# NTSE STAGE – I (HARYANA STATE)
# SET – A
# (2020 – 21)
# (For Class – X)
# MENTAL ABILITY TEST (MAT)

## ANSWER KEYS

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

# NTSE STAGE – I (HARYANA STATE)
# SET – A
# (2020 – 21)
# (For Class – X)
# MENTAL ABILITY TEST (MAT)

## SOLUTIONS

1. 2
1. $\times(-2)$ series

2. 3
2. Denominator decreases by factor $\frac{2}{3}$

3. 4
3. Middle term is product of two of its adjacent terms.
   $6 \times 7 = 42$

4. 4
4. $1^{st}$ series $\rightarrow +3, +3, +3$
   $2^{nd}$ series $\rightarrow \times 2, \times 2, \times 2$
   $20 \times 2 = 40$

5. 1
5. Dual series
   $1^{st}$ series $\rightarrow -10, -8, -6$
   $2^{nd}$ series $\rightarrow \times 3, \times 2, \times 1$
   $\Rightarrow 12 - 6 = 6$

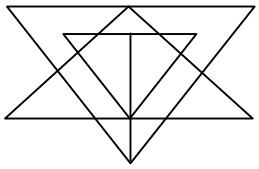
6. 3
6. $(3 + 4)^2 = 49$, $(7 + 5)^2 = 144$
   $(5 + 1)^2 = 36$
   $\Rightarrow (8 + 2)^2 = 100$

7. 1
7. $21 - 11 = 10/2 = 5$
   $33 - 17 = 16/2 = 8$
   $29 - 15 = 14/2 = 7$

8. 1
8. $(4^2 + 3^2) / (2 + 5) = 2.50$
   $(6^2 + 8^2) / (4 + 2) = 12.50$
   Similarly,
   $(5^2 + 2^2) / (9 + 2) = 1.61$

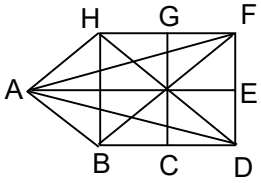
9. 2
9. Both middle boxes are opposite faces for $5 \leftrightarrow 2$

10. 2

10. 

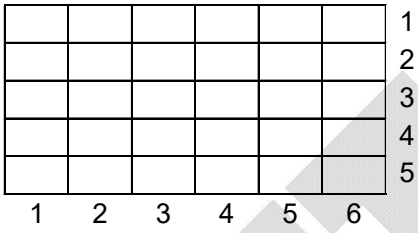
1 fig $\rightarrow$ 7
2 fig $\rightarrow$ 7
4 fig $\rightarrow$ 1
7 fig $\rightarrow$ 1
11 fig $\rightarrow$ 1
**Total = 17**

11. 3

11. 

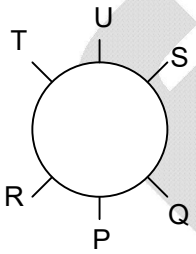

AH, AB, HF, BD, HB, FD, HD, BF, GC, AE, AF, AD
Total = 12

12. 1

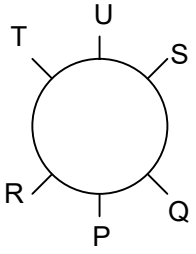
12. 


$(1 + 2 + 3 + 4 + 5 + 6) \times ((1 + 2 + 3 + 4)$
$= 21 \times 15 = 315$

13. 3

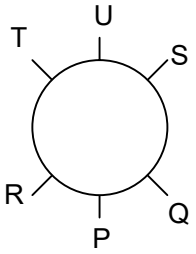
13. 


14. 4

14. 

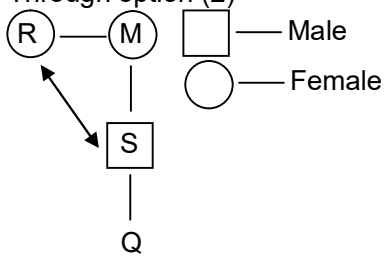

15. 1

15.



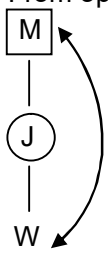

16. 2

16. Through option (2)




17. 4

17. From option (4)




M is grandfather of W.

