NTSE FEBRUARY, 2021
STAGE -1(A.P)

MENTAL ABILITY TEST
SOLUTIONS

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NTSE-FEBRUARY, 2021 (STAGE – 1 – AP)
MENTAL ABILITY TEST
QUESTION PAPER CODE: C

Time : 2 Hrs **Max.marks: 100**

INSTRUCTIONS

Read the following instructions carefully before you answer the questions. Answers are to be SHADED on a SEPARATE OMR Answer Sheet given, with HB Pencil. Read the Instructions printed on the OMR Sheet carefully before answering the question.

1. Please write your Center Code Number and Roll Number very clearly (only one digit in one block) on the OMR Sheet as given in your admission card. Please see that no block is left unfilled and even zeros appearing in the Center Code Number are correctly transferred to the appropriate blocks on the OMR Sheet as shown in the example given in the OMR Sheet. For all the subsequent purpose your Center Code Number and Roll Number shall remain the same as given on the Admission Card.
2. Paper-I (Mental Ability) consists of 100 questions (Q.Nos 1 to 100)
3. All questions carry one mark each.
4. Since all questions are compulsory do not try to read through the whole question paper before beginning to answer it.
5. Begin with the first question and keep trying one question after another till you finish all the questions
6. If you do not know the answer to any question, do not spend much time on it and pass on to next one. If time permits, you can come back to the questions which you have left in the first instance and try them again.
7. Since the time allotted to the question paper is very limited, you should make the best use of it by not spending too much time on any question.
8. A black page is provided for rough work at the end of question paper.
9. REMEMBER YOU HAVE TO SHADE ANSWERS ON A SEPARATE OMR SHEET PROVIDED.
10. Answer to each question is to be indicated by SHADING the circle having the number of the correct alternative in OMR Sheet from among the ones given for the corresponding question in the booklet.
11. Now turn to the next page and start answering the questions.
12. The OMR answer sheet consists of two copies, the ORIGINAL COPY and the CANDIDATE'S COPY. Do not separate or displace them. Do not darken the bubbles in two copies of OMR answer sheets separately. After the examination, you should hand over the OMR Sheet to the Invigilator of the room and can take away the candidate's copy of OMR answer sheet with them.
13. The candidate need not return this Question Paper booklet and can take it after completion of the examination. No candidate should leave the examination hall before the end of the examination.

PAPER - I
MENTAL ABILITY TEST
(Q.Nos. 1 to 100)
Max. marks : 100

Note: SHADE the correct alternatives in the OMR Answer Sheet provided, from amongst the ones given against the corresponding question in the Question Booklet. For shading the circles, use HB Pencil.

Direction: In Question nos. 1 to 5:

Each of the following questions consists of five figures marked A, B, C, D and E called the problem figures followed by four other figures marked 1, 2, 3 and 4 called the answer figures. Select a figure from amongst the answer figures which will continue the same series as established by the five problem figures. Select a figure from amongst the answer figures which will continue the same series as established by the five problem figures.

1.4

Sol. Obseve the darkened circles

2.3

Sol. Square should changed to V and darkened triangle should move to opposite

3.4

Sol. 5 lines are added every time in anti-clock wise direction

4.4

Sol. Inner figures are obtained by rotating clockwise one step and external figures are obtained by rotating anticlock wise directions.

5.3

Sol. First two symbols will come down and middle one will come to top

6.2

Sol. Shift all symbols anticlock wise 90^0 and reverse them.

7.1

Sol. Every time 1½ part of leaf is added

8.4

Sol. B is mirror image of A, D is mirror image of C

9.4

Sol. First and second rows are interchanged and third row elements are interchanged.

10.2

Sol. Every time are line segment and a circle is added

Questions (11 to 20) In each of the following letter series. Some of the letters ar missing which are given in that order as one of the alternatives below it. Choose the correct alternatives.

11.2

Sol. Sequence AABBCC is repeated

12.2

Sol. CCCBBBAAA is repeated

13.3

Sol. ABC/AA BC / AABBCC / A

14.1

Sol. AABCC/BBCAA/CCABB/AABCC

15.1

16.4

Sol. ABCD/AABBCCDD/AAABBBC

17.4

Sol. CA/CCAA/CCCAAA/CCCCAAAA

18.2

19.4

Sol. BAAC/ACCB/CBBA/BAAC

Sol. AABC/ABBC/ABCC/AABC/ABBC

Direction : Questions (21 to 30): In each of the following questions find out the alternative which will replace the question mark.

