

NTSE STAGE – I (DELHI STATE)
05 – A (2018 – 19)
(For Class – X)
MENTAL ABILITY TEST (MAT)

1. If $x + \frac{25}{x} = 10$ then value of $x^2 + \frac{50}{x^2}$ will be
1. 29
2. 25
3. 24
4. 27
2. If $x + y = 3$ and $x^2 + y^2 = 15$ then value of $(x - y)^2$ will be
1. 21
2. 36
3. 25
4. 16
3. If $\frac{a}{3} = \frac{b}{5} = \frac{c}{7}$ then value of $\frac{a+b+c}{b}$ will be
1. 7
2. 3
3. 10
4. 5
4. If sum of number is 25 and sum of their square is 425 then what will be their product.
1. 200
2. 300
3. 100
4. 400
5. If $0.64 \div a^2 = 64$ then positive value of 'a' will be
1. 0.1
2. 0.01
3. 1.0
4. 10
6. Divisor is 30 times of Quotient and 4 times of Remainder, If quotient is 20 then Divided will be
1. 1,200
2. 12,150
3. 10,000
4. 600
7. If $3^{a-2b} = 27$ and $9^{a+b} = 3$ then value of $-\frac{a}{b}$ will be
1. $-\frac{4}{3}$
2. $\frac{5}{8}$
3. $\frac{5}{6}$
4. $\frac{8}{5}$
8. If $\sqrt{17+x}\sqrt{11} = \sqrt{11} + \sqrt{6}$ then value of x^2 will be
1. $\sqrt{11}$
2. 23
3. $\sqrt{6}$
4. 24
9. If $\sqrt{0.02 \times 0.2 \times a} = 0.2 \times 0.2 \times \sqrt{b}$ then, value of $\frac{a}{b}$ will be
1. 0.4
2. 0.2
3. 0.04
4. 0.02
10. If $7 - \sqrt{3}$ and $7 + \sqrt{3}$ are solution of a Quadratic Equation, The Quadratic Equation will be
1. $x^2 - 14x + 46 = 0$
2. $x^2 + 14x - 46 = 0$
3. $x^2 - 14x - 46 = 0$
4. $x^2 + 14x + 46 = 0$

11. In a Triangle PQR if $\angle Q = 3\angle R = 2(\angle P + \angle R)$ then value of $\angle Q$ will be
1. 110°
 2. 120°
 3. 40°
 4. 102°
12. If $\frac{p}{q} = \frac{x+3}{x-3}$ then value of $\frac{p^2 - q^2}{p^2 + q^2}$ will be
1. $\frac{6x}{x^2 - 9}$
 2. $\frac{6x}{x^2 + 9}$
 3. $\frac{12x}{x^2 + 9}$
 4. $\frac{12x}{x^2 - 9}$
13. If perimeter of a square is same as that of a Rectangle whose length is 24m is double of its breadth then area of square will be
1. 324 m^2
 2. 342 m^2
 3. 224 m^2
 4. 330 m^2
14. If volumes of two cones are in ratio of 2 : 3 and their base radii are in ratio of 1 : 2 then what will be Ratio of their heights
1. 8 : 3
 2. 3 : 2
 3. 4 : 3
 4. 2 : 3
15. If $2^x = 8^{y-1}$ and $9^y = 3^{x-6}$ then value of $x + y$
1. 34
 2. 25
 3. 33
 4. 24
16. If two numbers are such that their difference, their sum and their product are in Ratio 1:7:24 then product of the two number is
1. 48
 2. 44
 3. 54
 4. 38
17. The mean of the median mode and Range of the observations 7, 6, 7, 9, 14, 9, 7, 15 is
1. 8
 2. 9
 3. 10
 4. 7
18. A person spends 80% of his income. With increase in the cost of living, his expenditure increased by $37\frac{1}{2}\%$ and his incomes increases by $16\frac{2}{3}\%$. His present percent saving is
1. $10\frac{1}{5}\%$
 2. $12\frac{1}{3}\%$
 3. $5\frac{1}{3}\%$
 4. $5\frac{5}{7}\%$
19. The cost of five chairs and three table is Rs.3110/-. If cost of one chair is Rs. 210 less than cost of one table. What is the cost of two tables and two chairs.
1. Rs. 1760
 2. Rs. 1000
 3. Rs. 1660
 4. Rs. 1800

20. If $5 = a + \frac{1}{1 + \frac{1}{6 + \frac{1}{2}}}$ then value of 'a' will be
- | | |
|--------------------|--------------------|
| 1. $\frac{15}{62}$ | 2. $\frac{62}{15}$ |
| 3. $\frac{14}{61}$ | 4. $\frac{61}{14}$ |
21. If $\frac{7}{8}$ of a number is 5 more than its $\frac{5}{7}$. Then Nine times of Number will be
- | | |
|--------|--------|
| 1. 380 | 2. 208 |
| 3. 308 | 4. 280 |
22. If a cone of height 24cm and base 6cm melted and reshape into a sphere. Then what will be the total surface area of sphere
- | | |
|-------------------|-------------------|
| 1. 36π Sq cm | 2. 16π Sq cm |
| 3. 144π Sq cm | 4. 142π Sq cm |
23. P and Q can do a piece of work in 10 days, Q and R can do same work in 15 days, R and P can do the same work in 20 days. Then in How many days R will complete it alone
- | | |
|-------------|-------------|
| 1. 115 days | 2. 110 days |
| 3. 130 days | 4. 120 days |
24. In the following which one is the smallest
 $\sqrt{3}, \sqrt[3]{2}, \sqrt{2}, \sqrt[3]{4}$
- | | |
|------------------|------------------|
| 1. $\sqrt{3}$ | 2. $\sqrt[3]{4}$ |
| 3. $\sqrt[3]{2}$ | 4. $\sqrt{2}$ |
25. If P denotes +, Q denotes -, R denotes \times and S denotes \div , which of the following statement is correct.
- | | |
|---------------------------------|---------------------------------|
| 1. $36 R 4 S 8 Q 7 P 4 = 10$ | 2. $16 R 12 P 49 S 7 Q 9 = 200$ |
| 3. $32 S 8 R 9 = 160 Q 12 R 12$ | 4. $8 R 8 P 8 S 8 Q 8 = 57$ |
26. A vessel contains 60Ltr. of milk, 12 liters of milk is taken out of it and is replaced by water. Then again from the mixture 12 liters are taken out and replaced by water. Find the amount of milk left after the operation.
- | | |
|---------------|---------------|
| 1. 28.4 Ltrs. | 2. 21.6 Ltrs. |
| 3. 36 Ltrs. | 4. 38.4 Ltrs. |
27. Select the one which is different from the other three responses.
- | | |
|------------|------------|
| 1. 15 : 46 | 2. 12 : 37 |
| 3. 9 : 28 | 4. 8 : 33 |
28. In a row of boys A is 20th from left and B is 16th from right, interchange their position, then A becomes 30th from left. How many boys are there in the row?
- | | |
|-------|-------|
| 1. 46 | 2. 44 |
| 3. 45 | 4. 48 |
29. A 15cm coloured cube is cut into 3cm small cubes then how many cubes are formed which have only one face painted.
- | | |
|-------|-------|
| 1. 54 | 2. 64 |
| 3. 44 | 4. 84 |