18. 3

18. From Option (3)
748 and 518 written as
874 – 851 = 23 (minimum)

19. 1

19. S L 2 = ? P C 7 % E **H** **@** ÷ 8 K B M 5 T V 3
Only 1

20. 1

20. S L = ? P C **%** E H @ ÷ K B M T V 3 *
14 – 7 = 7$^{th}$ from left is %

21. 3

21. S L 2 = ? P C 7 % E H @ ÷ K B M 5 T V 3 *

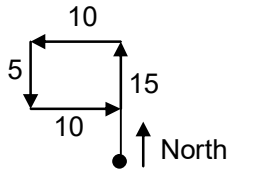
22. 1

22. Father is related to speed, all others are related to size.

23. 4

23. The nearest meaning of ROSE is STOOD.

24. 3

24. 


25. 4
25. His mother's only daughter is his sister who is mother of Radha.
So, Radha is niece of the man.

26. 3
26. $40 + 12 \div 3 \times 6 - 60$
$40 + 24 - 60$
$64 - 60 = 4$

27. 4
27. (4) $\rightarrow$ 3 words
As, to, under

28. 3
28. Day before yesterday $\rightarrow$ Thursday
Today $\rightarrow$ Saturday
Tomorrow $\rightarrow$ Sunday

29. 4
29. (A) Palisade
(E) Process
(D) Profession
(B) Protect
(C) Pursuit

30. 3
30. (E) Collapse
(B) Compensate
(A) Credential
(C) Credible
(D) Cremate

31. 3
31. Curator is incharge of museum.
Jailor is incharge of prison.

32. 2
32. L A B O U R
3 1 2 5 6 4

33. 2

33. $3^2 = 1$

$43 = 15\ 8$

$4^2 = 1$

Similarly,

$2^2 = 1$

$32 = 83$

$3^2 = 1$

34. 3

34. $14^3 + (x)^2 = 4425$

$x^2 = 4425 - 2744$

$x = \sqrt{1681}$

$x = 41$

35. 1

35. Let present age be 7x and 6x

$7x \times 6x = 672$

$x^2 = \frac{672}{42} = 16$

$x = 4$

Vijay age = 6x = 24

4 years ago = 20

36. 4

36. From statement (a) and (b)
Two members are to be selected,
Of the remaining seven
To maximize the size of the team we would choose S
U and W are included in the team(statement (c)).
We cannot include K or L because we would then have to leave out N and U(from statement (e) and (f))

37. 4

37. If 'K' is included 'L' has to be included (statement(d)).
If 'L' is choose neither N nor U can be chosen(statement(e & f)).
S, W are also not included because S, U, W have to be always together(statement(c)).
Hence, one of P or R would be selected (statement(a))
And one of M or Q would be selected (statement(b)).

38. 1

38. If a team includes N, it cannot include 'L' and therefore not even 'K' (statement (e) and (d)).
According to the statement (a), one of P or R or S has to be included.
According to the statement(b) one of M or Q has to be selected.
So following cases are possible:
PQN, RQN, PMN, RMN
If 'S' is selected
SUWMN, SUWQN
These are the only possible cases
Thus, in all 4 + 2 = 6 ways

39. 1

39. From the statement (a) and (b)

One of P, R, S and one of M, Q are to be selected.
But from statement(d) K, L are always together.
Thus, L cannot be included in a team of 3 members.

40. 3
40. From statement(a) one of P, R, S has to be selected. To make a team of 5.
S will be chosen(which leaves out P and R)
If 'S' is chosen, 'U' has to be chosen (statement(c))
If 'U' is chosen, 'L' has to be chosen (statement(c))
K cannot be chosen(statement(d)) and from statement(b); one of M or Q has to be chosen

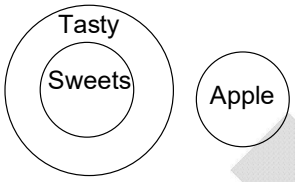
41. 2
41. If Gita is not sick, means she is careless.

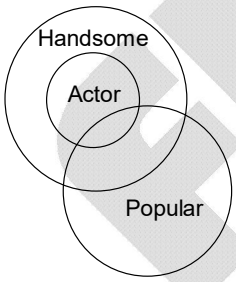
42. 4
42. Raman does not eat hamburgers, means he does not get a swollen nose.

