

SOLUTIONS WILL BE UPLOADED SOON

**NTSE STAGE I – 2018 - 19  
TAMIL NADU  
PART – I MENTAL ABILITY TEST**

**Direction: (Question number 1 and 5)**

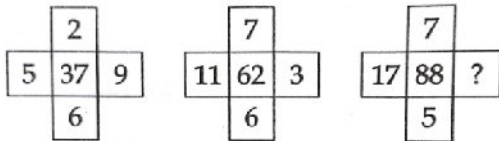
In each question the numbers/letters are arranged in a sequence based on certain principle. Select the answer from the four alternatives given under each sequence for the term marked by?

1. 19, 24, 31, 42, 55, 72, \_\_\_?  
(A) 83 (B) 89 (C) 91 (D) 93
2. 10, 58, 105, \_\_\_?, 196, 240, ....  
(A) 150 (B) 151 (C) 154 (D) 147
3. Z, W, R, K, \_\_\_?  
(A) B (B) F (C) D (D) A
4. 1, 4, 13, 40, 121, \_\_\_?  
(A) 202 (B) 364 (C) 148 (D) 210
5. 0, 1, 2, 3, 6, 11, 20, \_\_\_?  
(A) 31 (B) 34 (C) 37 (D) 22

**Direction: (Question number 6 and 7)**

The diagram and the numbers/letters follow certain principle. Select the missing number/ letter indicated by question mark?

6. 6, 7, 10, 8, 16, 15, 26, 23, 42, 38, 68, \_\_\_?  
(A) 61 (B) 80 (C) 106 (D) 120
- 7.



- (A) 20 (B) 59 (C) 85 (D) 10

**Direction: (Question number 8 - 15)**

First two terms are connected by some relationship. The same relationship is applicable for the next terms in which one is blank space. Identify the suitable term from the given four alternatives for the blank space.

8. PEN: WRITING::CYCLE: \_\_\_\_\_  
(A) REPAIRING (B) CAR (C) RIDING (D) ROAD

9. EYE: FACE: : \_\_\_\_\_  
 (A) RING : FINGER (B) STEM: ROOT  
 (C) KNOB : DOOR (D) SHOE : FOOT
10. WING : BEAK : : \_\_\_\_\_  
 (A) BUTTON : SHIRT (B) PLUTO : VENUS  
 (C) HOUSE : CHIMNEY (D) BIRD : CAGE
11. ROOM : HOUSE : : \_\_\_\_\_  
 (A) REFRIGERATOR : KITCHEN (B) CHAIR : ROOM  
 (C) ROOF : BUILDING (D) WHEEL : CHAIR
12. 5 : 29 : : ? : 41  
 (A) 30 (B) 6 (C) 7 (D) 4
13. CANADA : DOLLAR : GERMANY: \_\_\_\_\_  
 (A) YEN (B) DOLLAR (C) DEUTSCHE MARK (D) RIYAL
14. CARBOHYDRATE : POTATO : FAT : \_\_\_\_\_  
 (A) CARROT (B) TOMATO (C) WATER (D) GHEE
15. DAVIS CUP : LAWN TENNIS : DEODHAR TROPHY : \_\_\_\_\_  
 (A) FOOTBALL (B) CRICKET (C) HOCKEY (D) SHUTTLE COCK
16. There are four prime numbers written in ascending order. The product of the first three is 1001 and that of the last three is 2431. The last number is:  
 (A) 17 (B) 19 (C) 23 (D) 13
17. The largest number which divides 62, 132 and 237 to leave the same remainder in each case is:  
 (A) 51 (B) 35 (C) 8 (D) 53
18. Traffic lights at three different road crossings change after every 48 sec, 72 sec and 108 sec respectively. If they all change simultaneously at 7 : 00 : 00 hours then at what time will they again change simultaneously?  
 (A) 7 : 14 : 00 Hrs (B) 7 : 14 : 12 Hrs  
 (C) 7 : 07 : 12 Hrs (D) 7 : 09 : 12 Hrs
19. A student got twice as many sums wrong as he got right. If he attended 60 sums in all, how many did he solve correctly?  
 (A) 12 (B) 16 (C) 24 (D) 20
20.  $\frac{1}{5 \times 6} + \frac{1}{6 \times 7} + \frac{1}{7 \times 8} + \dots + \frac{1}{24 \times 25} = ?$   
 (A) 0.36 (B) 0.16 (C) 0.016 (D) 1.6

21. If  $\frac{2x}{1 + \frac{1}{1 + \frac{x}{1-x}}} = 3$  then the value of x is :
- (A)  $\frac{5}{6}$  (B)  $\frac{6}{5}$  (C)  $\frac{4}{5}$  (D)  $\frac{5}{4}$
22. If X mean +, ÷ means -, - means × and + means ÷ then  $36 + 18 \div 9 - 3 \times 26$  is:
- (A) -40 (B) 78 (C) -1 (D) 1
23. Notebooks were distributed equally among children of a class. The notebooks each child got was one - eighth of the number of children. If the number of children is half, each child would have got 16 notebooks. The total number of notebooks distributed is:
- (A) 512 (B) 312 (C) 248 (D) 428
24. If  $x = \frac{\sqrt{5} + \sqrt{4}}{\sqrt{5} - \sqrt{4}}$  and  $y = \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} + \sqrt{4}}$  then  $x^2 + y^2$  is:
- (A) 322 (B) 100 (C) 312 (D)  $8\sqrt{5}$
25. If  $\sqrt{13} = 3.605$  and  $\sqrt{130} = 11.40$  find  $\sqrt{1.3} + \sqrt{1300} + \sqrt{0.013}$  :
- (A) 37.34 (B) 37.034 (C) 37.0034 (D) 37.304
26.  $\frac{1}{\sqrt{9} - \sqrt{8}} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} + \frac{1}{\sqrt{5} - \sqrt{4}} = ?$
- (A)  $\sqrt{8}$  (B) 5 (C) 3 (D) -3
27.  $\sqrt{\frac{(0.03)^2 + (0.21)^2 + (0.065)^2}{(0.003)^2 + (0.021)^2 + (0.0065)^2}} = ?$
- (A)  $\frac{1}{10}$  (B) 100 (C) 10 (D)  $\frac{1}{100}$
28. A lead pencil is in the shape of right circular cylinder. The pencil is 28 cm long and its radius is 3 mm. If the lead is of radius 1 mm, the volume of the wood used is:
- (A)  $0.352 \text{ cm}^3$  (B)  $7.04 \text{ cm}^3$  (C)  $3.52 \text{ cm}^3$  (D)  $70.4 \text{ cm}^3$
29. The difference between two digit number and the number obtained by interchanging the positions of its digits is 36. The difference between the two digits of that number is:
- (A) 4 (B) 3 (C) 6 (D) 5
30. A and B are two stations 390 km apart. A train starts from A at 10 am and travels towards B at 65 kmph. Another train starts from B at 11 am and travels towards A at 35 kmph. At what time do they meet?
- (A) 3.15 pm (B) 2.15 pm (C) 4.15 pm (D) 12.15 pm

31. A cone, a hemisphere and a cylinder have equal bases. If the heights of the cone and the cylinder are equal to its common radius, then the ratio between their volumes is:  
 (A) 2 : 3 : 1 (B) 3 : 2 : 1 (C) 1 : 2 : 3 (D) 2 : 1 : 3
32. One side of a rhombus is 20 cm and one diagonal is 24 cm. Find the area of the rhombus.  
 (A) 200 cm<sup>2</sup> (B) 384 cm<sup>2</sup> (C) 288 cm<sup>2</sup> (D) 348 cm<sup>2</sup>

**Direction: (Question numbers 33 - 37)**

If the English alphabets A to Z have numerical value from 0 to 25 respectively denoted by  $\gamma(A) = 0; \gamma(B) = 1$ , etc.  $\gamma(Z) = 25$  and sum of two alphabets a and b is defined as  $a + b = c$  if  $\gamma(c) \equiv \gamma(a) + \gamma(b)$  then answer the question 33 – 37.

