National Talent Search (First Level) & National Means-Cum-Merit Scholarship Examination, 2012
(For Student Studying in Class - 8)

Mental Ability Test
Part – I

Questions (1–5) 
Directions: In each question there is a number series with one term missing shown by question mark (?). This term is one of the alternatives among the four numbers given under it. That number is–

1. 8, 7, 16, 5, 32, 3, 64, 1, 128, (?)
   (1) 18  (2) 13  (3) –1  (4) 3
   Ans.  [3]
   Sol. Combination of two series
   8, 16, 32, 64, 128,
   7, 5, 3, 1, ?
   \( \therefore ? = -1 \)

2. 16, 33, 65, 131, (?), 523
   (1) 261  (2) 521  (3) 613  (4) 721
   Ans. [1]
   Sol. Rule: \( \times 2 + 1 \), \( \times 2 - 1 \), \( \times 2 + 1 \), \( \times 2 - 1 \)
   IInd term  IIIrd term  IVth term  Vth term
   \( 16 \times 2 + 1 = 33 \)
   \( 33 \times 2 - 1 = 65 \)
   \( 65 \times 2 + 1 = 131 \)
   \( 131 \times 2 - 1 = 261 \)

3. 5, 2, 17, 4, (?), 6, 47, 8, 65
   (1) 29  (2) 30  (3) 31  (4) 32
   Ans. [3]
   Sol. Series consists two rules
   I \( ^{st} \) is 2, 4, 6, 8, ...
   II \( ^{nd} \) is \( 5 + 12 = 17 \)
   \( 17 + 14 = 31 \)
   \( 31 + 16 = 47 \)
   \( 47 + 18 = 65 \)

4. 1, 2, 4, 8, (?), 32
   (1) 10  (2) 12  (3) 14  (4) 16
   Ans. [4]
   Sol. Series is \( 2^0, 2^1, 2^2, 2^3, 2^4, 2^5 \)
   \( \therefore 2^5 = 32 \)

5. 2, 3, 10, 15, 26, (?)
   (1) 36  (2) 35  (3) 39  (4) 48
   Ans. [3]

Time : 90 minutes                  Max. Marks : 90
Questions (6–10)

Directions: These questions consist of a number series which contains a wrong term. This term is given as one of the four alternatives among the four numbers given below. The wrong term is–

6. 6, 8, 9, 12, 14, 18, 22, 26, 30
   (1) 12 (2) 22 (3) 26 (4) 30
   Ans. [2]
   Sol. 6, 9, 14, 21, 30 makes a rule
        6 + 3 = 9
        9 + 5 = 14
        14 + 7 = 21
        21 + 9 = 30
        ∴ 22 is wrong ans.

7. 3, 7, 9, 28, 27, 84, 81, 448, 243
   (1) 84    (2) 81   (3) 28  (4) 7
   Ans. [1]
   Sol. Two series 1st is : 3, 9, 27, 81, 243
        3 × 3 = 9
        9 × 3 = 27
        27 × 3 = 81
        81 × 3 = 243
        Second series : 7, 28, 84, 448,
        7 × 4 = 28
        28 × 4 = 112
        112 × 4 = 448
        ∴ 84 is wrong ans.

8. 190, 94, 46, 22, 10, 4, 3
   (1) 94   (2) 46   (3) 22  (4) 3
   Ans. [4]
   Sol. 190, 94, 46, 22, 10, 4, 3
        \[
        \begin{array}{cccc}
        190 & 94 & 46 & 22 \\
        96 & 48 & 24 & 12 \\
        96 ÷ 2 &= 48 \\
        48 ÷ 2 &= 24 \\
        24 ÷ 2 &= 12 \\
        12 ÷ 2 &= 6 \\
        6 ÷ 2 &= 3 \\
        \end{array}
        \]
        Last difference is 3 but difference by ques. is 1
        ∴ 4 – 3 = 1
        ∴ Last term 3 is wrong
9. 0, 5, 8, 17, 35, 65, 128
   (1) 5  (2) 17  (3) 35  (4) 128
   Ans. [3]

10. 9, 63, 5, 35, 1, 8
    (1) 63  (2) 5  (3) 35  (4) 8
    Ans. [4]
    Sol. Two series
        9, 5, 1 & 63, 35, 8 it should be
        $-4, -4$, $8^2 - 1, 6^2 - 1, 4^2 - 1$
        $\therefore$ 8 is wrong

Questions (11–14)
Directions: Each question consists of four groups. One set is different from other three in someway. Find out the different set–

11. (1) GEDC  (2) AZYX  (3) PNML  (4) USRQ
    Ans. [2]
    Sol. Difference between letters is different.

