} \therefore SP &= \frac{CP \times (100 + r)}{100} = \frac{720 \times \left(100 + 16\frac{2}{3}\right)}{100} \\ &= \frac{720 \times \left(100 + \frac{50}{3}\right)}{100} \end{aligned}$$

$$= \frac{72 \times \left(\frac{300+50}{3} \right)}{10} = \frac{72 \times 350}{10 \times 3} = 840$$

$$\therefore SP = ₹ 840$$

149. (c) Let length = x and breadth = y

Then, original area = $x \times y = xy$

$$\text{New length} = 150\% \text{ of } x = \frac{150x}{100} = \frac{3x}{2}$$

$$\text{New breadth} = 120\% \text{ of } y = \frac{120y}{100} = \frac{6y}{5}$$

$$\therefore \text{New area} = \frac{3x}{2} \times \frac{6y}{5} = \frac{9}{5}xy = \frac{9}{5}$$

Time of original area is $\frac{9}{5}$.

150. (c) We know that, Mode = 3 (Median) - 2 (Mean)

$$= 3 \times 9 - 2 \times 8.9 \\ = 27 - 17.8 = 9.2$$

Hence, mode is 9.2.

151. (c) Here, $n(S) = \{A, B, C, \dots, Z\} = 26$

$$n(E) = \{A, E, I, O, U\} = 5$$

$$\therefore \text{Probability of selecting a vowel} = \frac{5}{26}$$

152. (a) We know that in a $\triangle ABC$,

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow 3x - 5 + 5x + 8 + 7x - 3 = 180^\circ$$

$$\Rightarrow 15x = 180^\circ$$

$$\Rightarrow x = \frac{180^\circ}{15} = 12$$

$$\therefore x = 12^\circ$$

153. (b) Let cost price be ₹ x and sale price be ₹ y .

$$\therefore 20x = 12y \Rightarrow y = \frac{20}{12}x = \frac{5}{3}x$$

$$\therefore \text{Profit percentage} = \frac{\frac{5}{3}x - x}{x} \times 100 \\ = \frac{2x}{3x} \times 100 = \frac{200}{3} = 66.6\%$$

154. (b) Here, $\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \cdot \tan B}$

$$= \frac{\frac{5}{6} + \frac{1}{11}}{1 - \frac{5}{6} \times \frac{1}{11}} = \frac{\frac{55+6}{66}}{1 - \frac{5}{66}} = \frac{\frac{61}{66}}{\frac{66-5}{66}} = \frac{61}{66} = 1$$

$$\Rightarrow \tan(A+B) = 1 = \tan \frac{\pi}{4}$$

$$\therefore (A+B) = \frac{\pi}{4}$$

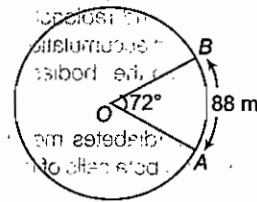
155. (c) $\cos 4x = 1 - 2\sin^2 2x = 1 - 2(\sin 2x)^2$

$$= 1 - 2(2\sin x \cdot \cos x)^2$$

$$= 1 - 2(4\sin^2 x \cdot \cos^2 x)$$

$$= 1 - 8\sin^2 x \cdot \cos^2 x$$

156. (b) Let A and B be the positions of horse, then l = length of arc $AB = 88$ m



Angle at centre

$$= 72^\circ \times \frac{\pi}{180^\circ} = \frac{2\pi}{5} \text{ radian}$$

$$\therefore \theta = \frac{l}{r} \Rightarrow r = \frac{l}{\theta}$$

$$\therefore r = 88 \times \frac{5}{2\pi} \\ = 88 \times \frac{5}{2} \times \frac{7}{22} = 70$$

$$\left(\because \pi = \frac{22}{7} \right)$$

$$\therefore r = 70 \text{ m}$$

157. (d) Let PQ be shadow of pole RQ then, if $RQ = x$ and $PQ = 2x$

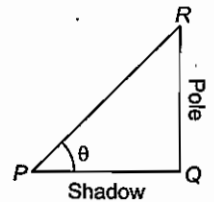
(given)

In $\triangle PQR$,

$$\tan \theta = \frac{RQ}{PQ} = \frac{x}{2x}$$

$$\Rightarrow \tan \theta = \frac{1}{2}$$

$$\therefore \theta = \tan^{-1} \left(\frac{1}{2} \right)$$



158. (a) Given, $x = 5$, $y = 3$ and $z = 2$

$$x^2 + y^2 + z^2 - 2xy - 2yz - 2zx \\ = (x - y - z)^2 = (5 - 3 - 2)^2 = (0)^2 = 0$$

159. (b) Rate of interest = 12% per annum

Simple interest = ₹ 6000 per annum

Let the principal be ₹ P .