21.3

Sol. Evolution is proposed by Darvin, Buoyancy is proposed by Archimedes

22.4

Sol. Snake bite with Fang, Bee bite with sting

23.2

Sol. Tea is taken in cup, Tobacco enhanced through Hookah

24.4

Sol. Aeroplane is controlled in cockpit, train is controlled in engine

25.4

Sol. Ottawa is in Canada, camberra is in Australia

26.2

Sol. Measure of X-rays is in Roentgen, same as measure of super conductivity is in Becquerel.

27.3

Sol. Gravity pulls the objects, due to magnetism objects are attracted

28.2

Sol. Joule is the unit for energy, Pascal is the unit for pressure.

29.3

Sol. Insulin is a type of hormone, Trypsin is a type of enzyme.

30.2

Sol. Triangle has 3 sides whereas Hexagon has 6 sides

Rectangle has 4 sides whereas Octagon has 8 sides

Direction : Questions (31 to 40) : Out of the four figures (1), (2) , (3), (4) given in each question, three are similar in certain way. Choose the figure which is different from the other figures.

31.4

Sol. (1), (2), (3) contains only one circle, but (4) contains two circles

32.4

Sol. (1), (2), (3) figures contains number of sides 3, 4, 5, 6 either in clock wise (or) anticlockwise but (4) do not obey that rule.

33.3

34.2

Sol. Line outside hexagon also should move 2, 3, 4 steps respectively.

35.4

Sol. (i), (ii), (iii) are filled in 3 quadrants and 4th quadrant is left blank. But in (4) 4th quadrant is also filled

36.3

Sol. Δ and $\bullet$ filled alternatively leaving middle box blank

37.4

Sol. In (1), (2), (3) angle between lines is 90^0

38.1/3

Sol. Angle between arrows is not 90^0 in (3)

39.4

Sol. (4) contains both dots in same side of diagonal.

40.3

Direction: Questions (41 to 50) : You are provided with substitutes for various mathematical symbols or numerals, followed by a question involving calculation of an expression or choosing the correct equation. You are required to put in the real signs or numerals in the given equation and then solve the questions as required (Follow BODMAS)

41.1

Sol. $14 \times 10 + (42 \div 2) - 8 = 153$

42.3

Sol. $(12 \div 6) - 3 \times 2 + 8 = 4$

43.2

Sol. $(3 \times 15 + 19) \div 8 - 6 = 2$

44.4

Sol. $12 - 12 \times (28 \div 7) + 15 = -21$

45.1

Sol. $(175 \div 25) + 5 \times 20 - 3 \times 10 = 77$

46.4

Sol. $24 \times 12 + (18 \div 9) = 290$

47.1

Sol. $(28 \div 7) \times 8 - 6 + 4 = 30$

48.ADD

49.4

Sol. $(252 \div 9) \times 5 - 32 + 92 = 200$

50.2

Sol. $(30 \div 2) + 3 \times 6 - 5 = 28$

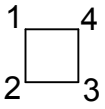
Directions (51 to 60): Each of the following questions consists of five figures marked A, B, C and D constitute the problem set while figures 1, 2, 3 and 4 constitute the answer set. There is a definite relationship between figures A and B. Establish a similar relationship between figures C and D by selecting a suitable figure from the Answer set that would replace the question mark (?) in figure (D).

51. 2

Sol: A : B : : C : D

Interchange positions of two figures.

52. 2

Sol: 

Shift the symbols at '1' to '3' and '3' to '4' and interchange symbols at 3.

53. 1

Sol: A : B : : C : D

Figure in A is divided into 8 equal pants using 3 lines.

54. 2

Sol: First take mirror image and then water image.

55. 3

Sol: B is mirror image of A.

D is mirror image of C.

56. 1

Sol: Rotate > in anticlockwise direction with $90°$.

57. 2

Sol: Take mirror image of hiv and reverse the tail.

58. 1

Sol: Two circles came to middle and overlapped.

59. 1

Sol: A to B new circle came to middle.

C to D new square came to middle and leave blank inside the small square.

60.4

Sol: A to B diagonals are drawn.

C to D also Diagonals are drawn.

Direction: (61 to 70) : In each of the following questions 4 words have been given, out of which 3 are alike in some manner and the fourth one is different. Choose out the odd one.

61. 1

Sol: Differences between numbers assigned to alphabets are in A.P.

62. 2

Sol: 166 is not 11 multiple.

63. 3

Sol: Captain is Navy and Army rank remaining are Air force ranks

64. 3

Sol: 97 is not 3 multiple

65. 2

Sol: Daman is union territory.

66. 3

Sol: Deimus is not a star.

67. 1

Sol: 2890 is not perfect cube.

68. 4

Sol: Mayonnaise is not a herb.

69. 2

Sol: Flute doesn't have strings.

70. 3

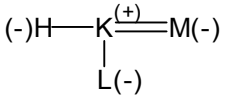
Sol: Beak doesn't steer.