33.  $E + K = ?$   
 (A) O (B) M (C) N (D) P
34.  $B + U = ?$   
 (A) U (B) W (C) V (D) X
35.  $A + C + F = ?$   
 (A) O (B) G (C) H (D) I
36.  $L - S = ?$   
 (A) U (B) T (C) R (D) S
37.  $-D - P = ?$   
 (A) I (B) J (C) H (D) K
38. In a certain code GOOD is written as JRRG and JACK is written as MDFN, then FRUIT is written as:  
 (A) IUYLW (B) IUXLW (C) IUXMW (D) IVXLW
39. In a certain code JUNGLE is written as JNLEGU then FOREST is written as:  
 (A) ROFEST (B) FORTSE (C) TSEROF (D) FRSTEO
40. The 10<sup>th</sup> consonant from the first consonant of the English alphabet is:  
 (A) N (B) M (C) Q (D) R
41. What letters appear in ECONOMY and not in SECOND?  
 (A) MY (B) NM (C) EY (D) CN
42. Which letter would divide the letters between N and Z into two equal halves?  
 (A) V (B) I (C) T (D) W

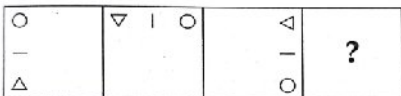
**Direction: (Question number 43 - 46)**

Pick the odd item from the following sets.

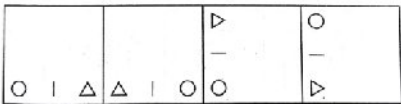
43. (A) Buddhism (B) Jainism (C) Pessimism (D) Hinduism  
 44. (A) Hunger (B) Cakes (C) Vegetables (D) Pastries  
 45. (A) King (B) Queen (C) Princess (D) Labourer  
 46. (A) Egypt (B) West Bengal (C) China (D) India

**Direction: (Question number 47 - 54)**

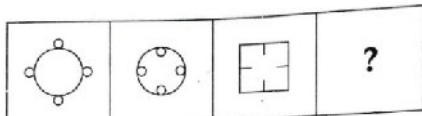
Figures A and B are related in some manner. In the same manner figures C and D are related. Choose the figure D in the given four alternatives.

47. 

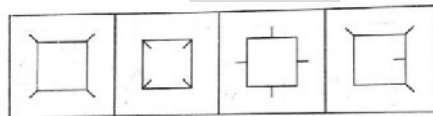
(A) (B) (C) (D)



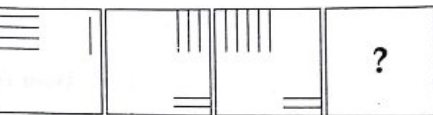
(A) (B) (C) (D)

48. 

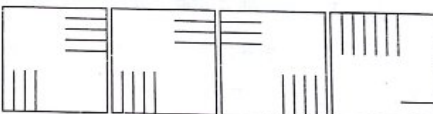
(A) (B) (C) (D)



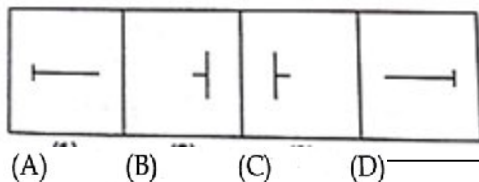
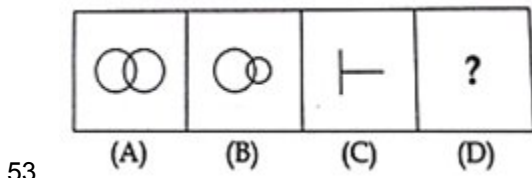
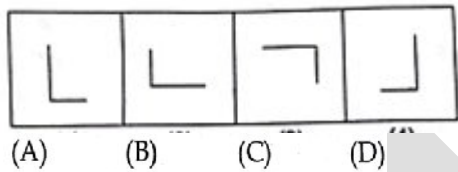
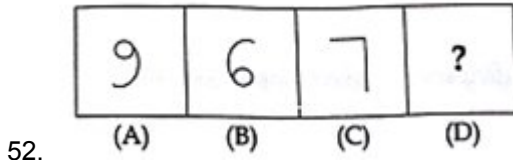
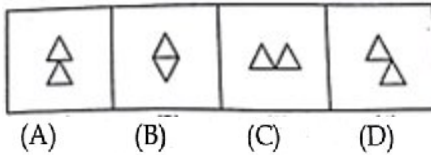
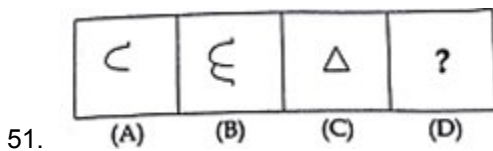
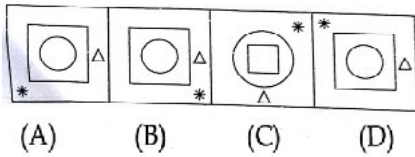
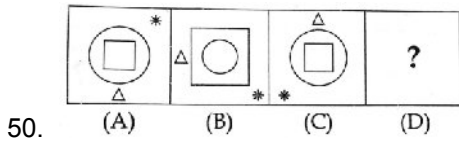
(A) (B) (C) (D)

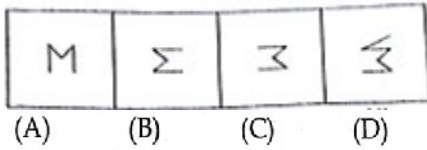
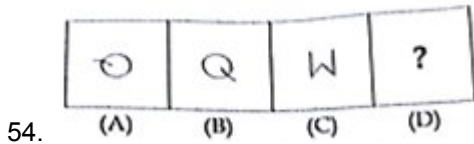
49. 