12. (1) SUXB  (2) LNQU  (3) BDGK  (4) JLNQ
    Ans. [4]
    Sol. Difference is different from all other.

13. (1) 23  (2) 43  (3) 63  (4) 73
    Ans. [3]
    Sol. It is non prime.

14. (1) Hut  (2) Home  (3) Palace  (4) Restaurant
    Ans. [4]

Questions (15–19)
Directions: In the following questions there is a letter series with one term missing shown by (?). Find this term and encircle its serial–

15. DOZ, GRC, (?), ALW, BMX
    (1) BGL  (2) LWH  (3) DLT  (4) GJM
    Ans. [2]
    Sol. Difference between each latter is 11

16. fed, ihg, lkj, (?), rqp
    (1) npq  (2) onm  (3) oqp  (4) nom
    Ans. [2]

17. ABYZ, ADWZ, (?), AHSZ
    (1) AFUZ  (2) AUFZ  (3) ZFUA  (4) ZUFA
    Ans. [1]
18. VTRP, NLJH, FDBZ, XVTR, (?)
   (1) JLPN  (2) LJPN  (3) NPLJ  (4) PNLJ
Ans. [4]
Sol. Rule in each option : from reverse alternate letters.

19. OBDR, QACT, SZBV, (?) WXZZ
   (1) WUWZ  (2) YTVB  (3) UYAX  (4) ASVD
Ans. [3]
Sol. first letter of each word
O, Q, S, ?, W
   U

Questions (20–23)
Directions: In each question there are circles. Certain numbers are given inside/outside the circles according to a particular rule. In each question one of the circle has a (?) mark in side it. Choose the correct answer to fill in the space marked (?) from the given alternatives.

20. 
<table>
<thead>
<tr>
<th>56</th>
<th>81</th>
<th>27</th>
<th>?</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

   (1) 9  (2) 10  (3) 11  (4) 12
Ans. [1]
Sol. 81 = 9 × 9
36 = 9 × 9
56 = 9 × 9

21. 
<table>
<thead>
<tr>
<th>12</th>
<th>18</th>
<th>5</th>
<th>?</th>
<th>2</th>
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<tr>
<td>5</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   (1) 12  (2) 14  (3) 16  (4) 20
Ans. [3]
Sol. ? = without 0 of (5 × 2 × 2 × 8) = 16

22. 
<table>
<thead>
<tr>
<th>196</th>
<th>144</th>
<th>6</th>
<th>?</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   (1) 270  (2) 196  (3) 256  (4) 320
Ans. [2]
Sol. 196 = (2 + 4 + 3 + 5)^2
144 = (1 + 2 + 3 + 6)^2
? = (2 + 6 + 1 + 5)^2 = (14)^2 = 196
23. \[ \begin{array}{cccccc}
1 & 2 & 3 & 4 & 5 & 6 \\
\hline
3 & 2 & 5 & 7 & 8 & ?
\end{array} \]

(1) 3  (2) 4  (3) 5  (4) 6

**Ans.** [4]

**Sol.** ? = \sqrt{8 + 9 + 9 + 10} = 6

Questions (24–26)

**Directions:** These questions are based on letter series in which some of the letters are missing. The missing letters are given in the proper sequence in one of the alternatives among the four given under each question. Find out the correct alternatives for each questions.

24. __ ab __ a __ bb __ ab __ a __
   (1) abaaba  (2) babbba  (3) aabbab  (4) bbaabb

**Ans.** [1]

25. __ a __ bb __ ba __ a __ bb __ ab __ a __
   (1) abaaba  (2) aabbaa  (3) bbabbb  (4) bbaabb

**Ans.** [3]

26. __ ac __ ca __ ca __ a __ a __
   (1) cacaca  (2) aaaccc  (3) acacac  (4) cacccc

**Ans.** [4]

Questions (27–31)

**Directions:** Out of nine cells of a square one cell is left blank, and in the rest of the cells numbers are written which follow some rule. Get the rule and find out the proper option for the blank cell (?).

27. \[
\begin{array}{ccc}
4 & 9 & 20 \\
8 & 5 & 14 \\
10 & 3 & ?
\end{array}
\]

(1) 8  (2) 11  (3) 14  (4) 15

**Ans.** [1]

**Sol.**

\[
\begin{align*}
4 + 9 + 20 &= 33 \\
8 + 5 + 14 &= 27 \\
10 + 3 + 8 &= 21
\end{align*}
\]

\[
\begin{array}{ccc}
? & 1 & 1 \\
9 & 4 & 4 \\
2 & 3 & 5
\end{array}
\]

(1) 8  (2) 10  (3) 14  (4) 16

**Ans.** [2]
29.

<table>
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<tr>
<th></th>
<th>8</th>
<th>10</th>
<th>9</th>
</tr>
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<td></td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

(1) 9  (2) 10  (3) 11  (4) 12
Ans. [1]

30.

