Instructions for candidates:

1. This exam relates to Mental Ability Test.

2. Each question carries one mark. All questions are compulsory.

3. You have been provided with an answer sheet (OMR) for this question paper. Darken the correct option of each question in the answer sheet (OMR) with black/blue pen.

4. Rough work may be done on the blank space provided for this purpose.

5. There is no negative marking in this test.

6. Do not use white fluid on OMR Answer Sheet.

7. Half an hour extra should be given to visually impaired candidates only.
MENTAL ABILITY/मनस्ता अबिलिटी

Direction Questions (1-12). There is a number series following a pattern one place is left blank. Find the answer among options.

1. 10000, 11000, 9900, 10890, 9801,________
   (1) 10241 (2) 10781
   (3) 10929 (4) 10991

2. \[
\frac{2}{3} , \frac{4}{7} , _______ , \frac{11}{21} , \frac{16}{31}
\]
   (1) \[
\frac{6}{11}
\]
   (2) \[
\frac{5}{9}
\]
   (3) \[
\frac{9}{17}
\]
   (4) \[
\frac{7}{13}
\]

3. 3, 12, 27, 48, 75, 108,________
   (1) 192 (2) 163
   (3) 147 (4) 99

4. 480, 96,__________, 8, 4
   (1) 24 (2) 88
   (3) 64 (4) 30

5. 78, 56, 30,________
   (1) 0 (2) 1
   (3) 6 (4) 20

6. 2, 2, 5, 13, 28,________
   (1) 49 (2) 50
   (3) 51 (4) 52

7. 45, 54, 47,__________, 49, 56, 51
   (1) 48 (2) 52
   (3) 55 (4) 62

8. 3, 20, 63, 144, 275,________
   (1) 352 (2) 468
   (3) 548 (4) 662

9. 0.5, 0.55, 0.65, 0.8,________
   (1) 0.1 (2) 1
   (3) 2 (4) 0.91

10. 589654, 89654, 9654,________
    (1) 10093 (2) 89654
    (3) 9456 (4) 654
Directions Questions (13-17) study the letter sense and answer the following.

13. ____, ____, babbba,____, a, ____
   (1) ababb (2) babb (3) baaab (4) bbaba

14. BMX, DNW, FOU,
   (1) HPX (2) HPS (3) HPT (4) GPS

15. B, E, D, F,____, H, J,____, L
   (1) M, I (2) I, M (3) I, N (4) J, M

16. mnonopqopqrs_______
   (1) mnopqr (2) oqrsstu (3) pqrstuv (4) qrstup

17. 2Z5, 7Y7, 14X9, 23W11, 34Y13,
   (1) 47U14 (2) 27U24 (3) 45U15 (4) 47U15

Direction clue:- (18-23).Find the missing term in place of Question Mark.

18.

19.

(1) 54 (2) 45 (3) 35 (4) 53
Direction (24-27) No./words on the left hand side of sign:: have some relationship developing same relationship on the right hand side of sign:: answer the Questions.

24. BC : DI :: DE : ?
   (1) FG
   (2) RU
   (3) PY
   (4) SK

25. KS : \( \frac{361}{121} \) :: GD : ?
   (1) \( \frac{39}{40} \)
   (2) \( \frac{43}{49} \)
   (3) \( \frac{289}{169} \)
   (4) \( \frac{16}{69} \)
26. 76835 : 54613 :: 94328 : ?  
(1) 52635  
(2) 72106  
(3) 81605  
(4) 62117  

27. Commander : Navy :: Brigadier : ?  
(1) Captain  
(2) Commander  
(3) Air-Force  
(4) Army  

Direction (28-31) Find odd one out.  

28. (1) Wheat  
(3) Rice  
(2) Barley  
(4) Mustard  

29. (1) Coal  
(3) Natural Gas  
(2) Petroleum  
(4) Bio-Gas  

30. (1) 2:4  
(3) 10:50  
(2) 4:8  
(4) 8:32  

31. (1) 15:63  
(3) 23:95  
(2) 22:91  
(4) 31:97  

Direction Question (32-36) In column I some given words have their codes in column II but not arranged in the same manner. Find the codes and answer.  

