National Talent Search (First Level) Scholarship Examination, 2013  
(For Student Studying in Class - 10)  
Mental Ability Test  
Part – I  
18-11-2012

Instruction: Mental Ability Test Consist of 90 questions. Each question carry one mark.

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. 2, 30, 6, 20, 12, 12, (?)  
   (1) 26   (2) 22   (3) 20   (4) 24  
   Ans. [3]

2. 6, 20, 36, 48, 50, (?), 0  
   (1) 36   (2) 40   (3) 46   (4) 56  
   Ans. [1]

3. 7, 15, 28, 59, 114, (?)  
   (1) 243   (2) 233   (3) 213   (4) 223  
   Ans. [2]  
   Sol.  
   7 × 2 + 1 = 15  
   15 × 2 – 2 = 28  
   28 × 2 + 3 = 59  
   59 × 2 – 4 = 114  
   114 × 2 + 5 = 233

4. 25, 49, 89, 145, 217, (?)  
   (1) 305   (2) 327   (3) 309   (4) 303  
   Ans. [1]  
   Sol.  
   25, 49, 89, 145, 217, ?  
   24 40 56 72 88  
   4×6 4×10 4×14 4×18 4×22  
   217 + 88 = 305

5. 0, 2, 2, 3, 3, 5, 8, 4, 10, (?), 5, 17  
   (1) 6   (2) 7   (3) 9   (4) 15  
   Ans. [4]
Questions (6–10)
Directions: These questions consists 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. 89, 78, 86, 80, 85, 82, 83
   (1) 83   (2) 82   (3) 86   (4) 78
   Ans. [3]
   Sol. 89, 86, 85, 83

7. 1, 1, 3, 9, 16, 225
   (1) 225   (2) 16   (3) 10   (4) 9
   Ans. [2]
   Sol. 1 + 2 → 3
        3 + 3 → 6
        6 + 4 → 10
        10 + 5 → 15

8. 444, 300, 200, 136, 87, 84, 80
   (1) 300   (2) 200   (3) 136   (4) 87
   Ans. [4]
   Sol. 444 – 300 = 124 = 2^2
        300 – 200 = 100 = 10^2
        200 – 136 = 64 = 8^2
        136 – 87 = 59 = 6^2

9. 8, 15, 31, 61, 123, 247, 491
   (1) 247   (2) 491   (3) 121   (4) 61
   Ans. [1]
   Sol. 8 × 2 – 1 = 15
        15 × 2 + 1 = 31
        31 × 2 – 1 = 61
        61 × 2 + 1 = 123
        123 × 2 – 1 = 245

10. 3, 6, 24, 30, 63, 72, 122, 132
    (1) 132   (2) 30   (3) 122   (4) 72
    Ans. [3]

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) PROQN   (2) DFCEG   (3) GIFHE   (4) KMJLI
    Ans. [2]
### Questions (15–19)

**Directions**: In the following questions there is a letter series with one term missing shown by (?). Find this term from the four given alternatives.

<table>
<thead>
<tr>
<th>Question</th>
<th>Series</th>
<th>Alternatives</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>YANWY, DFMBD, IKNGI, NPMLN, (?), XZMVX</td>
<td>(1) RUMSR (2) SUNQS (3) UWNSU (4) VUMTV</td>
<td>[2]</td>
</tr>
<tr>
<td>16.</td>
<td>PEXKW, RFWMU, TGVOS, VHUQQ, XITSO, (?)</td>
<td>(1) ZJSUM (2) YJSUZ (3) ZKSVJ (4) JZSTN</td>
<td>[1]</td>
</tr>
<tr>
<td>17.</td>
<td>AYBZC, DWEXF, GUHVI, JSKTL, (?), POQPR</td>
<td>(1) MQDRN (2) QMONR (3) MQNRO (4) NQMOR</td>
<td>[3]</td>
</tr>
<tr>
<td>Sol.</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>ZYYZR, ABVUN, (?), BCUTM, XWABT, CDTS</td>
<td>(1) YXZAS (2) ZYABT (3) WXYZR (4) YXZAB</td>
<td>[1]</td>
</tr>
<tr>
<td>19.</td>
<td>deb, ijr, nol, (?), xyv</td>
<td>(1) rlp (2) stp (3) rsq (4) stq</td>
<td>[4]</td>
</tr>
</tbody>
</table>

### 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.  
\[ \begin{array}{cccc}
7 & 63 & 9 & 11 \\
3 & 40 & 6 & 7 \\
? & 2 & 4 & 11 \\
\end{array} \]  
(1) 144  (2) 136  (3) 135  (4) 124  
**Ans.** [1]  
**Sol.**  
\[(7 + 18 + 11) \times 4 = 144\]  