<table>
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<tr>
<th></th>
<th>36</th>
<th>43</th>
<th>49</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>?</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>30</td>
<td>169</td>
<td></td>
</tr>
</tbody>
</table>

(1) 49  (2) 58  (3) 76  (4) 77
Ans. [2]

31.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>8</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
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<td>17</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>33</td>
<td>?</td>
<td></td>
</tr>
</tbody>
</table>

(1) 29  (2) 31  (3) 33  (4) 38
Ans. [1]

Questions (32–34)

Direction: Find out the correct alternative of the question based on the Días figures.

32.

The number opposite side the face having the no. 5 will be

(1) 1  (2) 2  (3) 3  (4) 4
Ans. [2]

33.

The number opposite the face having the no. 2 will be

(1) 1  (2) 4  (3) 3  (4) 5
Ans. [2]
34. The number opposite the face having the no. 3 will be
   (1) 1  (2) 3  (3) 4  (4) 6
   Ans. [1]

35. The following figures is converted in to a cube. Its incorrect shape will be
   Question Figure –
   (1) B C E
   (2) B F E
   (3) F D G
   (4) B C G
   Ans. [2]

Questions (36–40)
Direction: The following question are based on the arrangement of alphabets in the form of a pyramid. In each question there is some relationship between the two sets of the letters on the left of the ( : : ). The same relationship exists between the two terms on the right of which one is missing. Find the missing. Find the missing one from the given alternatives.

   A
   B C D
   E F G H I
   J K L M N O P
   Q R S T U V W X Y

36. BCG : DCG :: EGU : ?
   (1) IGU  (2) GUJ  (3) UIG  (4) IUG
   Ans. [1]

37. EJQ : FKR :: HOX : ?
   (1) IOW  (2) IPY  (3) GNU  (4) HMT
   Ans. [2]
38. LTSK : MUTL : : (?) : OWXP
   (1) LTUM  (2) NMUV  (3) NVWO  (4) NOWV
   Ans. [3]
   Sol.

39. (?): KRSL : : PYXO : OXWN
   (1) RSLK  (2) JQRK  (3) JKRQ  (4) QRKJ
   Ans. [2]
   Sol.

40. JQS : PWY : : KRT : (?)
   (1) OVX  (2) PWN  (3) OWY  (4) VOX
   Ans. [1]

Questions (41–45)
Direction : Words in Capital letters in column-I are written in small letters in a code language in column-II. Decode the language and find out the correct alternative for the given letters in each questions.

<table>
<thead>
<tr>
<th>Column –I</th>
<th>Column –II</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOPE</td>
<td>vtyg</td>
</tr>
<tr>
<td>WIDE</td>
<td>ceth</td>
</tr>
<tr>
<td>LUCK</td>
<td>nxfl</td>
</tr>
<tr>
<td>DUST</td>
<td>aien</td>
</tr>
<tr>
<td>SIND</td>
<td>cmae</td>
</tr>
<tr>
<td>SOAP</td>
<td>gapv</td>
</tr>
<tr>
<td>FEAR</td>
<td>putj</td>
</tr>
<tr>
<td>MUST</td>
<td>nidg</td>
</tr>
<tr>
<td>HUNT</td>
<td>mnyi</td>
</tr>
<tr>
<td>FILE</td>
<td>cxut</td>
</tr>
<tr>
<td>PINE</td>
<td>cmtg</td>
</tr>
</tbody>
</table>
41. Code for letters in the word SOLE are -
   (1) txza (2) fvxy (3) mtax (4) vtax
   Ans. [4]

42. Code for letters in the word MENT are -
   (1) ndti (2) dtum (3) mdit (4) puit
   Ans. [3]

43. Code for letters in the word NEWS are -
   (1) hmta (2) tmkh (3) fmak (4) tahv
   Ans. [1]

44. Code for letters in the word STAR are
   (1) ipaj (2) jami (3) paiz (4) ajkl
   Ans. [1]

45. Code for letters in the word TIME are
   (1) tkci (2) cird (3) ctpb (4) litm
   Ans. [2]

46. Shankar is father of 'B' but 'B' is not son of Shankar then what is the relationship of 'B' to Shankar ?
   (1) Grand daughter (2) Mother (3) Daughter (4) Grand Son
   Ans. [3]

47. Sachin is the bother of the son of Ajit's son. Then what is the relationship of Sachin to Ajit ?
   (1) Brother (2) Cousin (3) Nephew (4) Grandson
   Ans. [4]

48. How many '6' s are there in the following sequence which are followed by 3 and preceded by 8 ?
   9 4 6 3 2 7 1 8 6 9 8 1 3 6 8 9 7 8 6 3 1 3 6 8 4 3 2 3 5
   (1) 2 (2) 3 (3) 4 (4) 5
   Ans. [1]

Questions (49–50)

Direction : Find out the missing one from the given alternatives.