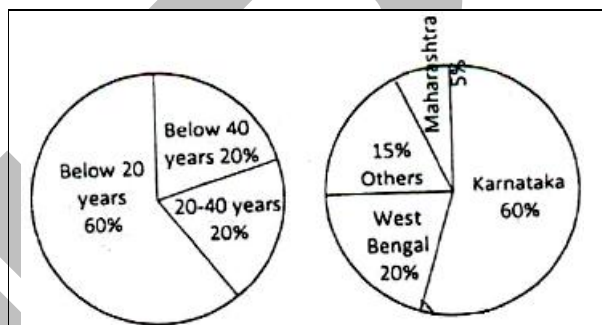
30. A father tells his son "I was three times of your present age when you were born" If the father's present age is 48 years, how old was the boy 4 years ago
1. 24 years
 2. 8 years
 3. 12 years
 4. 16 years

Direction (Q. 31 to 35) Find the missing term in the series given below.

31. 2, 12, 30, ?, 90, 120
1. 48
 2. 56
 3. 63
 4. 72
32. 10, 100, 200, 310, ?
1. 400
 2. 410
 3. 420
 4. 430
33. 0, 5, 2, 4.5, 8, 12.5, ?
1. 16
 2. 17
 3. 16.5
 4. 18
34. 109, 74, 46, 25, 11, ?
1. 3
 2. 0
 3. 11
 4. 4
35. $\frac{2}{3}, \frac{4}{7}, \frac{?}{?}, \frac{11}{21}, \frac{16}{31}$
1. $\frac{6}{11}$
 2. $\frac{5}{9}$
 3. $\frac{9}{11}$
 4. $\frac{7}{13}$
36. There are twelve dozen of apple in a basket. Two dozen are added later. Ten apples got spoil and are removed. The remaining are transferred equally into two baskets, how many are there in each.
1. 168
 2. 158
 3. 79
 4. 89
37. At what time between 8 and 9 will the hands of a clock be together
1. 40 minutes past 8
 2. $43\frac{7}{11}$ minutes past 8
 3. $43\frac{8}{11}$ minutes past 8
 4. $44\frac{10}{11}$ minutes past 8
38. What is the value of A, B and C in the given matrix.
- | | | |
|---|----|----|
| 9 | A | 12 |
| B | 10 | 7 |
| 8 | C | 11 |
1. A = 13, B = 11, C = 9
 2. A = 13, B = 9, C = 11
 3. A = 9, B = 11, C = 13
 4. A = 9, B = 13, C = 11
39. Simplified value of $\frac{7^{n+3} + 14 \times 7^{n+4}}{7^{n+3}}$ is
1. 98
 2. 100
 3. 99
 4. 97

40. If $\tan x = 5 - \sqrt{3}$ then $22 \tan(90 - x)$ is equal to
1. $5 + \sqrt{3}$
 2. $2 - \sqrt{3}$
 3. $\frac{5 + \sqrt{3}}{22}$
 4. $13 + \sqrt{3}$
41. If $a = \frac{1}{2 - \sqrt{3}}$ and $b = \frac{1}{2 + \sqrt{3}}$ then find the value of $7a^2 + 11ab - 7b^2$.
1. $\sqrt{11} + 3\sqrt{56}$
 2. $13 + 11\sqrt{56}$
 3. $11 + 5\sqrt{3}$
 4. $11 + 56\sqrt{3}$
42. Two pipes A and B can fill a tank in 12 and 15 minutes respectively. A third pipe C can empty it in 10 minutes. How long will it take to fill the tank if all pipes are opened Simultaneously.
1. 20 minutes
 2. 30 minutes
 3. 40 minutes
 4. 25 minutes
43. A sum amounts of Rs. 800 at 3% Per annum in a certain time but amount to Rs. 1000 at 5% per annum in the same time total sum and time are
1. Rs. 500, 20 years
 2. Rs. 400, 20 years
 3. Rs. 550, 20 years
 4. Rs. 600, 10 years
44. If a and b are the roots of $x^2 - 2x - 1 = 0$ then value of $a^2b + ab^2$ is
1. -2
 2. 2
 3. $\frac{1}{2}$
 4. 4

Directions: (Q. 45–49)



The pie chart above describes the characteristics of Indian visiting UK from various states during a given year.

Answer the following questions given below.

Assume that the age wise distribution data applies to all states and that in the given year 1,00,000 Indian visited UK.