21.  
\[ \begin{array}{cccc}
8 & 64 & 5 & 12 \\
12 & 9 & 10 & ? \\
21 & 5 & 7 & 14 \\
\end{array} \]  
(1) 102  (2) 152  (3) 162  (4) 172  
**Ans.** [3]  

22.  
\[ \begin{array}{cccc}
7 & 66 & 8 & 6 \\
6 & 7 & 9 & 4 \\
? & 3 & 2 & 2 \\
\end{array} \]  
(1) 91  (2) 108  (3) 116  (4) 119  
**Ans.** [2]  

23.  
\[ \begin{array}{cccc}
4 & 7.50 & 5 & 2 \\
2 & 3 & 11.25 & 2 \\
? & 9 & 2 & 7 \\
\end{array} \]  
(1) 10.25  (2) 10.50  (3) 11.25  (4) 11.50  
**Ans.** [3]  

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 __ acc __ __ da __ bba __  
(1) cdabc  (2) bdaaa  (3) cdbcd  (4) dbacd  
**Ans.** [2]  

25.  
abb __ ab __ b __ bba __ a  
(1) bbbab  (2) babba  (3) abaab  (4) bbabb  
**Ans.** [1]  

26.  
b __ a __ bab __ ab __ a  
(1) baba  (2) babb  (3) abab  (4) abba  
**Ans.** [3]  

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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. | 2 | 72 | 56 |
   | ? | 0  | 42 |
   | 12| 20 | 30 |
(1) 4 (2) 6 (3) 8 (4) 10
Ans. [2]

28. | 91| 64 | 73 |
   | 84| 76 | 61 |
   | 25| 60 | ?  |
(1) 66 (2) 68 (3) 69 (4) 71
Ans. [1]

29. | 5 | 10 | 30 |
   | ? | 3  | 12 |
   | 28| 14 | 32 |
(1) 34 (2) 16 (3) 7  (4) 1
Ans. [4]

30. | 7 | 32 | ?  |
   | 31| 8  | 25 |
   | 11| 24 | 9  |
(1) 50 (2) 48 (3) 47 (4) 51
Ans. [3]

31. | 4 | 20 | 25 |
   | 27| 81 | 9  |
   | 11| 44 | ?  |
(1) 4  (2) 16 (3) 30 (4) 55
Ans. [2]

Questions (32–33)

Directions: Find out the correct alternative of the question based on the Dice figures.

32. The number opposite side the face having the no. 4 will be
(1) 1  (2) 2  (3) 5  (4) 6
Ans. [1]
33. Three positions of a Dice are shown. In figure (iii) which number will come in place of (?)

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

Ans. [4]

34. The following figure is converted into a cube. Its correct shape will be –

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

Ans. [4]

35. The following figure is converted into a cube. Its four positions (a), (b), (c) and (d) are shown. On the basis of these select correct alternative.

(1) A only    (2) B only    (3) A and C only    (4) A, B, C and D

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 two number on the left of the (: :). The same relationship exists between the two terms in the right of which one is missing. Find the missing. Find the missing one from the given alternatives.

1

2 3 4

5 6 7 8 9

10 11 12 13 14 15 16

17 18 19 20 21 22 23 24 25

26 27 28 29 30 31 32 33 34 35 36

37 38 39 40 41 42 43 44 45 46 47 48

36. 132220 : 211412 :: 222931 : (?)

(1) 304345    (2) 302123    (3) 442931    (4) 312022

Ans. [2]
37. 2873 : 13212014 :: 10242311 : (?)
   (1) 29282423  (2) 28274746  (3) 25272824  (4) 29454430
   Ans. [4]

38. 241214 : 752119 :: 14163234 : (?)
   (1) 19174139  (2) 20184240  (3) 21194341  (4) 20224244
   Ans. [1]

39. 25224447 : 23204245 :: 11143229 : (?)
   (1) 13163431  (2) 24214341  (3) 24214346  (4) 13102421
   Ans. [1]

40. 82224 : 133133 :: 62022 : (?)
   (1) 91221  (2) 81312  (3) 153335  (4) 51921
   Ans. [3]

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>HERO</td>
<td>tbfw</td>
</tr>
<tr>
<td>JOIN</td>
<td>bakp</td>
</tr>
<tr>
<td>LAZY</td>
<td>nsvg</td>
</tr>
<tr>
<td>MINE</td>
<td>pdkt</td>
</tr>
<tr>
<td>PART</td>
<td>rwx</td>
</tr>
<tr>
<td>SAURY</td>
<td>wveos</td>
</tr>
<tr>
<td>BLUE</td>
<td>eglt</td>
</tr>
<tr>
<td>CIGAR</td>
<td>vsqwp</td>
</tr>
<tr>
<td>WRIT</td>
<td>wpxy</td>
</tr>
<tr>
<td>VIRUS</td>
<td>pzo</td>
</tr>
<tr>
<td>QUACK</td>
<td>jqems</td>
</tr>
<tr>
<td>PIRL</td>
<td>wprg</td>
</tr>
</tbody>
</table>