49. 03 : 10 : 08 : (?)
    (1) 17 (2) 16 (3) 14 (4) 13
    Ans. [1]

Sol. 
$$2^2 - 1 : 3^2 + 1 = 3^2 - 1 : 4^2 + 1$$
$$17$$
50. \[01:08 : : (?) : 125\]
   (1) 10  (2) 12  (3) 15  (4) 16
   Ans. [4]
   Sol. \[1^2 : 2^3 : 4^2 : 5^3\]

Questions (51–52)
Directions: In the following diagram "I" represents Indians 'S' represent scientists and 'P' represents Politicians.

![Venn Diagram]

51. Indians those are politicians but not scientist will be
   (1) a  (2) b  (3) d  (4) f
   Ans. [2]

52. Scientists which are politician but not Indians will be
   (1) d  (2) e  (3) f  (4) g
   Ans. [3]

Questions (53–56)
Directions: In the following questions some relations are written by particular indicators as shown below –

\[
\begin{align*}
\times & = \text{Greater than} \\
\square & = \text{Not less than} \\
\div & = \text{Not equal to} \\
\emptyset & = \text{Equal to} \\
+ & = \text{Not greater than} \\
\triangle & = \text{Less than}
\end{align*}
\]

Find out the correct answer for each question.

53. If \(x \triangle y + z\) it is not possible -
   (1) \(x + y \emptyset z\)  (2) \(x + y \times z\)  (3) \(x + y \times z\)  (4) \(x \triangle y \square z\)
   Ans. [1]
54. If \( x \) \( y \) \( z \) it is not possible -
   (1) \( x \varnothing y + z \)   (2) \( x + y + z \)   (3) \( x + y \varnothing z \)   (4) \( x + y \Delta z \)
   Ans. [4]

55. If \( x \varnothing y \) \( x \) \( z \), it is possible -
   (1) \( x \times y \Delta z \)   (2) \( x \varnothing y + z \)   (3) \( x \varnothing y \varnothing z \)   (4) \( x \varnothing y \varnothing z \)
   Ans. [3]

56. If \( x + y \Delta z \), it is not possible -
   (1) \( x \times y + z \)   (2) \( x \varnothing y \times z \)   (3) \( x \varnothing y \varnothing z \)   (4) \( x + y + z \)
   Ans. [2]

57. Rajesh is elder 3 days 10 hours from Vikas. The date of Birth of Vikas is 21 Nov. at 7 A.M. then what will be
   the date of birth of Rajesh?
   (1) 16 November   (2) 17 November   (3) 18 November   (4) 19 November
   Ans. [3]

58. First day of the month is Wednesday and Last day of the same month is Tuesday then which one will be that month?
   (1) January   (2) February   (3) March   (4) August
   Ans. [2]

Q.59 Write in a correct sequence –
(A) Rainbow   (b) Rain   (c) Sun   (d) Happiness   (e) Children
   (1) dbcea   (2) deabc   (3) badce   (3) bcaed
   Ans. [4]

60. In the group of 26 girls Rekha's Position is 7th from the bottom. What is the position of ‘Rekha’ from the top
   of the group?
   (1) 20th   (2) 21st   (3) 22nd   (4) 17th
   Ans. [1]

Questions (61–65)

Direction: Two sets of the figures are given. One set of Question-figures and another set is of Answer-figures.
Question-figures are arranged in sequence. One figure from the Answer figures is to be selected such that it can be
placed after the series of Question-figures. Find the correct Serial number of the selected Answer-figure.