45. Number of visitors from Karnataka in the age group of 20–40 years
1. 20000
 2. 18000
 3. 12000
 4. None of these
46. Number of visitors from Maharashtra below the age of 20 years
1. 3000
 2. 5000
 3. 60000
 4. 8000
47. How many visitors were below 20 years of age but were neither from Karnataka, nor Maharashtra or West Bengal?
1. 7000
 2. 15000
 3. 9000
 4. 6000

48. The ratio of visitors from West Bengal below 20 years to visitors from Maharashtra above 40 years in
 1. 1 : 3
 2. 12 : 1
 3. 3 : 4
 4. 3 : 1
49. Find the difference between visitors from West Bengal and Maharashtra in the age group of 20–40 years
 1. 4000
 2. 6000
 3. 3000
 4. 8000
50. The number of ways in which 6 students can be seated at a round table is
 1. 720
 2. 120
 3. 410
 4. 350
51. What letter will come next in the following series?
 A B C D E F G Z Y X W U V T B C D E F Y X W V U C D E X W V R
 1. A
 2. V
 3. B
 4. Z
52. Among P, Q, R, S and T each secured different marks, Q scored higher than T only and P secured higher than S but lower than R. Who among them scored highest marks.
 1. P
 2. S
 3. R
 4. T

Direction (Q. No. 53 to 55): Study the following series carefully and answer the question given below:

7 M 4 P % J V 1 K 3 @ E W 2 Q © 6 T A * 8 Z I 5 \$ F U # 9 H N

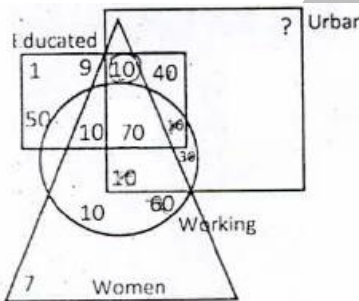
53. Which of the following is the sixth to the left of nineteenth from the left end of the above arrangement
 1. \$
 2. T
 3. W
 4. 2
54. How many such consonants are there in the arrangement, each of which is immediately preceded by a symbol and immediately followed by 2 numbers?
 1. four
 2. one
 3. two
 4. three
55. If all the symbols are dropped from the above arrangement then which of the following will be twelfth from the right end.
 1. Q
 2. 6
 3. 2
 4. T

Directions (Q. No. 56 to 60): Study the following information carefully to answer these questions.
 Seven friends A, B, C, D, E, F & G perform in stage shows on a different day from Monday to Sunday not necessarily in the same order. Each one performs a different item viz Music, speech Dance, Mimicry, Play, Debate and monologue, not necessarily in the same order. B performs play on Thursday and E performs Music on Sunday. G performs mimicry but not on Tuesday or Saturday. C's performance is on the next day of G's performance. D performs on Monday but not the next day of G's performance. D performs on Monday but not Dance or Debate. A performs Monologue which is on the next day of speech. Dance is not performed on Saturday.

56. Who performs Dance?
 1. C
 2. F
 3. D
 4. A

57. Which item is performed by D and on what day?
 1. Mimicry – Monday
 2. Music – Tuesday
 3. Play – Wednesday
 4. Speech – Monday
58. A performs on which day of the week?
 1. Tuesday
 2. Wednesday
 3. Friday
 4. Saturday
59. G performs on which day of the week?
 1. Wednesday
 2. Saturday
 3. Tuesday
 4. Friday
60. Who performs in debate?
 1. B
 2. D
 3. F
 4. C

Direction (Q. No. 61 to 63): The venn diagram given below is about a small town having population of 500 persons. The square represents persons from urban area, the circle represents working persons, the triangle represents women & the rectangle represents educated persons. Number written are number of persons.



61. What is the number of non-working females?
 1. 167
 2. 57
 3. 17
 4. 80
62. If urban population is 350, what is the number of non-educated non working urban women.
 1. 0
 2. 9
 3. 10
 4. 20
63. What is the number of urban male who are educated but not working?
 1. 30
 2. 40
 3. 50
 4. 110
64. In the matrix below, the numbers in the cells follow some rules. Identify the number which when substituted for (?) maintains the same rule.

7	12	?
21	27	35
7	14	23

1. 18
 2. 19
 3. 17
 4. 16

Direction: (Q. No. 65 to 67): In the table given below, there are two columns, column I & column II. Four words are written in column I. In Column II, Equivalent codes are used for these words. For each of the four words, four different patterns are used. Identify the pattern in the questions given below & choose the correct option.

Column – I	Column – II
Sr. No. Word	Code Equivalent
A. CHAIR	YDWEN
B. PHONE	SKRQH
C. TROUPE	GILFKV
D. TOURIST	WLXOLPW

65. If 'JUDGE' is coded as "MXGJH" the code pattern, followed is Series Number:
 1. A
 2. B
 3. C
 4. D
66. If 'EMPLOY' is coded as "AILHKU" the code pattern followed is Serial Number:
 1. A
 2. B
 3. C
 4. D
67. If 'JOURNAL' is coded as "QLFIMZQ" the code pattern followed is Series Number.
 1. A
 2. B
 3. C
 4. D

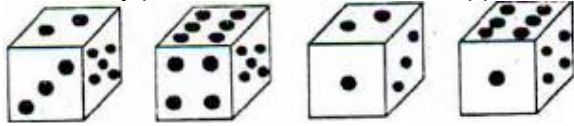
Direction (Q. No. 68 to Q.70): Eight person A, B, C, D, E, F, G, H are sitting around a circular table facing the centre. B is sitting second to the left of G, who is sitting third to the right of F. Only E is sitting between A & C. C is sitting third to the left of B. Only one person is sitting between E and H. Now answer the following questions.

68. Which of the following is the correct order of seating of persons to the right of A.
 1. ECHDGBF
 2. ECHFBDG
 3. EBHDCFG
 4. CHBEDGF
69. Who is sitting third to A on its left side.
 1. B
 2. H
 3. D
 4. F
70. Who is seating exactly in front of A.
 1. B
 2. C
 3. H
 4. F
71. If % means +, @ means −, ^ means ×, √ means ÷, Then the value of $42 \wedge 7 \sqrt{8} @ 25 \% 63 \wedge 9$ is:
 1. −10
 2. 14
 3. −20
 4. 30
72. Arrange the following words in the sequence in which they occur in the dictionary, then choose the correct option
 (i) BHAGWAN
 (ii) BHAGWAT
 (iii) BHAGIRATH
 (iv) BHAGAT
 1. iv, i, iii, ii
 2. iv, ii, i, iii
 3. iv, iii, ii, i
 4. iv, iii, i, ii
73. R is the brother of S and M is the Father of R, J is the brother of P & P is daughter of S. What is the relation of P with M?
 1. Grand Daughter
 2. Niece
 3. Aunty
 4. Sister

74. If $Z = 52$ and $ACT = 48$ then BAT is equal to
- | | |
|-------|-------|
| 1. 39 | 2. 44 |
| 3. 46 | 4. 50 |

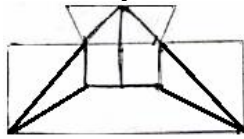
75. If $20 * 3 = 180$ and $4 * 5 = 100$ then value of $7 * 7$ is
- | | |
|--------|-------|
| 1. 21 | 2. 49 |
| 3. 343 | 4. 7 |