(A) (B) (C) (D)



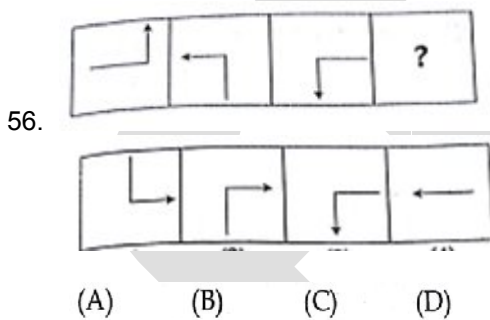
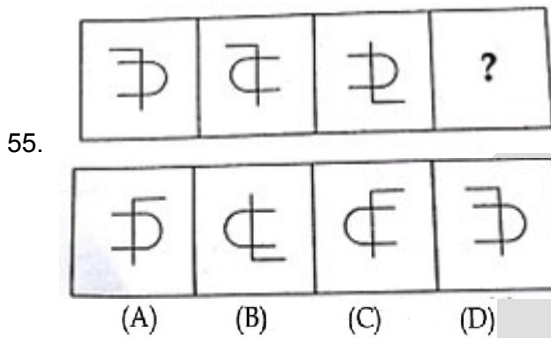
(A) (B) (C) (D)

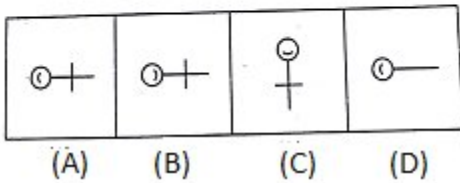
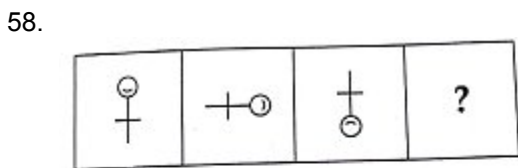
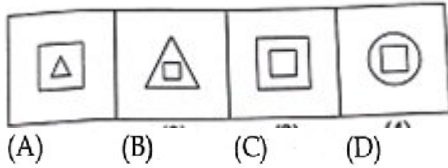




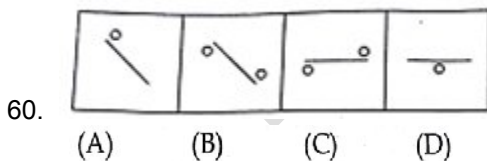
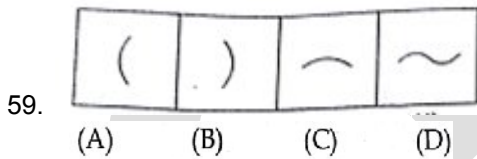
**Direction: (Question number 55 - 58)**

All the four figures in the set of problem figures have a definite sequence. Discover the sequence and pick-up one figure from answer figures that completes the series.





**Direction: (Question number 59 and 60)**  
Pick the figure not in same category.





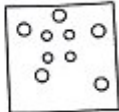
**Direction: (Question number 61 and 64)**

Match the following based on common characteristics:

61.



(1)



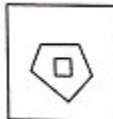
62.



(2)



63.



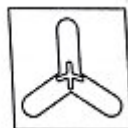
(3)



64.



(4)



65. First two words are related to each other. Choose the word which bears the same relationship.

Monk : Brotherhood :: letter :

(A) jumble

(B) gang

(C) album

(D) budget

**Direction: (Question number 66 and 70)**

Read the following information carefully and answer the question.

- (i) Five persons J, K, L, M and N participated in a quiz contest.
- (ii) One is master of sports, one is master of current events and one is master of art and culture.
- (iii) J and M are unmarried ladies and do not hold command in any subject.
- (iv) N is the husband in a married couple.
- (v) K is the brother of L and is neither master of current events nor art and culture.
- (vi) None of the ladies has command over current events and sports.

66. Who is the master of sports?

- (A) M (B) L (C) J (D) K

67. Who is the master of art and culture?

- (A) N (B) L (C) K (D) M

68. Who is the master of current events?

- (A) N (B) M (C) J (D) L

69. Wife of N is:

- (A) K (B) J (C) Data inadequate (D) L

70. The three ladies are:

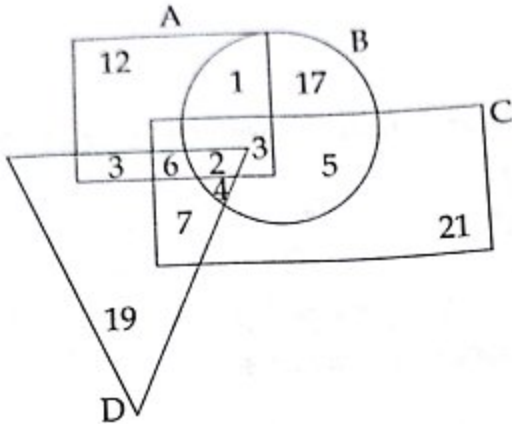
- (A) J, K and M (B) J, K and L (C) J, L and M (D) K, L and M

71. If A is brother of F and F is the daughter of D and P is brother of D. How is P related to A?

- (A) Father (B) Uncle (C) Grand-father (D) Co-brother

**Direction: (Question number 72 and 75)**

Observe the diagram carefully and answer the following question:



Let A –denote the self of persons who speak Tamil  
 B – who speak English  
 C – who speak Malayalam and  
 D – Set of people who speak Telugu

72. The number of people who can speak both Tamil and English is:  
 (A) 12 (B) 4 (C) 1 (D) 6
73. Find the number of people who can speak English, Malayalam and Telugu.  
 (A) 4 (B) 9 (C) 6 (D) 82
74. Find the number of people who can speak either English or Malayalam.  
 (A) 66 (B) 53 (C) 60 (D) 56
75. If the total population is 100, how many do not speak either language?  
 (A) 2 (B) 0 (C) 1 (D) 4

**Direction: (Question number 76 and 77)**

76. Find the missing terms in the table which follows some pattern.

|    |     |     |
|----|-----|-----|
| 5  | 7   | $x$ |
| 3  | 4   | 12  |
| 6  | $y$ | 18  |
| 11 | 9   | 99  |

- (A)  $x = 3, y = 35$                       (B)  $x = 35, y = 3$                       (C)  $x = 12, y = 12$                       (D) Data insufficient

77.

|   |    |   |
|---|----|---|
| 0 | -2 | ? |
| 2 | 0  | 6 |
| 5 | -6 | 0 |

- (A) 5    (B) -5    (C) 4    (D) -4

78. Select any one alternative whose alphabets when placed at the missing places, complete the series.

a \_ aa \_ a \_ baa \_ aaba

- (A) bbba    (B) bbab    (C) bbaa    (D) baab

**Direction: (Question number 79 and 80)**

Find the water image of the following question.

79. The water image of APPLE79 is:

- (A)  $\overline{A P P L E 7 9}$     (B)  $\overline{9 7 E L P A}$   
 (C)  $\overline{9 7 E L P P A}$     (D)  $\overline{A P P L E 7 9}$

80. TRUTH

- (A)  $\overline{H T U R T}$     (B)  $\overline{H T U R T}$   
 (C)  $\overline{H T U R T}$     (D)  $\overline{H T U R T}$

**Direction: (Question number 81 and 84)**

Read the relations carefully and answer the questions.