61. Question-Figure

\[ \text{Answer Figure:} \]

\[ \text{(1)} \quad \text{(2)} \quad \text{(3)} \quad \text{(4)} \]

Ans. [1]
62. **Question-Figure**

![Figure 1](image1)

**Answer Figure:**

1. ![Answer 1](image2)
2. ![Answer 2](image3)
3. ![Answer 3](image4)
4. ![Answer 4](image5)

Ans. [2]

63. **Question-Figure**

![Figure 2](image6)

**Answer-Figures**

1. ![Answer 1](image7)
2. ![Answer 2](image8)
3. ![Answer 3](image9)
4. ![Answer 4](image10)

Ans. [3]

64. **Question-Figure**

![Figure 3](image11)

**Answer-Figures**

1. ![Answer 1](image12)
2. ![Answer 2](image13)
3. ![Answer 3](image14)
4. ![Answer 4](image15)

Ans. [4]

65. **Question-Figure**

![Figure 4](image16)

**Answer-Figures**

1. ![Answer 1](image17)
2. ![Answer 2](image18)
3. ![Answer 3](image19)
4. ![Answer 4](image20)

Ans. [3]
Direction: (Q.66 to 70) In each of the following questions four figures are given. One of these figures does not fit with the rest of the figures. Find out that correct serial number.

66.

Ans. [1]

67.

Ans. [4]

68.

Ans. [3]

69.

Ans. [2]

70.

Ans. [3]
Questions (Q.71 to 75)
Direction: In the following questions visualize the image of the correct item.

71.

AnS. [2]

72.

AnS. [1]

73.

AnS. [2]

Q.74

AnS. [2]
Q.75  

\[
\begin{array}{c}
5 \ 2 \ 6 \ 9 \ 3 \\
\end{array}
\]

Mirror  

(1) \ 2 \ \Box \ \Box \ 3 \\
(3) \ 2 \ \Box \ \Box \ 3 \\

\[
\begin{array}{c}
5 \ \Box \ 9 \ 6 \ 3 \\
\end{array}
\]

(2) \ 5 \ \Box \ 9 \ 6 \ 3 \\
(4) \ 5 \ \Box \ 6 \ \Box \ 3 \\

Ans. [1]

Questions : (Q.76 to 80)  

Direction : In the following questions a question figure is given, that figure exists in one of the given alternative figure find out that figure.

Q.76  

Question-Figure

Answer-Figures

\[
\begin{array}{c}
\quad \\
\quad \\
(1) \quad \\
(2) \quad \\
(3) \quad \\
(4) \quad \\
\end{array}
\]

Ans. [4]

Q.77  

Question-Figure

Answer-Figures

\[
\begin{array}{c}
\quad \\
\quad \\
(1) \quad \\
(2) \quad \\
(3) \quad \\
(4) \quad \\
\end{array}
\]

Ans. [2]
Q.78 Question-Figure

Answer-Figures

(1) (2) (3) (4)

Ans. [4]

Q.79 Question-Figure

Answer-Figures

(1) (2) (3) (4)

Ans. [3]

Q.80 Question-Figure

Answer-Figures

(1) (2) (3) (4)

Ans. [4]
Questions (Q.81 to 85)

**Direction:** In the following questions there is some relationship between the two figure on the left of (::) the same relationship exists between the two terms on the right, of which one is missing. Find the missing one from the given alternative.

<table>
<thead>
<tr>
<th>Q.81</th>
<th>Question-Figure</th>
<th>Answer-Figures</th>
<th>Ans.</th>
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Q.82 Question-Figure

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Q.83 Question-Figure

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<td><img src="Image" alt="Answer" /></td>
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</tbody>
</table>
Q.84  Question-Figure

\[
\begin{align*}
F & \quad T \\
\text{Answer-Figures:} & \\
M & \quad K \\
K & \quad W
\end{align*}
\]

Ans. [3]

Q.85  Question-Figure

\[
\begin{align*}
\text{Answer-Figures:} & \\
K & \quad W
\end{align*}
\]

Ans. [4]

Q.86  In a coded language TRACE = 43251 and EARTH = 12347 then the code for FACT = 12347 then the code for FACT will be

(1) 9245  (2) 9254  (3) 9425  (4) 9524

Ans. [2]

Q.87  In a coded language SHOP = 8256, WORK = 9573 and HOME = 2541 then the code for SMOKE will be

(1) 84531  (2) 83451  (3) 84351  (4) 85431

Ans. [1]

Q.88  In a coded language TAKE = 1790, PLOT = 5321 then code for PLATE will be

(1) 52701  (2) 53071  (3) 35710  (4) 53710

Ans. [4]

Q.89  In a coded language FRUIT = HTWKV then FLOWER will be written as

(1) HNQYGT  (2) HGPTYN  (3) HYNQPT  (4) HTPNGY

Ans. [1]

Q.90  What will be the number of triangles in the given figure?

\[
\begin{align*}
\text{(1) 9} & \\
\text{(2) 11} & \\
\text{(3) 10} & \\
\text{(4) 12}
\end{align*}
\]

Ans. [4]