76. How many points will be on the face opposite to the face which contains two points.



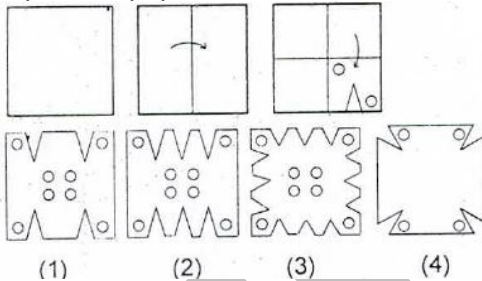
- | | |
|------|------|
| 1. 1 | 2. 4 |
| 3. 5 | 4. 6 |

77. How many minimum line segment required to draw the given figure?



- | | |
|-------|-------|
| 1. 16 | 2. 17 |
| 3. 18 | 4. 19 |

78. A piece of paper is folded as shown in the figure & then punched:



Choose the correct option from the answer figure which appears the same when unfolded.

- | | |
|------|------|
| 1. 1 | 2. 2 |
| 3. 3 | 4. 4 |

79. A mirror is placed vertically as shown in the figure. Choose the correct option for mirror image.

SUPER - 609

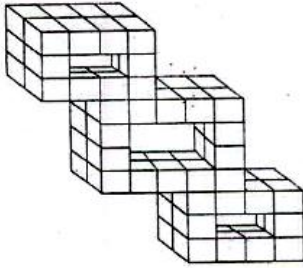
- | | |
|--------------|--------------|
| 1. 906-REPU2 | 2. 209-REPU2 |
| 3. 209-REPU2 | 4. 606-SUPER |

80. Each vowel in the word KILOMETER is replaced by the previous letter in the English alphabet & each consonant is replaced by the next letter in the English alphabet, then the substituted letters are arranged in alphabetical order, which will be the fifth from the left end?

- | | |
|------|------|
| 1. D | 2. L |
| 3. M | 4. N |

Directions: (Q. 84 to 85): Count the number of cubes in the given figure of each question and choose correct answer out of four alternative.

84.



1. 64
3. 66

2. 68
4. 70

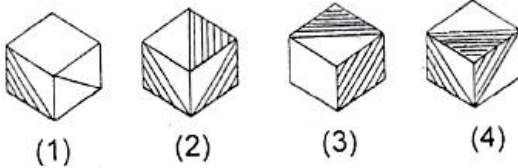
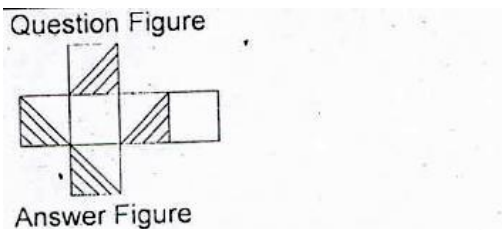
85. The number of squares on a chess board is

1. 203
3. 205

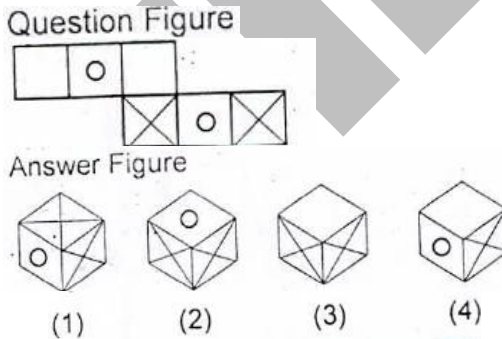
2. 204
4. 206

Direction: (Q. No. 86 & 87): A net is given which can be folded into a figure. Choose the correct alternative which can be made from the net.

86.

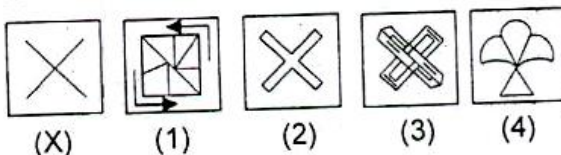


87.

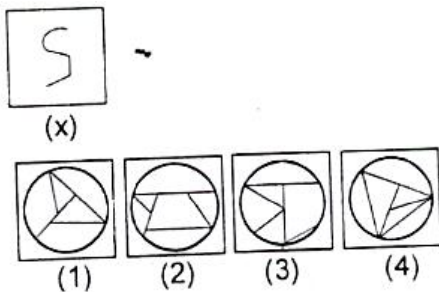


Direction (Q. No. 88 to 89): In each of the following questions figure (X) is embedded in any one of the four alternative figures (1) (2) (3) and (4). Find the alternative which contains figure (X) as its part.

88.



89.



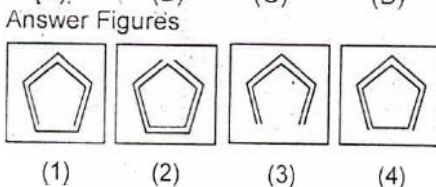
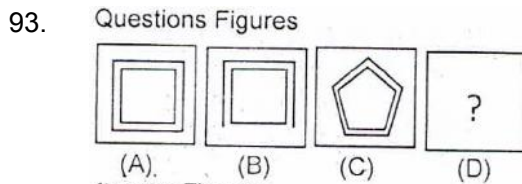
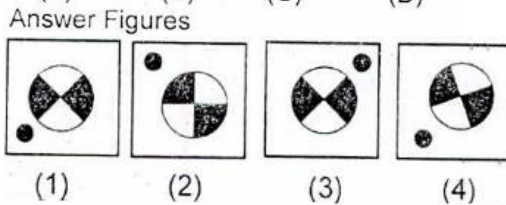
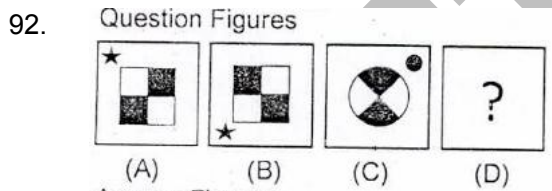
90. How many rectangles does the following figure have?