$\square$  is greater than

$\Delta$  is smaller than

$\odot$  is equal to

$\neq$  is not equal to

81. If  $A \square B$ ;  $C \Delta B$  and  $D \odot C$  then :

(A)  $C \Delta A$

(B)  $D \square A$

(C)  $C \neq D$

(D)  $A \odot C$

82. If  $A \neq C$ ;  $C \Delta B$  and  $B \odot A$  then:

(A)  $A \odot C$

(B)  $A \Delta C$

(C)  $B \square A$

(D)  $A \square C$

83. If  $A \Delta C$ ,  $B \square C$  and  $B \odot E$  then:

(A)  $A \square E$

(B)  $A \Delta E$

(C)  $A \odot E$

(D)  $A \odot B$

84.  $A \square O$  and  $AB \square AC$  then:

(A)  $(A + B) \square (C + D)$

(B)  $(B + D) \odot (C + D)$

(C)  $(B + D) \square (C + D)$

(D)  $(B + D) \Delta (C + D)$

**Direction: (Question number 85 and 89)**

Read the statements and answer the questions.

(i) A family consists of 6 members P, Q, R, S, T and U.

(ii) The family consist of only two female members.

(iii) S is father of R, who is brother of T.

(iv) T is daughter of U.

(v) Q and P are grandsons of S.

(vi) P is son of T.

85. The female members of the family are:

(A) T and R

(B) T and U

(C) T and P

(D) T and S

86. The relationship of S to U is:

(A) husband

(B) daughter

(C) son

(D) wife

87. The relationship of P to Q is:

(A) sister

(B) father

(C) brother

(D) mother

88. The male members of the family are:

- (A) S, R, Q, P (B) P, Q, R, U (C) Q, R, U, T (D) P, R, S, T

89. T is a sister of:

- (A) U (B) R (C) Q (D) P

90. Mahesh starts walking towards east and after walking 30m takes right turn and walks again 30m. Then he turns left and walks 30m. Again he takes left turn and after walking 15m finally turn to his left and walks 60m. How far and in which direction is Mahesh from the starting point?

- (A) 20m North (B) 30m West (C) 30m South (D) 15m South

**Direction: (Question number 91 and 92)**

Two statements (i) and (ii) are followed by two conclusion numbered (I) and (II). Choose the option which logically follows:

91. **Statements:**

- (i) Some goats are sheeps.  
(ii) All sheeps are cows.

**Conclusions:**

- (I) All cow are sheeps.  
(II) Some goats are cows.  
(A) (I) only true (B) (II) only true  
(C) (I) and (II) are true (D) Both (I) and (II) are not true

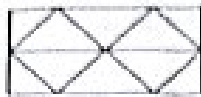
92. **Statements:**

- (i) All mangoes are apples.  
(ii) Some grapes are apples.

**Conclusions:**

- (I) All apples are mangoes.  
(II) Some apples are mangoes.  
(A) (I) only true (B) (I) and (II) are true  
(C) (II) only true (D) None of these are true

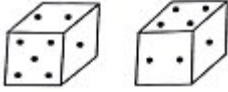
93. The number of triangles in



is:

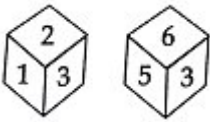
- (A) 10 (B) 4 (C) 6 (D) 12

94. Two positions of dice are shown below. How many points will appear on the opposite to the face containing 5?



- (A) 3 (B) 1 (C) 2 (D) 4

95. Which digit will appear on the face opposite to the face with number 4?



- (A) 3 (B) 5 (C) 6 (D) 2/3

96. Find the mirror image of "MALAYALAM".

- (A) MALAYALAM (B) MAJAYAJAM  
(C) MALAYALAM (D) MAGAYAGAM

97. Find the mirror image of "EFFECTIVE".

- (A) EFFECTIVE (B) EVITCEFFE  
(C) EVITCEFFE (D) EFFECTIVE

98. Find the mirror image of "MAGAZINE".

- (A) MAGAZINE (B) ENIZAGAM  
(C) MAGAZINE (D) ENIZAGAM

99. If a clock shows 6.45 AM, what is the angle between the needles?

- (A) 90° (B) 45° (C) 22.5° (D) 67.5°

100. A ladder leaning against a vertical wall makes an angles of 60° with the ground. If the foot of the ladder is 3.5 m away from the wall, the length of the ladder, is:

- (A) 7 m (B) 3.5 m (C) 14 m (D)  $\frac{7}{\sqrt{3}}$  m

**NTSE STAGE I – 2018 - 19**  
**TAMIL NADU**  
**PART – I MENTAL ABILITY TEST**  
**ANSWER KEY**

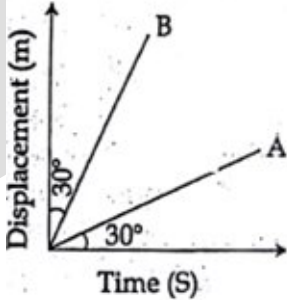
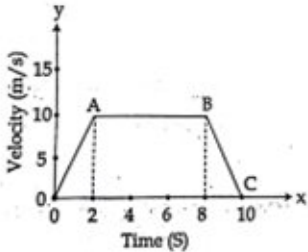
|      |        |      |      |       |
|------|--------|------|------|-------|
| 1.C  | 2.B    | 3.A  | 4.B  | 5.C   |
| 6.A  | 7.D    | 8.C  | 9.C  | 10.B  |
| 11.C | 12.B/C | 13.C | 14.D | 15.B  |
| 16.A | 17.B   | 18.C | 19.D | 20.B  |
| 21.B | 22.D   | 23.A | 24.A | 25.D  |
| 26.B | 27.C   | 28.B | 29.A | 30.B  |
| 31.C | 32.B   | 33.A | 34.C | 35.C  |
| 36.B | 37.A   | 38.B | 39.D | 40.B  |
| 41.A | 42.C   | 43.C | 44.A | 45.D  |
| 46.B | 47.A   | 48.C | 49.A | 50.D  |
| 51.B | 52.A   | 53.C | 54.A | 55.B  |
| 56.A | 57.C   | 58.A | 59.D | 60.A  |
| 61.D | 62.C   | 63.A | 64.B | 65.A  |
| 66.D | 67.B   | 68.A | 69.D | 70.C  |
| 71.B | 72.D   | 73.C | 74.A | 75.B  |
| 76.B | 77.B   | 78.B | 79.B | 80.A  |
| 81.A | 82.D   | 83.B | 84.C | 85.B  |
| 86.A | 87.C   | 88.A | 89.B | 90.D  |
| 91.B | 92.C   | 93.A | 94.D | 95.A  |
| 96.B | 97.A   | 98.D | 99.D | 100.A |