Direction (71 to 75) : Study the information given below and answer the following questions.

71. 1 or 2

Sol: Man is either cousin or brother of Shubha

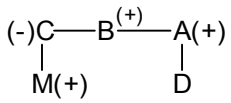
72. 1

Sol: 

K is husband of M.

73. 2

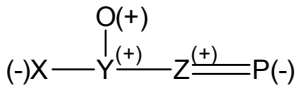
Sol:



Mohan is cousin of Dhruv

74. 4

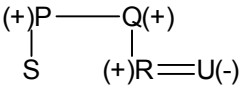
Sol:



P is daughter-in-law of O.

75. 1

Sol:



U is sister-in-law of S.

Direction (76 to 80): Read the following and answer the questions given below.

1. There are six persons A, B, C, D, E and F.
2. C is the sister of F.
3. B is the brother of E's husband.
4. D is the father of A and grandfather of F.
5. There are two fathers, three brothers and a mother in the group.

76. 4

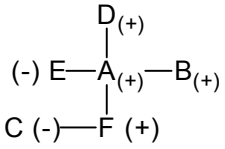
77. 3

78. 4

79. 3

80. 1

Sol: (76-80)



76. E is the mother.

77. A is E's husband

78. These are 4 male members in the group.

79. F is son of E

80. ABF are brothers

Direction (81 to 90): In these questions; numbers are arranged on the basis of some rules. One place is vacant, which is indicated as ?. Find out the correct alternative to replace the question mark "?"

81. 2

Sol: $25 + 17 = 42 = 6 \times 7$

$37 + 18 = 56 = 8 \times 7$

$89 + 16 = 105 = 15 \times 7$

82. 1

Sol: $\frac{84}{12} = 7 \times 2 = 14, \frac{88}{11} = 8 \times 2 = 16, \frac{81}{9} = 9 \times 2 = 18$

83. 4

Sol: $\sqrt{36} + \sqrt{49} + \sqrt{64} + \sqrt{25} = 26$

$\sqrt{9} + \sqrt{81} + \sqrt{25} + \sqrt{16} = 21$

$\sqrt{25} + \sqrt{64} + \sqrt{144} + \sqrt{36} = 31$

84. 4

Sol: $(93 - 27) = 66 - 63 = 3$

$(79 - 38) = 41 - 37 = 4$

$(67 - 16) = 51 - 42 = 9$

85. 4

Sol: $(5\times15)+(6\times3)=93$

$(7\times5)+(9\times6)=89$

$(18\times1)+(4\times8)=50$

86. 3

Sol: $1+2=3,\ 2+3=5,\ 3+5=8,\ 5+8=13$

87. 4

Sol: $4\times2-1=7,\ 7\times2+1=15,\ 15\times2-1=29,\ 29\times2+=59$

$59\times2-1=117,\ 117\times2+1=235,\ 235\times2-1=469$

88. 3

Sol: $5^2-3^2=16,\ 7^2-2^2=45,\ 11^2-1^2=120$

89. 4

Sol: $149+26=175,\ 175+28=203,\ 203+30=233$

90. 4

Sol: $7\times2+1=15,\ 15\times2+1=31,\ 31\times2+1=63,\ 63\times2+1=127,\ 127\times2+1=255$

Direction (91 to 95): In each question below is given a group of digits followed by four conbinations of letters or symbols numbered (1), (2), (3), and (4). You have to find out which of the combinations correctly represents the group of digits based on the coding system and the conditions given below and mark the number of that combination as your answer.

Digits	5	1	3	4	9	6	8	2	7
Symbols	P	A	K	%	R	@	D	#	M

Conditions:

1) If the first digit is odd and the last digit is even, the codes for the first and last digits are to be interchanged.

2) If both the first and last digits are even, both are to be coded as*.

3) If both the first and last digits are odd, both are to be coded as $.

91. 4

Sol: No change in codes.

92. 3

Sol: First and last even, so first and last digit codes are to be coded as *.

93. 2

Sol: No change in codes.

94. 4

Sol: First and last odd, so they should to be coded as $.

95. 1

Sol: First even and last add, so codes to be interchanged.

Direction (96 to 100) : The letters in a word are replaced by certain other letters according to a specific rule to form its code. Answer the following questions accordingly.

96. 2

Sol: Assign numbers to alphabets and add them.

97. 2

Sol: Replace each alphabet in BOMBAY with the next alphabet.

98. 3

Sol: Replace each alphabet with is number.

99. 1

Sol: Swim – La, you – Ne. So here is Se.

100. 4

Sol: $D \rightarrow Q, N \rightarrow Z, G \rightarrow T, E \rightarrow V, R \rightarrow I.$