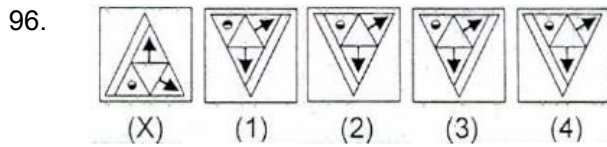
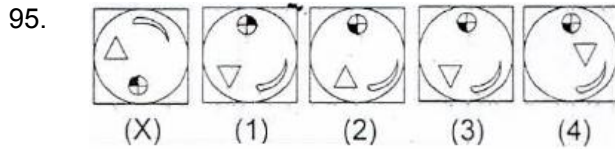
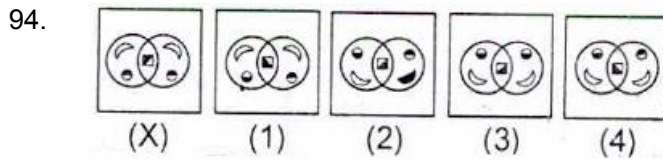
91. How many squares are there in the given figure?



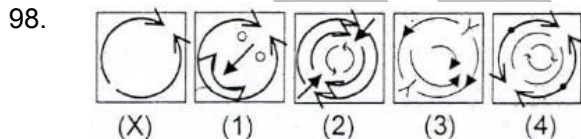
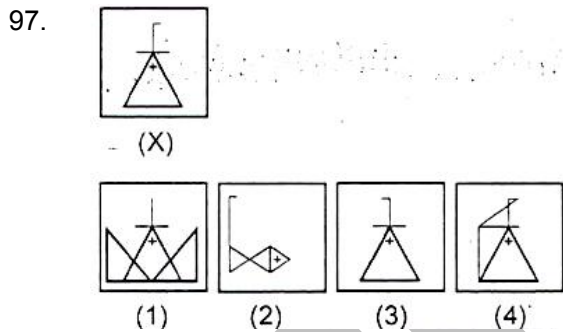
Direction (Q. No. 92 to 93): In each of the following questions, figures A and B are related. Find the figure from figure (1), (2), (3) and (4). Which has same relationship with figure C.



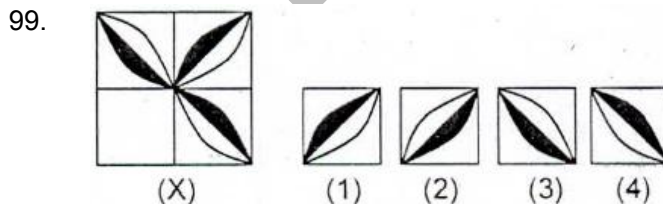
Direction (Q. No. 94 to 96): In each of the following questions choose the correct water image of figure (X) from the four alternatives (1), (2), (3) and (4).



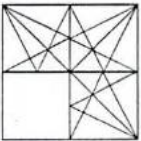
Direction (Q. No. 97 to 98): In each of the following questions, you have figure (X) followed by four alternative figures (1), (2), (3) and (4) such that figure (X) is embedded in one of them. Trace out the alternative figure, which contains figure (X) as its part.



Direction (Q. No. 99 – 100): Select a figure from the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.



100.



(X)



(1)



(2)



(3)



(4)

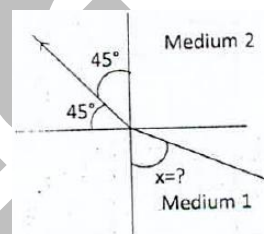
FITJEE

NTSE STAGE – I (DELHI STATE)
05 – A (2018 – 19)
(For Class – X)
SCHOLASTIC APTITUDE TEST

101. A body starts from rest is accelerated uniformly for 30s. If x_1 , x_2 , x_3 are the distances travelled in first 10s; next 10s and last 10s respectively, then $x_1 : x_2 : x_3$ is
 (1) 1 : 2 : 3 (2) 1 : 1 : 1
 (3) 1 : 3 : 5 (4) 1 : 3 : 9

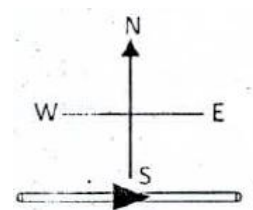
102. A bomb of mass 3 m kg explodes into two pieces of mass m kg and 2m kg. If the velocity of m kg mass is 16 ms^{-1} , the total kinetic energy released in the explosion is
 (1) 192 mJ (2) 96 mJ
 (3) 384 mJ (4) 768 mJ

103. Figure shows a ray of light as it travels from medium 1 to medium 2. If refractive index of medium 1 with respect to medium 2 is $\frac{\sqrt{2}}{\sqrt{3}}$ then the value of angle x is
 (1) 30° (2) 60°
 (3) 15° (4) 45°



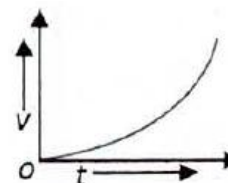
104. Which of the following statements is true?
 (1) A convex lens with power +4D has a focal length -0.25 m .
 (2) A convex lens with power -4D has a focal length $+0.25$.
 (3) A concave lens with power +4D has a focal length $+0.25$.
 (4) A concave lens with power -4D has a focal length -0.25 m .

105. A constant current I flows in a horizontal wire in the plane of the paper from West to East as shown in the figure. The direction of magnetic field at a point will be South to North
 (1) directly above the wire
 (2) directly below the wire
 (3) at a point located in the plane of the paper, on the north side of the wire.
 (4) at a point located in the plane of the paper, on the south side of the wire.



106. If the current through a resistor is increased by 50%, the increase in power dissipated will be (assume the temperature remains constant)
 (1) 225% (2) 200%
 (3) 250% (4) 125%

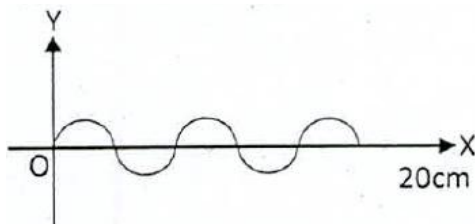
107. The velocity – time graph of a moving body is shown in the figure. Which of the following statements is true?
 (1) The acceleration is constant and positive.
 (2) The acceleration is constant and negative.
 (3) The acceleration is increased and positive.
 (4) The acceleration is decreasing and negative.