$$\therefore SI = \frac{P \times R \times T}{100} \Rightarrow 6000 = \frac{P \times 12 \times 1}{100}$$

$$\Rightarrow P = \frac{6000 \times 100}{12} = 50000$$

$$\therefore P = ₹ 50000$$

160. (a) Given, $\frac{2.48 \times 2.48 - 1.52 \times 1.52}{0.96}$

$$= \frac{(2.48)^2 - (1.52)^2}{0.96} = \frac{(2.48 + 1.52)(2.48 - 1.52)}{0.96}$$

$$= \frac{4 \times 0.96}{0.96} = 4$$

151. (b) 152. (a) 153. (d) 154. (a) 155. (b)

156. (c) 157. (a) 158. (a) 159. (b) 160. (d)

161. (d) Head of the state may be elected or hereditary as in the case of Britain, the hereditary head of the State Queen. In India, we have elected head of the State President.

162. (b)
163. (d) The President of India can nominate two members of Anglo-Indian Community, if he thinks that they have not proper representation in the Lower House.
164. (d) The powers of the Central and State Government are divided through three lists—central, state, concurrent list. Embodied in schedule seven of the Constitution.
165. (d) The subjects which are not described in the three lists.
166. (a) On the ground of defection Speaker can disqualify members of the Lok Sabha.
167. (b) Constitution of India prohibits discrimination on grounds of religion. People have freedom to belief, faith and worship any religion.
168. (d) Invisible export include services such as finance, banking. These are distinct from physically visible goods.
169. (b) Black soils are found on Deccan plateau which is very good for cotton cultivation.
170. (a)
171. (b) It was founded in 1873 by Jyotiba Phule to fight brahmanic domination and to liberate low castes by educating them and teaching them their rights.
172. (c) Three important kings, viz. Qutab-ud-din Aibak, Iltutmish and Balban of this dynasty were slaves.
173. (b) 174. (a)
175. (b) The Dhangars were an important pastoral community of Maharashtra.
176. (c) Britain at that time was industrialising. Thus, people migrated in towns for search of jobs. As the urban population grew, the market for foodgrains expanded. The new enclosures were necessary for cultivation.
177. (b) It is an epic about the Mallas, the fisher folk community and author himself belongs to this community.
178. (b) Martin Luther wrote ninety five thesis criticising many of the practices and rituals of the Roman Catholic Church and the credit of starting reformation in Germany was given to him.
179. (a) Most of the landscape was not under the control of white Americans. There were various native American groups of them, some were nomadic, some were settled.
180. (b) Pastoralists migrated from one region to other in search of pastures for their animals.
181. (d) All the three land, labour and capital are necessary for the production of goods and services.
182. (b) Seasonal unemployment is a feature of rural economy, where people are largely dependent on agriculture and agriculture itself is a seasonal activity.
183. (b)
184. (c) The Government provides subsidy on petroleum products and fertilisers as these products are import oriented.
185. (c) Kharif season begins with the onset of the monsoons in June-July. Examples are rice, maize, millets, cotton, groundnuts.
Rabi season starts after the rainy season, examples are wheat, barley, pulses.
186. (c) The ownership of the government in any industry or organisation defines whether an unit is public sector or private. The units or organisation in which government has the major share *i.e.*, not less than 51% all time, are classified as public sector.
187. (b) GDP is the aggregate of total flow of goods and services produced by an economy in a year.
188. (b)
189. (d) WTO is the international organisation to regulate and control the trade between countries of the world.
190. (b) Fiscal policy is formulated by Ministry of Finance and Monetary policy is formulated by RBI.
191. (d) Arid soil are sandy in texture and saline in nature. After proper irrigation, this soil becomes cultivable.
192. (c)
193. (c) Around 60% work force is engaged in agricultural activities.
194. (a) Rat hole mining is done in most of the tribal areas of North-East India. Example—Meghalaya, Cherapunji.
195. (c) TISCO-full form is Tata Iron and Steel Company Limited. Company headquarter is in Mumbai.
196. (a) National waterway 1 - Allahabad - Haldia
National waterway 2 - Sadiya-Dhubri stretch of Brahmaputra river
National waterway 3 - Kottapuram-Kollam
National waterway 4 - Kakinada-Pondicherry
National waterway 5 - Talcher-Dhamra stretch of the Brahmani river.
National waterway 6 - Lakhipur to Bhanga of river Barak.
197. (d)
198. (a) It is the 3rd highest mountain in India and 23rd highest independent peak in the world.
199. (d) Arunachal Pradesh is also known as 'Land of Rising Sun'. It is the Eastern most state of India.
200. (c) Humidity of rainfall is measured by hygrometer.