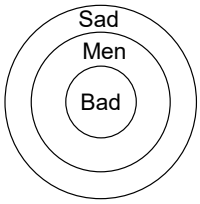
43. 4
43. If they are not hostile by nature means they have no confidence in the management.

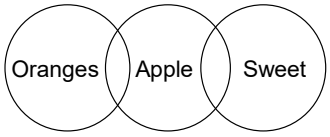
44. 4
44. None of the given options relates logically to the given statements.

45. 1
45. As all irresponsible parents do not shout, it follows that the children read.

46. 4
46.



47. 3
47.



48. 1
48.



49. 2
49.


50. 4

50. To be together between 9 and 10 o'clock, the minute hand has to gain 45 min spaces
55 min spaces gained in 60 min

45 min spaces are gained in $\left(\frac{60}{55}\times 45\right)\text{min} = 49\frac{1}{11}\text{min}$

So answer is $9:49\frac{1}{11}$

51. 1 & 4 both

51. A + B > C + D ……(i)
A + C = B + D ……(ii)

$A = \frac{B+D}{2}$, so from(ii) we get C = $\frac{B+D}{2}$ = A

Substituting A and C in (i) we get B > D
So, B > C = A and B > D and B > A
B > A = C > D. here A's income is less than B
If option (1) is false then option(4) must be false

52. 2

52. A + B > C + D ……(i)
A + C = B + D ……(ii)

$A = \frac{B+D}{2}$, so from(ii) we get C = $\frac{B+D}{2}$ = A

Substituting A and C in (i) we get B > D
So, B > C = A and B > D and B > A
B > A = C > D. B's income is the highest.

53. 2

53. To be opposite between 9 to 10 o'clock, the min. hand has to gain 15 min. spaces
55 min. spaces gained in 60 min

15 min spaces are gained in $\left(\frac{60}{55}\times 15\right)\text{min} = \frac{180}{11} = 16\frac{4}{11}\text{min}$

So answer is $9:16\frac{4}{11}\text{min}$

54. 1

54.


55. 2

55. 8 Match 2011
Odd days in Century → 2000 → 0 odd days
Odd days upto previous year → 10 years + 2 leap year
= 12 odd days or 5 odd days
Odd days in Current year → Jan – 3, Feb – 0, Mar - 1 ⎤ 4 odd days
Total odd days → 0 + 5 + 4 = $\frac{9}{7}$ = 2 odd days

Means 8 March 2011 → Tuesday

56. 2
56. As per observation

57. 3
57. As per observation
(1) $(7 \times 5) - 12 = 23$
(2) $(4 \times 8) - 10 = 22$
(3) $(9 \times 3) - 10 =$ **[17]**
(4) $(6 \times 7) - 8 = 34$

58. 4
58. As per observation

59. 3
59. As per observation

60. 2
60. As per observation

61. 2
61. As per observation

62. 2
62. As per observation

63 2
63. Rival is the synonym of competitor

64. 2
64. E X A M I N A T I O N S
1 2 3 4 5 6 3 7 5 8 6 9
So,
N O M I N A T I O N
6 8 4 5 6 3 7 5 8 6

65. 4
65. The difference between the positions of alphabet is two in all of the given options except 4.

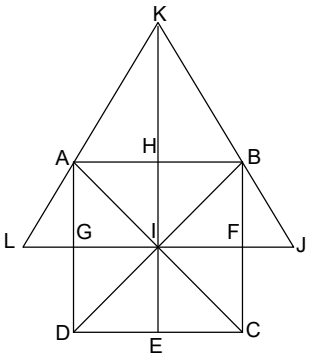
66. 1
66. When we divide the first number with the second number we will get 4 as quotient except 3.

67. 4
67. Except New York all of them is the capital of different countries.

68. 3
68. As per observation.

69 1

69.




Square – AGHI, HBIF, GIBF, IFEC, ABCD
Triangle – KAH, KHB, ALG, AIH, AGI, HIB, BIF, BFJ, GDI, IDE, IFC, KAB, AIK, BIK, AIB, ALI, BIJ, AID, BIC, DIC, KLI, KJI, ADC, DCB, KLJ

70. 1
70. As per observation.

71. 2
71. When Suresh reached on Tuesday he said he has come 3 day before means he has to come on Friday.
So, if the man reached on Tuesday he was late by 4 days.