108. Which of the following eye defects can be rectified using cylindrical lens?
 (1) Myopia (2) Presbyopia
 (3) Astigmatism (4) Hyper metropia

109. The linear distance between a consecutive compression and rarefaction in longitudinal wave is
- (1) γ (2) $\frac{\gamma}{2}$
 (3) $\frac{\gamma}{4}$ (4) $\frac{3\gamma}{4}$

110. For the wave shown in figure, calculate the frequency and wave length of the wave if its speed is 320 ms^{-1} .



- (1) 80 cm, 4000 Hz (2) 8 cm, 400 Hz
 (3) 80 cm, 400 Hz (4) 80 cm, 40 Hz
111. If x calories of heat are supplied to 15 g of water, its temperature rises from 20°C to 24°C . If specific heat for water is $1 \text{ cal g}^{-1} \text{ }^\circ\text{C}^{-1}$, then the value of x is
- (1) 30 (2) 120
 (3) 15 (4) 60
112. In a hydro-Power Plant
- (1) Kinetic energy possessed by the stored water is converted into potential energy.
 (2) Potential energy possessed by the stored water is converted into electricity.
 (3) Water is converted into steam to produce electricity.
 (4) Heat is extracted from water to produced electricity.
113. The mass of a planet is twice and its radius is three times that of the earth. The weight of a body, which has a mass of 5 kg, on that planet will be
- (1) 11.95 N (2) 10.88 N
 (3) 9.88 N (4) 20.99 N
114. Which of these can be used as ol-factory indicator?
- (1) Vanila (2) Onion
 (3) Clove (4) All the above three
115. What will be the products when acid reacts with metals:
- (1) Water and hydrogen gas (2) Acid and hydrogen gas
 (3) Salt and hydrogen gas (4) Base and hydrogen gas
116. What happen, when methyl orange solution mixed with HCl.
- (1) Solution becomes yellow (2) Solution becomes Red
 (3) Solution becomes Blue (4) Solution becomes Pink
117. Which of these salts will give acidic solution?
- (1) Na_2CO_3 (2) NaCl
 (3) NH_4Cl (4) COONa
118. Name the metal which offers higher resistance to the passage of electricity than copper.
- (1) Gold (2) Silver
 (3) Mercury (4) None of these
119. Name two metals both of which are very ductile as well as malleable.

- (1) Gold and copper
(3) Silver and copper
- (2) Gold and silver
(4) none of these
120. Tick the arrangement of metals Fe, Cu, Zn, Ag in the order of decreasing Reactivity.
(1) Fe > Cu > Zn > Ag
(3) Ag > Zn > Fe > Cu
- (2) Cu > Fe > Zn > Ag
(4) Zn > Cu > Fe > Ag
121. Which metal does not corrode easily?
(1) Gold
(3) Platinum
- (2) Silver
(4) All the above
122. pH is defined as
(1) $-\log [H_3O^+]$
(3) $-\log [OH^-]$
- (2) $-\log [H_2O]$
(4) $-\log [H^+][OH^-]$
123. A solution turns methyl orange into yellow the approximate pH of solution is
(1) 1.2 – 2.8
(3) 6.0 – 7.6
- (2) 3.1 – 4.4
(4) 8.3 – 10.0
124. Zinc reacts with NaOH solution to produce.
(1) O₂
(3) NH₃
- (2) H₂
(4) NO₂
125. Aqueous solution of SO₂ is
(1) Acidic
(3) Neutral
- (2) Basic
(4) Amphoteric
126. Ethane with the molecular formula C₂H₆ has
(1) 6 Covalent bond
(3) 8 Covalent bond
- (2) 7 Covalent bond
(4) 9 Covalent bond
127. A flagellum is present at one end of a protozoan. It is:
(1) Planaria
(3) Hydra
- (2) Paramecium
(4) Leishmania
128. DNA is not present in
(1) Chloroplast
(3) Nucleus
- (2) Mitochondria
(4) Ribosome
129. The wings of house fly and the wings of a sparrow are an example of:
(1) Analogous organs
(3) Respiratory organs
- (2) Vestigial organs
(4) Homologous organs
130. Which of the following is NOT the purpose of Transpiration?
(1) Help in absorption and transportation in plants
(2) Prevents loss of water
(3) Maintains the shape and structure of plants by keeping the cell turgid
(4) Supplies water for photosynthesis
131. Pulmonary vein carries:
(1) Deoxygenated blood
(3) Mixed blood
- (2) Oxygenated blood
(4) None of these
132. Cell division in plants is promoted by:
(1) Abscisic acid
(3) Ethylene
- (2) Gibberlin
(4) Cytokinin
133. Loop of Henle is found in:

- (1) Lungs (2) Liver
(3) Nephron (4) Neuron
134. Flight and fight hormone is:
(1) Adrenalin (2) Thyroxine
(3) Oxytocin (4) Insulin
135. In the food chain given below, if the amount of energy available at fourth trophic level is 5 KJ. What was the energy available at the producer level?
Grass → Grasshopper → Frog → Snake → Hawk
(1) 5000KJ (2) 500KJ
(3) 50KJ (4) 5KJ
136. Jaya and Ratna are varieties of:
(1) Maize (2) Rice
(3) Wheat (4) Bajra
137. Which of the following is NOT an ancient water harvesting structure?
(1) Kattas (2) Sargam
(3) Kulhs (4) Surangam
138. ATP is formed by photosynthesizing plant cell by:
(1) Photophosphorylation (2) Oxidative Phosphorylation
(3) Substrate level phosphorylation (4) All of the above
139. Breathing rate in human is controlled by:
(1) Thalamus (2) Hypothalamus
(3) Cerebellum (4) Medulla oblongata
140. The number of pairs of nerves which arise from spinal cord is:
(1) 21 (2) 31
(3) 41 (4) 51
141. If $a : b = 2 : 3$ and $x : y = 3 : 4$, then $\frac{2ax - 25by}{3ay + 4bx}$ is
(1) $\frac{24}{5}$ (2) $\frac{5}{24}$
(3) $-\frac{24}{5}$ (4) $\frac{12}{13}$
142. A square is inscribed in a circle of radius 'a'. Another circle is inscribed in that square and again a square is inscribed in this circle. The side of this square is:-
(1) 2a (2) $\frac{a}{2}$
(3) $\frac{a}{\sqrt{2}}$ (4) a
143. If $a \cos \theta - b \sin \theta = c$, then $a \sin \theta + b \cos \theta = ?$
(1) $\pm \sqrt{a^2 + b^2 + c^2}$ (2) $\pm \sqrt{a^2 + b^2 - c^2}$
(3) $\pm \sqrt{a^2 - b^2 + c^2}$ (4) $\pm \sqrt{a^2 - b^2 - c^2}$
144. If $x^2 - 3x + 2$ is a factor of $x^4 - px^2 + q$, then the value of p and q respectively are:
(1) -5, 4 (2) -5, -5
(3) 5, 4 (4) 5, -4