41. Code for letters in the word TOIL are-
   (1) pxba  (2) bpgn  (3) bpxg  (4) mpxg
   Ans. [3]

42. Code for letters in the word COST are-
   (1) boqx  (2) xqps  (3) qost  (4) xqnr
   Ans. [1]

43. Code for letters in the word ULCER are-
   (1) ggwmr  (2) teqwp  (3) ktegp  (4) gteqw
   Ans. [4]
44. Code for letters in the word SINE are-
   (1) ptkl    (2) toka    (3) ptok    (4) optb
   Ans. [3]

45. Code for letters in the word ARCH are-
   (1) frsq    (2) wfsq    (3) wqfp    (4) sqfn
   Ans. [2]

46. A and B are brother. C and D are sisters. A's son is D's brother. How is B related to C?
   (1) Brother    (2) Father    (3) Uncle    (4) Son
   Ans. [3]

Questions (47)
Direction: Read the following information carefully and answer the question given below-
   A + B means A is the daughter of B;
   A – B means A is the husband of B;
   A × B means A is the brother of B.

47. If P + Q – R, which one of the following is true?
   (1) R, is the mother of P    (2) R is the sister-in-law of P
   (3) R is the aunt of P       (4) R is the mother-in-law of P
   Ans. [1]

Questions (48–50)
Direction: Find out the missing one from the given alternatives.

48. 08 : 28 :: (?) : 65
   (1) 9    (2) 12    (3) 15    (4) 18
   Ans. [3]

49. 35 : 91 :: 189 : (?)
   (1) 343    (2) 341    (3) 280    (4) 210
   Ans. [2]
   Sol. 35 : 91 :: 189 :
       3³ + 2³, 4³ + 3³, 5³ + 4³, 6³ + 5³
       27 + 8, 64 + 27 ; 125 + 64, 216 + 125
       35, 91 : 189, 341

50. 7 : 13 :: 19 : (?)
   (1) 25    (2) 29    (3) 23    (4) 29
   Ans. [2]
Questions (51–53)
Directions: Following four diagrams marked 1, 2, 3 and 4 are given as alternatives. Choose the best suitable alternative diagram marked 1, 2, 3, and 4, the one that represent the best relationship amongst the three given groups.

51. Birds, Crows, Cats
Ans. [4]

52. Snakes, Land creatures, Water creatures
Ans. [1]

53. Males, Nephews, Nieces
Ans. [4]

Questions (54–56)
Directions: In the following questions some relations are written by particular indicators as shown below –

O = Greater than
+ = Equal to
Δ = Not equal to
∅ = Not greater than
× = Not less than
□ = Less than

Find out the correct answer for each question.

54. If p Δ q O r, it is possible that-
   (1) p × q ⊙ r   (2) p × q ⊙ r   (3) p □ q ⊙ r   (4) p ⊙ q ⊙ r
Ans. [1]

55. p □ q Δ r, it is not possible that-
   (1) p Δ q ⊙ r   (2) p □ q Δ r   (3) p ⊙ q □ r   (4) p + q × r
Ans. [4]

56. p × q ⊙ r, it is not possible that-
   (1) p Δ q □ r   (2) p × q + r   (3) p Δ q O r   (4) p O q + r
Ans. [3]
57. If your birth day 30th June, 2003 falls on Monday, on what day of the week does your birth day fall in the year 2005?
(1) Sunday  (2) Monday  (3) Tuesday  (4) Wednesday
Ans. [4]
Sol. A

58. On what day of the week India will celebrate its Republic Day on 26th January, 2015?
(1) Sunday  (2) Monday  (3) Tuesday  (4) Wednesday
Ans. [2]

59. At what angle are the hands of a clock inclined at 30 minutes past 6?
(1) $7\frac{1}{2}^\circ$  (2) $11\frac{1}{2}^\circ$  (3) 15°  (4) 23°
Ans. [3]

60. A clock is set to show the correct time at 11 a.m. The clock gains 12 minutes in 12 hours what will be the true time when the watch indicates 1 p.m. on the 6th day?
(1) 10 a.m.  (2) 11 a.m.  (3) 12 noon  (4) None of these
Ans. [2]
Sol. Let today set the clock and is Sunday so 6th day is Friday.
11 am to 12.00 i.e. 13 hrs Sunday
24 × 4 = 96 Monday
11 hrs. 13 + 96 = 120 min = 2 hrs.
:: time on Friday is 1 pm
:: true time is 11 am

Questions (61–64)
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-Figures

Answer-Figures

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

Ans. [2]
Questions (65–68)
Directions: 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.
65. (1) (2) (3) (4)

Ans. [3]

66. (1) (2) (3) (4)

Ans. [1]

67. (1) (2) (3) (4)

Ans. [1]

68. (1) (2) (3) (4)

Ans. [4]
Sol. Except option (4), all are made by three lines.