**NTSE STAGE I – 2018 - 19**  
**TAMIL NADU**  
**PART – II SCHOLASTIC APTITUDE TEST**

101. The value of  $\left[9\left(\frac{1}{64^{-\frac{1}{3}}} + 125^{\frac{1}{3}}\right)\right]^{\frac{1}{4}}$  is :
- (A) 9                      (B) 3                      (C) 81                      (D)  $9\sqrt[4]{9}$
102. If  $\sqrt{m} + \sqrt{n} - \sqrt{p} = 0$ , then the value of  $(m + n - p)^2$  is:
- (A) mn                      (B)  $-mn$                       (C)  $2mn$                       (D)  $4mn$
103. If  $x^2 + \frac{1}{x^2} = 14$ , then the value of  $x^3 + \frac{1}{x^3}$  is:
- (A) 52                      (B) 42                      (C) 24                      (D) 25
104. The polynomials  $ax^3 + 4x^2 + 3x - 4$  and  $x^3 - 4x + a$  leave the same remainder when divided by  $x - 3$ , then the value of  $a$  is:
- (A)  $-1$                       (B)  $-4$                       (C)  $4$                       (D)  $1$
105. The bisectors of  $\angle B$  and  $\angle C$  of a triangle ABC meet at a point O. If  $\angle A = 60^\circ$  then,  $\angle BOC$  is :
- (A)  $30^\circ$                       (B)  $60^\circ$                       (C)  $90^\circ$                       (D)  $120^\circ$
106. The side BC of  $\triangle ABC$  is produced to a point D. The bisectors of  $\angle ACD$  meet at point E. If  $\angle BAC = 60^\circ$ , then  $\angle BEC$  is:
- (A)  $15^\circ$                       (B)  $30^\circ$                       (C)  $60^\circ$                       (D)  $120^\circ$
107.  $\triangle ABC$  is an isosceles triangle in which  $AB = AC$ . If the side BA is produced to D such that  $AD = AB$ , then  $\angle BCD$  is:
- (A)  $30^\circ$                       (B)  $45^\circ$                       (C)  $60^\circ$                       (D)  $90^\circ$
108. In an A.P., the sum of  $m$  terms is equal to  $n$  and the sum of  $n$  terms is equal to  $m$ , then the sum of  $(m + n)$  terms is:
- (A)  $m + n$                       (B)  $-(m + n)$                       (C)  $(m - n)$                       (D)  $(n - m)$
109. If the roots of the equation  $(a^2 + b^2)x^2 - 2b(a + c)x + (b^2 + c^2) = 0$  are equal, then:
- (A)  $2b = a + c$                       (B)  $b = \frac{2ac}{a + c}$                       (C)  $b^2 = ac$                       (D)  $b = ac$

110. A right triangle has hypotenuse of length  $p$  cm and one side of length  $q$  cm. If  $(p - q) = 1$ , then the length of third side is:  
 (A)  $2q + 1$  (B)  $\sqrt{2q + 1}$  (C)  $2p + 1$  (D)  $\sqrt{2p + 1}$
111. The longest pole that can be kept in a room of dimensions  $5 \text{ m} \times 4 \text{ m} \times 2 \text{ m}$  is:  
 (A)  $9\sqrt{5} \text{ m}$  (B)  $6\sqrt{5} \text{ m}$  (C)  $3\sqrt{5} \text{ m}$  (D)  $5\sqrt{3} \text{ m}$
112. If the volume of a sphere is equal to its surface area, then the circumference of a cross sectional circle whose centre coincides with the sphere is:  
 (A)  $2\pi$  (B)  $4\pi$  (C)  $6\pi$  (D)  $8\pi$
113. A circle is inscribed in a triangle ABC with right angle at A. The length of the two sides containing the right angle are 6 cm and 8 cm respectively. The radius of the circle is:  
 (A) 2 cm (B) 6 cm (C) 8 cm (D) 10 cm
114. A fair die is thrown once. The probability of getting neither a prime nor a composite number is:  
 (A) 1 (B) 0 (C)  $\frac{5}{6}$  (D)  $\frac{1}{6}$
115. If the product of two zeros of the polynomial  $x^3 - 6x^2 + 11x - 6$  is 2, then the third zero is:  
 (A) 1 (B) 2 (C) 3 (D) 4
116. If the HCF of 55 and 22 is expressed in the form of  $55m - 22 \times 2$  then the value of  $m$  is:  
 (A) 2 (B) 1 (C) 11 (D) 22
117. The graphs of the linear system  $x + y = 1$ ;  $2x + 2y = 2$  gives:  
 (A) No solution (B) Unique solution  
 (C) Infinitely many solutions (D) Two solutions
118. If  $\tan \theta = \frac{a}{x}$ , then the value of  $\frac{x}{\sqrt{a^2 + x^2}}$  is:  
 (A)  $\cos \theta$  (B)  $\sin \theta$  (C)  $\operatorname{cosec} \theta$  (D)  $\sec \theta$
119. The remainder when  $x^n + n$  divided by  $x - 1$  is:  
 (A)  $n$  (B) Cannot be determined  
 (C)  $n + 1$  (D) 0

120. Which of the following statements are not true?  
 (a) Sum of two irrational numbers is always irrational  
 (b) Difference between two irrational numbers is irrational  
 (c) Product of two irrational numbers is irrational  
 (d) Quotient of two irrational numbers is irrational  
 (A) (a) and (b) only  
 (B) (a), (b), (c) and (d)  
 (C) (a), (b) and (c) only  
 (D) None of the above
121. A car travels from Chennai to Bengaluru with a speed of 60 km/hr and returns back along the same path with speed of 40 km/hr. The average speed of the car is given by:  
 (A) 50 km/hr (B) 13.8 m/s (C) 48 km/hr (D) 172.8 m/s
122. What will be the percentage change in momentum of a body when both its mass and velocity are doubled?  
 (A) 400 (B) 75 (C) 500 (D) 300
123. The displacement – time graph for two particles are shown in the figure. The ratio of velocity of A to velocity of B is:  
 (A) 1 (B) 3  
 (C)  $\frac{1}{3}$  (D)  $\sqrt{3}$
- 
124. The velocity – time graph of a body moving along a straight line is shown below. The acceleration of the body along OA, AB and BC is:  
 (A)  $5 \text{ m/s}^2, 0, -5 \text{ m/s}^2$   
 (B)  $-5 \text{ m/s}^2, 0, +5 \text{ m/s}^2$   
 (C)  $5 \text{ m/s}^2, 1.6 \text{ m/s}^2, -5 \text{ m/s}^2$   
 (D)  $-5 \text{ m/s}^2, 1.6 \text{ m/s}^2, 5 \text{ m/s}^2$
- 
125. Two bodies A and B having masses 2 kg and 4 kg respectively are separated by 2m. Where should a body of mass 1 kg be placed so that the gravitational force on this body due to A and B is zero?  
 (A) 8.3 m (B) 0.83 m (C) 3.8 m (D) 0.38 m

126. A ship of mass  $3 \times 10^7$  kg initially at rest is pulled by force of  $5 \times 10^4$  N through a distance of 3 m. Assuming that the resistance due to water is negligible the speed of the ship is:

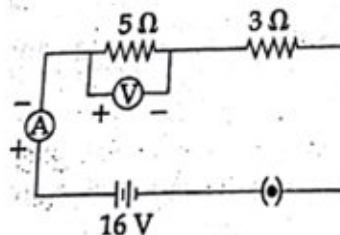
- (A) 1.5 m/s                      (B) 60 m/s                      (C) 0.1 m/s                      (D) 5 m/s