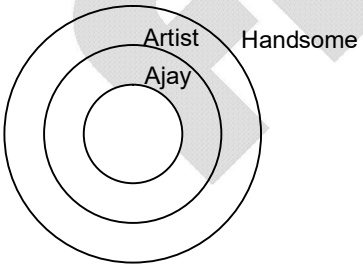
72. 1
72. As per observation.

73. 4
73. If we arrange all the given words according to dictionary then INTIMATION will be last word and 4$^{th}$ letter of this word is I.

74. 4
74. Relation between U and A is not given so we can't say anything.

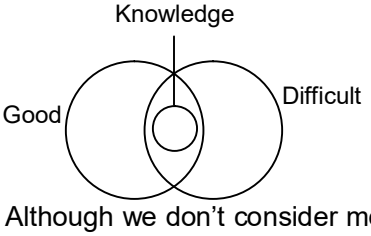
75. Bonus
75. As per observation.

76. 2
76.




So from the figure we can say Ajay is Handsome.

77. 2
77.




Although we don't consider meaning of English in syllogism but if we go for this then option I is also correct, where difficult means hard.

78. 1
78. If English alphabet is written in reverse order I will be the 3rd to the right of the 15th letter from the left.

79. 4
79. The managing director of a firm arrived 10 min before 12:30 to interview means 12:20. Which is 20 minutes before Chairman. It means Chairman come at 12:40 which is 30 min late according to scheduled time of interview so the interview was held at 12:10.

80. 2
80. 4 5 3 6 2 4 3 4 2 9 3 4 1 0 3 4 2 7 4 3 2 3 4 2 3 4

81. 1
81. As per observation.

82. 2
82. As per observation.

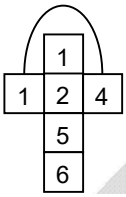
83. 4
83. As per observation.

84. 4
84. As per observation.

85. 3 & 4
85. As per observation.

86. 4
86. As per observation.

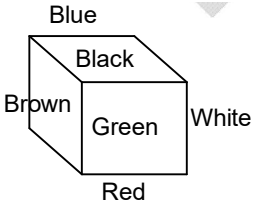
87. 3
87.




As per net rule 1 is opposite to 4.

88. 1
88. As per observation.

89. Bonus
89.




Cube is symmetrical figure so, out of 4, 2 will be always opposite to each other and rest will be adjacent to it.

90. 1
90. White is opposite of brown.

91. 2

91. As per observation.

92. 4
92. The number of cubes with 0 face painted is $(n-2)^3 = 64$

93. 3
93. The three coloured smallest cubes will be at corners so there is 8 three coloured cubes.

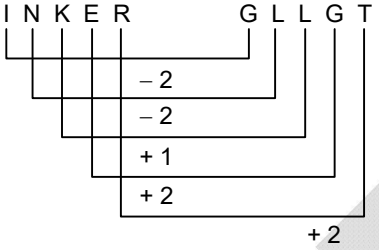
94. 3
94. $2(n-2)^2 = 32$
One faced red colour small cubes will be found on 2 faces of larger cubes.

95. 2
95. c a b b b b c a b b b b c a b b b b

96. 2

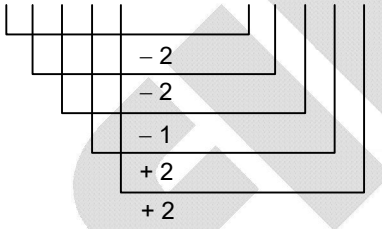
96. G A R N I S H ⟶ R G A I N H S
1 2 3 4 5 6 7 3 1 2 5 4 7 6
G E N I O U S ⟶ 3 1 2 5 4 7 6 → N G E O I S U

97. 4
97. I N K E R G L L G T




Similarly,

J I N K S H G O M U




98. 3
98. U → 7
M → 2
1 → 5
O → 1
K → 8
J → 4
MOUJIK → 217458
It is asking reverse
So → 854712

99. 4
99. 10 26 74 218 654 1946 5834
The difference is multiplied by 3 so it should be 650 instead of 654

100. 4

100. 325, 259, 202, 160, 127, 105, 94
The sequence is – 66 – 55 – 44 – 33 – 22 – 11
So it should be 204 instead of 202