Questions (Q.69 to 72)
Direction: In the following questions there is some relationship between the two figures 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.

69. Question-Figures

Answer-Figures

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

Ans. [4]
Questions (Q.73 to 76)

Direction: The following questions are related to paper cutting. The questions that follow contain a set of three X, Y and Z, showing a sequence of folding of piece of paper. Figure Z shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures 1, 2, 3 and 4 (IIInd set from which you have to choose a figure which most closely resemble the infolded form of fig.(Z))
73. Sequence of folding the paper

Answer-Figures

Ans. [3]

74. Sequence of folding the paper

Answer-Figures

Ans. [2]

75. Sequence of folding the paper

Answer-Figures

Ans. [1]
76. Sequence of folding the paper

Answer-Figures

[Diagram of folded papers X, Y, Z]

Ans. [4]

77. X, Y, Z and P are sitting around a circular table and discussing their trades.
(1) X, sits opposite to cook (2) Y, sits right to the barber
(3) the washerman is on the left of the tailor (4) P, sits opposite Z
What are the trades of X and Y?
(1) Tailor and Barber (2) Barber and Cook (3) Tailor and Cook (4) Tailor and Washerman

Ans. [3]

78. Six person A, B, C, D, E and F are standing in a circle. B is between F and C, A is between E and D, F is to the left of D.
Who is between A and F?
(1) B (2) C (3) D (4) E

Ans. [3]

Sol.

A  B  C  D  E  F

79. Six students are sitting in a row. K is sitting between V and R. V is sitting next to M. M is sitting next to B who is sitting on the extreme left and Q is sitting next to R.
Who are sitting adjacent to V?
(1) R and Q (2) B and M (3) K and R (4) M and K

Ans. [4]

Sol.

B  M  V  K  R  Q
80. If $27 \times 3 = 243$
   $5 \times 4 = 80$
Then what is the value of $3 \times 7$?
(1) 84  (2) 147  (3) 63  (4) 23
Ans. [2]

Questions (Q.81 to 84)
Direction: The six faces of a cube are painted in a manner that on two adjacent faces have the same colour. The three colours used in painting are red, blue, and green. The cube is then cut into 36 smaller cubes in such a manner that 32 cubes are of one size and the rest of a bigger size and each of the bigger cubes has no red side. Answer the following question.

81. How many cubes in all have a red side?
(1) 16  (2) 32  (3) 8  (4) 20
Ans. [2]

82. How many cubes in all have only one side coloured?
(1) 20  (2) 16  (3) 0  (4) 8
Ans. [4]

83. How many cubes are coloured on three sides?
(1) 20  (2) 16  (3) 8  (4) 0
Ans. [3]

84. How many cubes are there which have two or more sides painted?
(1) 36  (2) 28  (3) 20  (4) 32
Ans. [2]

85. In a coded language NUMBER is written as in MFNYVI, Then FIGURE may be written in coded language as-
(1) ERHFID  (2) URTVSF  (3) GJFSF  (4) URTFIV
Ans. [4]

86. In a coded language SHIFT is written as UFKDV, Then COVET may be written in coded language as-
(1) EMXCV  (2) FNYDU  (3) EXCUV  (4) EQUDS
Ans. [1]
Sol. S + 2 → U  C + 2 → E
    H – 2 → F  O – 2 → M
    I + 2 → K  V + 2 → X
    F – 2 → D  E – 2 → C
    T + 2 → V  T + 2 → V

87. If
    PET = 4
    LET = 3
    JEY = 2
Then what is the value of XET?
(1) 1  (2) 5  (3) 6  (4) 8
88. In a coded language if HOME = 2541, SHOP = 8256, WORK = 9573, then code for SMOKE will be-

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

Ans. [2]
Sol.
H → 2  S → 8  W → 9
O → 5  H → 2  O → 5
M → 4  O → 5  R → 7
E → 1  P → 6  K → 3
S → 8
M → 4
O → 5
K → 3
E → 1

89. What will be the number of Hexagonals in the given figure?

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

Ans. [3]

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

(1) 15   (2) 17    (3) 13   (4) 16

Ans. [2]
Sol.
ABPQ, BCFP, PFKJ, PJIQ, ABJI, BCKJ, QFKJ, ACFQ, ACKI
ABEF, BCDE, ACDF, IFEJ, JEDK, IFDK
HFRJ, GFSB