127. An electric bulb is rated 220 V, 110 W. When it is operated on 110 V, the power consumed will be:

- (A) 55 W                      (B) 110 W                      (C) 25 W                      (D) 27.5 W

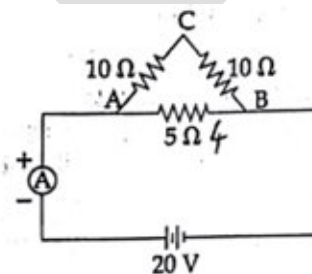
128. In the above electrical circuit, the readings shown by the ammeter and voltmeter are:

- (A) 2 A, 10 V                      (B) 3.2 A, 16 V  
(C) 2 A, 16 V                      (D) 3.2 A, 10 V



129. In the circuit shown the current in the ammeter is:

- (A) 5 A                      (B) 4 A  
(C) 1.5 A                      (D) 8 A



130. If 5 coulombs of charge flows through a conductor in 2 seconds, then the number of electrons flowing through a conductor in one second approximately is:

- (A)  $30 \times 10^{18}$                       (B)  $15 \times 10^{18}$                       (C)  $6 \times 10^{18}$                       (D)  $12 \times 10^{18}$

131. A stone is dropped from the top of a tower 490 m high into a pond of water at the base of the tower. The splash is heard after

(Given  $g = 9.8 \text{ m/s}^2$ , speed of sound = 350 m/s)

- (A) 11.4 sec                      (B) 10 sec                      (C) 22.8 sec                      (D) 20 sec

132. Infrasound can be heard by:

- (A) dog                      (B) bat                      (C) rhinoceros                      (D) tiger

133. Among the statements which is/are correct?  
Acceleration due to gravity:  
(a) Decreases from equator to poles  
(b) Decreases from poles to equator  
(c) Is maximum at the centre of the earth  
(A) (a) only  
(B) (b) and (c) only  
(C) (c) only  
(D) (b) only
134. An element "X" has six electrons in the "M" shell. It belongs to:  
(A) 3<sup>rd</sup> period, 16<sup>th</sup> group (B) 2<sup>nd</sup> period, 14<sup>th</sup> group  
(C) 3<sup>rd</sup> period, 13<sup>th</sup> group (D) 2<sup>nd</sup> period, 15<sup>th</sup> group
135. Pick out the Isobar pair.  
(A)  ${}_1\text{H}^1, {}_1\text{H}^2$  (B)  ${}_6\text{C}^{13}, {}_7\text{N}^{14}$  (C)  ${}_{17}\text{Cl}^{35}, {}_{17}\text{Cl}^{37}$  (D)  ${}_{18}\text{Ar}^{40}, {}_{20}\text{Ca}^{40}$
136. An example of a homo atomic molecule is:  
(A) Ozone (B) Ammonia (C) Methane (D) Sulphur di oxide
137. Identify the wrong statement in the following:  
(A) Sodium benzoate is used as food preservative.  
(B) Sulphuric acids is called as the 'King of Chemicals'.  
(C) The pH of acid is equal to 7.  
(D) Curd contains lactic acid.
138. The metal present in chlorophyll is:  
(A) Al (B) Fe (C) Mg (D) Zn
139. The hardening of plaster of paris on reaction with water is due to the formation of:  
(A)  $\text{CaSO}_4 \cdot \text{H}_2\text{O}$  (B)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$   
(C)  $\text{CaSO}_4 \cdot \frac{3}{4}\text{H}_2\text{O}$  (D)  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$
140. Foul – smelling of eatable prepared by using oil and fat is due to:  
(A) Reaction with Nitrogen in air  
(B) Reaction with  $\text{CO}_2$  in air  
(C) Reaction with sulphur di oxide in air  
(D) Reaction with oxygen in air
141. Magnesium ribbon starts floating when it is placed in hot water. Why?  
(A) Light metal (B) Highly reactive  
(C) Hydrogen gas stick at the bottom of the metal (D) Neither light nor heavy

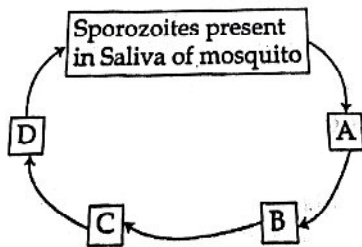
142. Common Hydrogen is also called as:  
 (A) Protium atom (B) Deuterium atom  
 (C) Tritium atom (D) None of the above
143. Arrange the following in the increasing order of forces of attraction:  
 (A) Water, air, sugar (B) O<sub>2</sub>, H<sub>2</sub>O, sugar  
 (C) Salt, air, fruit juice (D) Sugar, oil, air
144. The ionic compounds are solids at room temperature on account of:  
 (A) Electrostatic force between the opposite ions  
 (B) Electrostatic force between the same ions  
 (C) Weak intermolecular forces between opposite ions  
 (D) Both electrostatic and intermolecular force between the opposite ions.
145. The rate of Chemical reaction depends on:  
 (A) Absence of Catalyst (B) Greater the surface area of the reactant  
 (C) Decrease in temperature (D) Low concentration of the reactant
146. The best method to detect and identify of the drugs present in the blood of criminals in Forensic Science is:  
 (A) Sublimation (B) Evaporation (C) Chromatography (D) Filtration
147. Match the following:
- | Column - I              |       | Column - II                |  |
|-------------------------|-------|----------------------------|--|
| (a) Seed borne disease  | (i)   | Blast of rice              |  |
| (b) Soil borne disease  | (ii)  | Bacterial blight of rice   |  |
| (c) Air borne disease   | (iii) | Leaf spot of rice          |  |
| (d) Water borne disease | (iv)  | Tikka disease of groundnut |  |
- (A) (a) – (iii), b -(iv), (c) – (i), d – (ii)  
 (B) (a) – (iii), b -(i), (c) – (iv), d – (ii)  
 (C) (a) – (ii), b -(iii), (c) – (iv), d – (i)  
 (D) (a) – (i), b -(ii), (c) – (iii), d – (iv)
148. Observe the diagram given below. Read the question and select the correct answer.  
 (a) Which gives the nourishment for the developing embryo sac?  
 (b) After fertilization, which develops into a seed coat?  
 (c) Name the nuclei which face towards the chalazal end.  
 (d) When soaked seed is pressed, the water oozes out through  
 (A) Nucellus, Integuments, Micropyle, Antipodals  
 (B) Antipodals, Micropyle, Nucellus, Integuments  
 (C) Integuments, Nucellus, Antipodals, Micropyle  
 (D) Nucellus, Integuments, Antipodals, Micropyle



149. Soil contains decomposed matter. Plants that grow from the soil absorb nutrient elements. When we eat the plants, the nutrients enter into our body. After our death, when our body are buried into the soil, our body will become decomposed matter. This cyclic process refers to:

- (A) Life cycle  
 (B) Bio – Geo Chemical cycle  
 (C) Biological cycle  
 (D) Geological cycle