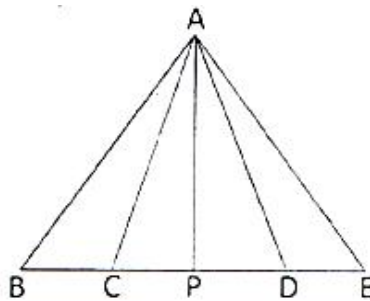
145. If $x_1, x_2, x_3, \dots, x_n$ are in A.P. then the value of $\frac{1}{x_1 x_2} + \frac{1}{x_2 x_3} + \frac{1}{x_3 x_4} + \dots + \frac{1}{x_{n-1} x_n}$ is:

- (1) $\frac{n-1}{x_1 x_n}$ (2) $\frac{n-1}{x_2 x_{n-1}}$
 (3) $\frac{n}{x_1 x_n}$ (4) $\frac{n+1}{x_1 x_n}$

146. If $x^2 + y^2 + \frac{1}{x^2} + \frac{1}{y^2} = 4$, then the value of $x^2 + y^2$ is

- (1) 2 (2) 4
 (3) 8 (4) 16

147. In the figure, $BC = CD = DE$ and P is mid point of CD . The area of $\triangle APC$ is



- (1) $\frac{1}{3} \text{ar}(\triangle ABC)$ (2) $\frac{1}{2} \text{ar}(\triangle ABD)$
 (3) $\frac{1}{6} \text{ar}(\triangle ABC)$ (4) $\frac{1}{4} \text{ar}(\triangle ABD)$

148. If x, y and z are positive real numbers and a, b and c are rational numbers, then value of

$$\frac{1}{1+x^{b-a}+x^{c-a}} + \frac{1}{1+x^{a-b}+x^{c-b}} + \frac{1}{1+x^{b-c}+x^{a-c}}$$

(1) -1 (2) 1
 (3) 0 (4) 2

149. If the height of right circular cylinder is increased by 10% while radius of base is decreased by 10% then curved surface area of cylinder

- (1) Remains same (2) Decreases by 1%
 (3) Increases by 1% (4) Increases by 0.1%

150. If $a_1, a_2, a_3, \dots, a_n$ are in A.P. and $a_1 = 0$, then the value of

$$\left(\frac{a_3}{a_2} + \frac{a_4}{a_3} + \dots + \frac{a_n}{a_{n-1}} \right) - a_2 \left(\frac{1}{a_2} + \frac{1}{a_3} + \dots + \frac{1}{a_{n-2}} \right)$$

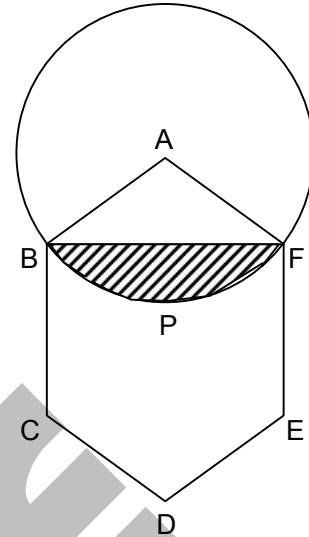
is equal to

(1) $n + \frac{1}{n}$ (2) $n + \frac{1}{n-1}$
 (3) $(n-1) + \frac{1}{(n-1)}$ (4) $(n-2) + \frac{1}{(n-2)}$

151. Three circles touch each other externally and all the three touch a line. If two of them are equal and radius of third circle is 4 cm then radius of equal circles is:

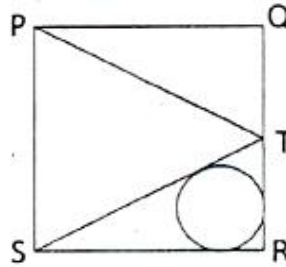
- (1) 12 cm (2) 8 cm
 (3) 16 cm (4) 20 cm

152. In the given figure, the centre of the circle is A and ABCDEF is a regular hexagon of side 6 cm. The **approximate** area of segment BPF is. (Take $\pi = 3.14$)
- (1) 25 cm^2 (2) 22 cm^2
 (3) 32 cm^2 (4) 30 cm^2



153. If $\frac{1}{y+z} + \frac{1}{z+x} = \frac{2}{x+y}$, then what is the value of $x^2 + y^2$?
- (1) 1 (2) $-2z^2$
 (3) $2z^2$ (4) $y^2 + z^2$
154. If $x^2 = y + z$, $y^2 = z + x$ and $z^2 = x + y$, then what is the value of $\frac{1}{x+1} + \frac{1}{y+1} + \frac{1}{z+1}$?
- (1) 1 (2) 0
 (3) -1 (4) 2
155. If α, β, γ are the roots of the equation $x^3 + 4x + 1 = 0$, then $(\alpha + \beta)^{-1} + (\beta + \gamma)^{-1} + (\gamma + \alpha)^{-1}$ is equal to
- (1) 2 (2) 4
 (3) 3 (4) 5
156. If x, y, z are three positive numbers then the minimum value of $\frac{y+z}{x} + \frac{z+x}{y} + \frac{x+y}{z}$ is
- (1) 1 (2) 2
 (3) 3 (4) 6
157. The minimum value of the expression $\frac{3b+4c}{a} + \frac{4c+a}{3b} + \frac{a+3b}{4c}$, (a, b, c are positive)
- (1) 1 (2) 4
 (3) 6 (4) 8
158. The volume of a cube is numerically equal to sum of the length of its edges. The total surface area of cube in square units is
- (1) 12 (2) 36
 (3) 72 (4) 144
159. The expression $14^m - 6^m$ will always divisible by
- (1) 8 (2) 20
 (3) 14 (4) 6