COLUMN-I  
SAY  
SIP  
ROTATE  
TYRE  
YEAR  
TREAT  
TAPE  
TIE  
COUP  

COLUMN-II  
mls  
msr  
lhpok  
nhpk  
npkl  
kolph  
pmlh  
hrp  
moij  

32. REACT  
(1) liphr  
(3) kplih  
(2) pkjih  
(4) jkplh  

33. EASY  
(1) plsn  
(3) pnls  
(2) lnps  
(4) lpsn  

COLUMN-I  
SAY  
SIP  
ROTATE  
TYRE  
YEAR  
TREAT  
TAPE  
TIE  
COUP  

COLUMN-II  
mls  
msr  
lhpok  
nhpk  
npkl  
kolph  
pmlh  
hrp  
moij  

32. REACT  
(1) liphr  
(3) kplih  
(2) pkjih  
(4) jkplh  

33. EASY  
(1) plsn  
(3) pnls  
(2) lnps  
(4) lpsn
40. Which short student of Gandhi House is not wearing the glasses?

(1) A
(2) B
(3) C
(4) D

41. Directions (40-41) Questions Read the following and answer:
Six students A, B, C, D, E, and F are sitting on the ground A & B are from NEHRU HOUSE, D & F are tall while the others are short. A & C are wearing glasses while the others are not wearing glasses.

39. A & B are brothers. C & D are sisters. As son is D's brother, how is Related to C?

(1) Grandfather
(2) Father
(3) Uncle
(4) Brother

40. What does P+R+Q means?

(1) P is the brother of R
(2) Q is the son of P
(3) P is the father of R
(4) Q is the brother of P

38. What does P+R mean?

(1) P is the nephew of R
(2) Q is the son of P
(3) P is the father of R
(4) Q is the brother of P

37. What does P+Q means?

(1) P is the father of Q
(2) Q is the son of P
(3) P is the brother of Q
(4) Q is the brother of P

36. CURE

(1) DJIP
(2) JIJP
(3) JIP
(4) PIJP

35. TRACE

(1) DJIP
(2) JIJP
(3) JIP
(4) PIJP

34. SOUP

(1) DJIP
(2) JIJP
(3) JIP
(4) PIJP

33. BERE

(1) DJIP
(2) JIJP
(3) JIP
(4) PIJP

32. BARE

(1) DJIP
(2) JIJP
(3) JIP
(4) PIJP

31. BAR

(1) DJIP
(2) JIJP
(3) JIP
(4) PIJP

30. A + B means A is the son of B.

39. A + B means A is the son of B. B + A means A is the brother of B.

38. A + B means A is the son of B. B + A means A is the brother of B.
41. Which tall student of Gandhi house is not wearing glasses?
   (1) D  (2) E  (3) F  (4) A

42. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre, A and P are at the ends. R is sitting on the left of A, then who is sitting on the right of P?
   (1) A  (2) S  (3) X  (4) Z

Alka is older than Mala. Gopal is older than Mala but younger than Alka. KAPIL is younger than Ram and Mala. Mala is older than Ram.

43. Whose age is exactly in the middle of five?
   (1) GOPAL  (2) Ram  (3) Alka  (4) Mala

44. Five boys took part in race, Raj finished before Mohit but behind Gaurav, Ashish finished before Sanjit but behind Mohit, who won the race?
   (1) RAJ  (2) Gaurav  (3) Mohit  (4) Ashish

45. In a class of 60, where girls are twice that of boys, Kunal ranked seventeenth from the top. If there are nine girls ahead of Kunal, how many boys after his rank?
   (1) 3  (2) 9  (3) 12  (4) 21

46. Amit is now 6 times old as his son. Four years after, the sum of their ages will be 43 years. Determine Amit's present age?
   (1) 30 years  (2) 32 years  (3) 34 years  (4) 38 years

47. In a row of ten boys, when Varun was shifted two places towards the left, he become seventh from the left end, what was his earliest position from the right end?
   (1) 6th  (2) 4th  (3) 2nd  (4) 1st
Direction Questions (48-49) Find the correct Group of signs to solve the equation?