150. Choose the correct series of life cycle of malarial parasite.



- (A) A – Life cycle in human liver  
 B – Life cycle in erythrocytes  
 C – Sucking of gametocytes by mosquito  
 D – Life cycle in the body of mosquito
- (B) A – Life cycle in erythrocytes  
 B – Life cycle in human liver  
 C – Sucking of gametocytes by mosquito  
 D – Life cycle in the body of mosquito
- (C) A – Life cycle in erythrocytes  
 B – Sucking of gametocytes by mosquito  
 C – Life cycle in the body of mosquito  
 D – Life cycle in human liver
- (D) A – Life cycle in the body of mosquito  
 B – Life cycle in erythrocytes  
 C – Sucking of gametocytes by mosquito  
 D – Life cycle in human liver

151. Find out the true and false statements from the following:

- (a) Pepo is developed from tricarpellary ovary  
 (b) Drupe is developed from pentacarpellary ovary  
 (c) Pome is called a pseudofruit  
 (d) Hesperidium is developed from multicarpellary ovary
- (A) (a) True (b) False (c) True (d) False  
 (B) (a) True (b) False (c) True (d) True  
 (C) (a) False (b) True (c) False (d) True  
 (D) (a) False (b) False (c) True (d) True

152. Choose the incorrect pair.
- (A) Stomata – transpiration
  - (B) Osmosis – Semi permeable membrane
  - (C) Guard Cells – Potassium ions
  - (D) Exosmosis – Turgidity
153. **Assertion (A):**  
Mule is the product of inter specific hybridization.  
**Reason (R):**  
Mule is produced from cross between female donkey and male horse.
- (A) (A) is correct; (R) is wrong
  - (B) Both (A) and (R) are correct
  - (C) (A) is wrong and (R) is correct
  - (D) Both (A) and (R) are wrong
154. Centipede and earthworms have segmented body, but they are in two different phyla. Identify the phyla they belong to.
- (A) Arthropoda and Annelida
  - (B) Arthroda and Aschelminthes
  - (C) Annelida and Aschelminthes
  - (D) None of the above
155. Lysosomes are considered as suicidal bags of cell. The reason is:
- (A) Lysosomes contain poison required to kill the cell.
  - (B) Lysosomes contain lytic enzyme to digest the whole cell content.
  - (C) Lysosomes contain genes to stop cellular activities.
  - (D) Lysosomes do not permit oxidation process of the cell.
156. Pick out the items which has sequential arrangement.
- (A) Zygotente → Leptotene → Pachytene → Diplotene → Diakinesis
  - (B) Diakinesis → Zygotente → Leptotene → Pachytene → Diplotene
  - (C) Leptotene → Zygotente → Pachytene → Diplotene → Diakinesis
  - (D) Leptotene → Pachytene → Diplotene → Diakinesis → Zygotente
157. **Assertion (A):**  
The pituitary gland is called as ‘the Conductor of Endocrine Orchestra’.  
**Reason (R):**  
The pituitary gland regulates the other endocrine glands.
- (A) Both (A) and (R) are true and (R) explains (A)
  - (B) Both (A) and (R) are true but (R) doesn't explain (A)
  - (C) (A) is true but (R) is false
  - (D) (A) is false but (R) is true
158. The parental genotypes are  $BB \times bb$ . The probability of having  $bb$  genotype in the  $F_1$  generation is:
- (A) 25%
  - (B) 50%
  - (C) 75%
  - (D) 0%
159. Which of the following statement is not correct about vasopressin hormone?
- (A) It constricts the blood vessels and raises the blood pressure.
  - (B) Vasopressin helps in the reabsorption of water
  - (C) Its less production results in diabetes insipidus.
  - (D) It dilates the blood vessels and raises the blood pressure.



160. Subsequent generations show greater improvement in genetic characters. It is seen in ~~higher animals particularly~~. This is due to:
- (A) Crossing over process of sexual reproduction.  
(B) Living in an area for many generations.  
(C) Due to pressure for improvement of characters from peers.  
(D) Asexual reproduction brings improvement.
161. Arrange the following events in chronological order:
- (a) The League of Free Nations Association  
(b) The League of Nations Society  
(c) The League of Nations  
(d) The World League for peace
- (A) (b), (a), (c), (d) (B) (a), (b), (d), (c)  
(C) (a), (c), (d), (b) (D) (b), (d), (a), (c)
162. Who was the designer of Indian National Flag?
- (A) Bankim Chandra Chatterjee (B) Rabindranath Tagore  
(C) Pingali Venkayya (D) Bipin Chandra Pal
163. The famous monument built to commemorate the end of plague in India in the year 1591.
- (A) Buland Darwaza (B) Charminar  
(C) Gol Gumbaz (D) Gol Konda
164. Who was known as 'The Heroine of Quit India Movement'?
- (A) Surcheta Kriplani (B) Sarojini Naidu  
(C) Jhasi Rani Lakshmi Bai (D) Aruna Asaf Ali
165. Name the Greek philosopher who was the teacher of Alexander the Great and the student of Plato.
- (A) Aristotle (B) Socrates (C) Democritus (D) Pythagoras
166. Which is called the 'Cradle of Indian Temple Architecture'?
- (A) Ajanta (B) Ellora (C) Aihole (D) Chithannavasal
167. Rabindranath Tagore surrendered his 'Knighthood' to the British after the event of:
- (A) Jallianwalbagh Massacre (B) Surat Split  
(C) Chouri Chaura Incident (D) Non Cooperation Movement
168. The dead bodies were preserved by the Egyptians using Natron salt. Its main constituents are:
- (A) Sodium Carbonate and sodium bicarbonate  
(B) Sodium Carbonate and sodium acetate  
(C) Sodium bicarbonate and sodium benzoate  
(D) Sodium carbonate and sodium phosphate
169. From which year Kamarajar's birthday is celebrated as 'Educational Development Day'?
- (A) 2005 (B) 2006 (C) 2007 (D) 2008
170. The first Indian ruler who organized pilgrimage to Haj at the expense of the state.
- (A) Humayun (B) Babar (C) Akbar (D) Jahangir

171. Name the war fought between the period 1912-14.  
 (A) The Second Anglo Boer War (B) The Russian Civil War  
 (C) First balcan War (D) Jutland War
172. Choose the incorrect pair.  
 (A) Salem - Kolli hills  
 (B) Villupuram - Kalvarayan hills  
 (C) Trichy - Pachaimalai  
 (D) Srivilliputhur – Sathuragiri hills
173. Kayal goes to her grandpa's place, Coimbatore along with her sister. She says about the type of soil in Coimbatore to her sister. What is the type of soil?  
 (A) Alluvial soil (B) Black soil (C) Laterite soil (D) Red loams
174. Appiko movement is synonymous to Chipko movement started in:  
 (A) Kerala (B) Odisha (C) Tamil Nadu (D) Karnataka
175. Which planet has its axis highly tilted?  
 (A) Earth (B) Uranus (C) Mars (D) Mercury
176. Which famous pass, between India and China was reopened for the trade after 44years?  
 (A) Nathu La (B) Shipki La (C) Jelep La (D) Karakoram
177. Minor ports are:  
 (A) Tidal port (B) Anchorage port (C) Duty free port (D) Entrepot port
178. Which Wildlife Reserve in India was started in 1974 to protect Tiger population?  
 (A) Ranthambore National park (B) Bandipur National park  
 (C) Jim Corbet National park (D) Kanha Tiger Reserve

179.