160. PQRS is a square of side 6 cm each and T is mid point of QR. What is the radius of circle inscribed in ΔTSR .



- (1) $\frac{3}{3-\sqrt{5}}$ (2) $\frac{6}{3+\sqrt{5}}$
 (3) $\frac{2}{3+\sqrt{5}}$ (4) $3+\sqrt{5}$
161. When was the democracy restored in Chile?
 (1) 1973 (2) 1988
 (3) 1957 (4) 1991
162. Which of the following country is not a operational member of security council?
 (1) Russia (2) China
 (3) Germany (4) America
163. Who among the following was not a member of the constituent assembly?
 (1) Mahatama Gandhi (2) Jawahar Lal Nehru
 (3) Dr. Rajendra Prasad (4) Dr. B.R. Ambedkar
164. Which of the following Secretary General said that "US war on Iraq was not legal"
 (1) Kofi A Anan (2) B. B. Ghali
 (3) U Thant (4) Ban Ki Moon
165. President can declare emergency when
 (1) Prime minister advisers him to do so
 (2) Parliament advises
 (3) The council of ministers, in writing, advises him to do so
 (4) Home minister ask him to do so
166. "KOSOVO" was a province of try before the spilit
 (1) Vietnam (2) Zimbabve
 (3) Sri Lanka (4) Yugoslavia
167. Which of the following state was born out of culture, ethnicity and geography.
 (1) Kerala (2) Nagaland
 (3) Mizoram (4) Assam
168. 'End of Racial Discrimination' is a part of which fundamental right?
 (1) Right of Freedom (2) Right to equality
 (3) Right against exploitation (4) Right to education and culture
169. The movement for the individual and family right of woman is known as -
 (1) Mahila Adhikar Aandolan (2) Mahila Shakti Aandolan
 (3) Narivadi Aandolan (4) Nari Shasktikaran Aandolan
170. What is the meaning of 'Transparency'
 (1) when decision is taken by the ruler
 (2) when decision are make through leader's

- (3) when decision are made for individual greeds
 (4) when decision are taken with honesty and proper follow of rules
171. The international organization that works for human rights is
 (1) Amety International (2) Amnesty International
 (3) Asnesty International (4) Afnesty International
172. What was 'Livre'
 (1) Currency of France (2) Newspaper of France
 (3) Magazine of France (4) Flag of France
173. Who granted sole right to trade with East to East India Company.
 (1) James-I (2) James-II
 (3) Elizabeth-I (4) Elizabeth-II
174. In which congress session, Non-cooperation programme was adopted.
 (1) Ahmedbad 1921 (2) Kolkata 1917
 (3) Amritsar 1919 (4) Nagpur 1920
175. The first Modern Novel published in Malayalam in the year 1889 was
 (1) Indulekha (2) Rajasekhara Caritamu
 (3) Manju Ghose (4) Pariksha Guru
176. The painting 'Damayanti' was made by
 (1) Abindra Nath Tagore (2) William Jones
 (3) Raja Ravi Verma (4) Rabindra Nath Tagore
177. When was 'Simon Commission' arrived in India?
 (1) 1928 (2) 1930
 (3) 1931 (4) 1932
178. 'Rinderpest' is a term used for
 (1) A cattle disease (2) Missing of cattle
 (3) Indentured labourer (4) Mass production in a factory
179. Giuseppe Garibaldi was a famous freedom fighter of
 (1) germany (2) poland
 (3) ireland (4) italy
180. Gudem Rebellion was led by
 (1) Baba Ramchandra (2) Jawahar Lal Nehru
 (3) Alluri Sitaram Raju (4) Mahatma Gandhi
181. "The Social Contract" book was written by
 (1) Dantey (2) Roussea
 (3) Petrarek (4) Napoleon
182. The principle of the 'Garden City' was developed by
 (1) Raymond Unwin (2) Barry Parker
 (3) Ebenezar Howard (4) Herbert Baker
183. Which of the following organization looks after the credit needs of agriculture and rural development in India?
 (1) FCI (2) IDBI
 (3) NABARD (4) SBI
184. How many phases are there in circular flow of income?
 (1) 2 (2) 3

- (3) 6 (4) 5
185. Which of the following is considered as social infrastructure?
(1) Transport (2) Education
(3) Energy (4) Communication
186. Multiple cropping refers to
(1) cultivating of wheat and rice
(2) cultivation of two crops in alternative rows
(3) cultivating more than
(4) cultivating crops & rearing animals simultaneously
187. Infant mortality rate refers to the death of child under the age of
(1) 1 year (2) 2 year
(3) 3 year (4) 4 year
188. In which year was the integrated child development service(ICDS) introduced?
(1) 1965 (2) 1975
(3) 1985 (4) 1995
189. The first chairman of Planning commission was
(1) Indira gandhi (2) Dr Rajendra prashad
(3) Jawahar lal nehru (4) Vallabh Bhai Patel
190. What percentage of the total surface area of India is covered by mountains?
(1) 33% (2) 35%
(3) 30% (4) 25%
191. Which mineral has excellent dielectric strength, insulating properties, low power loss factor and resistance to high voltage?
(1) Aluminium (2) Lime stone
(3) Copper (4) Mica
192. Which of the following is an example of joint sector industry?
(1) BHEL (2) OIL
(3) SAIL (4) TISCO
193. Which mode of transport reduces trans-shipment losses and delays?
(1) Railways (2) Road ways
(3) Water ways (4) Pipelines
194. Which of the following lake lies on the equator?
(1) Lake victoria (2) Lake Malavi
(3) Lake Nasser (4) None of these
195. The longitudinal valleys lying between Lesser Himalayas and Shivaliks are known as
(1) Valleys (2) Coast
(3) Passes (4) Duns
196. In winters, the western cyclonic disturbances originate from which sea?
(1) Caspian sea (2) Black sea
(3) Mediterranean sea (4) Baltic sea
197. Balancing the need to use resources and also conserve them for future is called
(1) Resource development (2) Resource conservation
(3) Sustainable development (4) Human resource development

198. Which among the following has the maximum number of National parks?
(1) Andaman and Nicobar island (2) Arunachal Pradesh
(3) Assam (4) Meghalaya
199. According to the 'Theory of Plate Tectonics' when some plate comes towards each other which one of the following is formed?
(1) Convergent boundary (2) Divergent boundary
(3) Transform boundary (4) None of the above
200. The largest producer of cotton in the world is
(1) India (2) China
(3) Brazil (4) USA

FITJEE