48. 24 * 16 * 8 * 32
   (1) + - = (2) + - =
   (3) - + = (4) x + =
49. 9 * 7 * 2 * 3 * 10
   (1) + x + = (2) - + + =
   (3) + - x = (4) - x - =

50. A is 40 mts. South-West of B, C is 40 mts. South-East of B, Then C is in which direction of A?
   (1) East (2) West
   (3) North-East (4) South

51. Karan & Arjun start simultaneously from 9 O'clock and 6 O'clock with same speed. In clockwise and anti-clock wise direction respectively. Where will be Karan & Arjun after walking for 15 minutes.
   (1) NOORTH & East
   (2) South & North
   (3) East & West
   (4) East & North

52. Asha is going Northwards, She turns right, Moves some distance and again turns to her right. After moving some distance she turns to her left, goes forward and again turns to her left, Now In which direction is Asha going.
   (1) North
   (2) South - West
   (3) South
   (4) West

53. The Last day of the century can not be?
   (1) Wednesday
   (2) Monday
   (3) Friday
   (4) Thursday

54. Find the day of the week on 5th November 1999?
   (1) Monday
   (2) Wednesday
   (3) Friday
   (4) Saturday

55. At what time between 4:00 P.M & 5:00 P.M. hands of clock will coincide?
   (1) 4 : 21 $\frac{7}{11}$ P.M.
   (2) 4 : 21 $\frac{8}{11}$ P.M.
   (3) 4 : 21 $\frac{9}{11}$ P.M.
   (4) 4 : 21 $\frac{10}{11}$ P.M.
56. In which century February will have 29 days from the following?
(1) 2200    (2) 2300
(3) 2400    (4) 2500

Direction (57-60) A solid cube of each side 8 cms, has been painted Red, Blue and Black on pairs of opposite faces. It is then cut into cubical blocks of each side 2 cms.

57. How many cubes have only two faces painted?
(1) 8    (2) 16
(3) 20    (4) 24

58. How many cubes have two faces painted red and black and all other faces unpainted?
(1) 4    (2) 8
(3) 16    (4) 32

59. How many cubes have only one face painted red and all other faces unpainted?
(1) 4    (2) 8
(3) 12    (4) 16

60. How many cubes have two faces painted black?
(1) 2    (2) 4
(3) 8    (4) None

Direction (61-62) Questions Triangle stands for Land owned by R, square stands for the Land owned by T, Rectangle stands for the area where vegetables are grown and circle stands for the area where Fruits are grown.

61. Which Number represents the area that belongs to both R & T where vegetables & fruits both are grown?
(1) 3    (2) 5
(3) 6    (4) 12

62. \( \text{R + T} \) stands for the area where vegetables & fruits both are grown.
(1) 3    (2) 5
(3) 6    (4) 12
62. Which Number represents the area which belongs to R alone and where both vegetables & fruits are grown?
(1) 2  (2) 3  (3) 4  (4) 5

63. Direction (63-65) Questions which of the following diagrams correctly represents the relation between given three words.

63. BED, WARD, HOSPITAL

64. SEED, LEAF, ROOT

65. SEA, MOUNTAIN, ISLAND

66. Which one word can be formed from the following Letters.
   abcillnooort
   (1) Collapsible  (2) Locomotive  (3) Colour fullers  (4) collaboration

62. ਵਜ਼ੀਰ ਕਹਾ ਇਲਾਕਾ ਖੱਟ ਤੋਂ ਲਗਾਇਆ ਹੈ ਵਜ਼ੀਰ ਕਹਾ ਇਲਾਕਾ ਕਹੋ ਕਚਾ ਹੈ?
   (1) 2  (2) 3  (3) 4  (4) 5

63. ਨਿਉਂਲੇੜ ਤੁਰ ਕੋਲੀ (63-65) ਵੇਂਤਾਂ ਦੇ ਕੀਛ ਕੋਚ ਕੀਛ ਵਿਹਾਰ ਵੀਚ ਦੇ ਕੀਛ ਦੇ ਕੀਛ ਕਰਦੇ ਹਨ ਸਾਹ ਭਾਗ ਲਗਾਇਆ ਹੈ?