Identify the rivers marked in the above map of India.

- (A) (a) Yamuna, (b) Mahandai, (c) Krishna  
 (B) (a) Ganga, (b) Mahanadi, (c) Krishna  
 (C) (a) Narmada, (b) Godavari, (c) Tapti  
 (D) (a) Brahmaputra, (b) Ganga, (c) Mahanadi

180. Which instrument is used to measure wind speed?

- (A) Hygrometer (B) Beaufort scale (C) Wind vane

181. What were the old names of Zambia and Zimbabwe?

- (A) North West Africa and South West Africa  
(B) Aberdeen and Abyssinia  
(C) Northern Rhodesia and Southern Rhodesia  
(D) British Honduras and Bechuanaland

182. Which of the following statement(s) is/are correct?

- (a) Red and yellow soils develop a reddish colour due to diffusion of magnesium in crystalline and metamorphic rocks.  
(b) Black soils are generally rich in phosphoric content.  
(A) (a) only (B) (b) only (C) (a) and (b) (D) None

183. Match the following:

| COLUMN - I |                                       | COLUMN - II |      |
|------------|---------------------------------------|-------------|------|
| (A)        | Bandung conference                    | (P)         | 1968 |
| (B)        | Non Proliferation Treaty              | (Q)         | 1996 |
| (C)        | Nuclear Test Ban Treaty               | (R)         | 1963 |
| (D)        | Comprehensive Nuclear Test Ban Treaty | (S)         | 1955 |

- (A) A – S; B – P; C – R; D – Q (B) A – R; B – Q; C – P; D – S  
(C) A – S; B – R; C – Q; D – P (D) A – Q; B – S; C – R; D – P

184. Pick out the wrong statement about Principles of Pancha Sheel.

- (A) Each country should respect the territorial integrity and sovereignty of others.  
(B) People's representative should be elected through election.  
(C) No one should try to interfere in the internal affairs of others.  
(D) All country shall strive for equality and mutual benefits.

185. Who is the India's first transgender Judge in Lok Adalat?

- (A) Joyita Mondal  
(B) Swathi Bidhan Baruah  
(C) Sathyasri Sharmila  
(D) Prithika Yashini

186. Pick the odd man out.

- (A) India (B) Britain (C) Spain (D) Saudi Arabia

187. Find the correct statement:  
**Statement: (a):**  
The Supreme Court cannot interfere in the Judgments declared by the Military Tribunals.
- Statement: (b):**  
Appeal can be taken from Military Tribunals to Supreme Court.
- (A) (a) and (b) are correct (B) (b) is correct  
(C) (a) is correct (D) (a) and (b) are wrong
188. Who has the authority to give suggestions to the president on politically legal problems?  
(A) Supreme Court (B) Parliament (C) Prime Minister (D) Governor
189. 61<sup>st</sup> amendment of the Constitution Act of \_\_\_\_\_ has lowered the voting age from 21 years to 18 years.  
(A) 1998 (B) 1978 (C) 1968 (D) 1988
190. Which two countries got independence in the year 1971?  
(A) Cameroon and Seychelles (B) Bangladesh and Bahrain  
(C) Bahamas and Mozambique (D) Fiji and Papua New Guinea
191. Which of the following is not an example of an exercise of a fundamental right?  
(A) Religious missionaries set up schools  
(B) Businessman from Tamil Nadu sets up a restaurant in Assam  
(C) An accused engages a lawyer to defend his case  
(D) A worker forced to render a free service.
192. Choose the two sovereign countries where Tamil is the official language.  
(A) Srilanka, Singapore (B) Srilanka, Malaysia  
(C) Singapore, Mauritius (D) Malaysia, Singapore
193. Which Chief Justice of India has acted as the Acting President of India?  
(A) T.S. Thakur (B) Mohammad Hidayatullah  
(C) Ranganth Mishra (D) Mirza Hameedullah Beg
194. The first Woman Chairperson of SBI:  
(A) Arundhati Bhattacharya  
(B) Rekha Sharma  
(C) Girija Vyas  
(D) Jayanthi Patnaik
195. Which is the tenth largest stock exchange in the world and oldest stock exchange in South Asia?  
(A) National Stock Exchange (B) Madras Stock Exchange  
(C) Bombay Stock Exchange (D) Calcutta Stock Exchange
196. Which Finance Minister has presented the maximum number of union budgets?  
(A) Pranab Mukherjee (B) Moraji Desai (C) Yashwant Sinha (D) P. Chidambaram

197. Expand – FERA:  
(A) Foreign Exchange and Resources Act  
(B) Financial Exchange and Regulation Act  
(C) Fiscal Exchange Reserves Act  
(D) Foreign Exchange Regulation Act
198. Per capita income is calculated by:  
(A)  $\frac{\text{Total Population}}{\text{Gross Domestic Product}}$   
(B)  $\frac{\text{Total Population}}{\text{National Income}}$   
(C)  $\frac{\text{National Income}}{\text{Total Population}}$   
(D)  $\frac{\text{Gross Domestic Product}}{\text{Total Population}}$
199. MGNREGA 2005 guarantees:  
(A) Emancipation of women  
(B) Child upliftment  
(C) 100 days of employment  
(D) Minimum support price for farmers
200. State Bank of India before Nationalisation was known as:  
(A) General Bank of India  
(B) Bank of Hindustan  
(C) Grand Bank  
(D) Imperial Bank of India

**NTSE STAGE I – 2018 - 19**  
**TAMIL NADU**  
**PART – II SCHOLASTIC APTITUDE TEST**  
**ANSWER KEY**

|       |       |       |       |       |
|-------|-------|-------|-------|-------|
| 101.B | 102.D | 103.A | 104.A | 105.D |
| 106.B | 107.D | 108.B | 109.C | 110.B |
| 111.C | 112.C | 113.A | 114.D | 115.C |
| 116.B | 117.C | 118.A | 119.C | 120.B |
| 121.C | 122.D | 123.C | 124.A | 125.B |
| 126.C | 127.D | 128.A | 129.A | 130.B |
| 131.A | 132.C | 133.D | 134.A | 135.D |
| 136.A | 137.C | 138.C | 139.B | 140.D |
| 141.A | 142.A | 143.B | 144.A | 145.B |
| 146.C | 147.A | 148.D | 149.B | 150.A |
| 151.B | 152.D | 153.A | 154.A | 155.B |
| 156.C | 157.A | 158.D | 159.D | 160.A |
| 161.D | 162.C | 163.B | 164.D | 165.A |
| 166.C | 167.A | 168.A | 169.B | 170.C |
| 171.C | 172.A | 173.B | 174.D | 175.B |
| 176.A | 177.B | 178.B | 179.A | 180.B |
| 181.C | 182.D | 183.A | 184.B | 185.A |
| 186.D | 187.C | 188.A | 189.D | 190.B |
| 191.D | 192.A | 193.B | 194.A | 195.C |
| 196.B | 197.D | 198.C | 199.C | 200.D |