63. ਪੰਡਾਲ, ਬਰੋਡ, ਸਸ਼ਾਦਰ

64. ਗੀਤ, ਪੋਸਟ, ਕੋਰ

65. ਸਰੰਹਾਨ, ਘਰਾਣੀ, ਟਪੂ

66. ਦੋਹਾ ਹੀ ਅਵਾਸਤੀ ਦੇ ਸਾਧਾਰਣ ਦੇ ਵਿਕਾਸ ਦੀ ਟਿੱਂ ਕੇਂਦਰ ਵਹਾਨਾ ਕੀ ਸਕਦੇ ਹਨ?
   abcillnooort
   (1) Collapsible  (2) Locomotive  (3) Colour fullers  (4) collaboration
67. Arrange words as they occur in dictionary.
(1) Pestle  (2) Pestilence  (3) Pester  (4) Pest  (5) Pessimist
   (1) 4, 3, 1, 5, 2  (2) 3, 4, 2, 5, 1  (3) 5, 4, 3, 2, 1  (4) 4, 5, 1, 2, 3

68. Number of letters skipped between adjacent letters in the series is in order of 1^1, 2^2, 3^3, which of the following series observe the rule given above.
(1) RTWZ  (2) EGLO  (3) CEJT  (4) EGLP
   (1) RTWZ  (2) EGLO  (3) CEJT  (4) EGLP

69. Arrange the letters so meaningful word form?
   R T A O U H
   1 2 3 4 5 6
   (1) 124365  (2) 634152  (3) 521436  (4) 251436

70. If you write down all the numbers from 1 to 100 than how many times do you write 3?
   (1) 18  (2) 19  (3) 20  (4) 21

71. A Total No. of 324 coins of 20 paise and 25 paise makes a sum of Rs. 71. The No. of 25 paise coin is?
   (1) 120  (2) 124  (3) 132  (4) 200

72. A certain no. of horses & same No. of men are going somewhere. Half of owners on their horses Back while the remaining ones are walking along leading their horses. If the No. of legs walking on the ground is 70, how many horses are there?
   (1) 10  (2) 12  (3) 14  (4) 16
Direction Question (73-74) The sum of the values of below bricks give the value of the bricks which is above two bricks?

\[ 4 + 5 = 9 \]
\[ x^2 + p = 13 \]

\[
\begin{array}{c}
120 \\
\uparrow \\
a \\
C 30 p^2 \\
b 9 + x^2 13 f \\
p + 4 9 x^3 p x + p \\
p 4 5 z x p
\end{array}
\]

73. What will be the value of \( p \)?
   (1) 5  
   (2) 6  
   (3) 8  
   (4) 9

74. Find the value of \( y \)?
   (1) 25  
   (2) 45  
   (3) 55  
   (4) 65

Direction (75-76) Questions are given below with statement followed by conclusions. You have to decide which of the given conclusion follows from the given statements, disregarding commonly known facts.

75. Statements:-
   Some kings are Queens.
   All Queens are beautiful.

Conclusions:-
   I. All kings are beautiful.
   II. All Queens are kings.
   (1) Only conclusion I follows.
   (2) Only conclusion II follows.
   (3) Either I or II follows.
   (4) Neither I nor II follows.
76. **Statements:**

Most Lilies are Roses.
Some Roses are daffodils.

**Conclusions:**

I. Some daffodils are Roses.
II. Some lilies are daffodils.
III. All daffodils are lilies.
IV. No lily is a daffodil.

1. Only I and either II or IV follows.
2. Only I follows.
3. Either I or IV follows.
4. Only I and III follows.

77. What is the minimum number of colours required to fill the spaces in the diagram without any two adjacent spaces having same colour.

A) 6  B) 5  C) 4  D) 3

78. **Question:** Count the Parallelogram in the given figure

A) 23  B) 22  C) 21  D) 18
79. Select the one which satisfies the same conditions of placement of the dot as in fig. (X)

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

80. A cylinder is painted in 6 colours-green, blue, yellow, violet, red and orange. Three positions are shown below

(i) Green Yellow Blue
(ii) Red Orange
(iii) Green Violet

what is the colour in the empty space?

(1) Blue (2) Green (3) Violet (4) Yellow

Direction - Find the figure from the answer figure which will continue the series (81-82)

81 Problem figure

Answer figure

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

82 Problem figure

Answer Figure

(1) (2) (3) (4)
Directions - All the figures together form a series. The unnumbered figure marks the beginning of series position of two figures in the series are incorrect. Series will be correct if these are interchanged. The earliest of two numbered figures whose position are to be interchanged is the answer (83-84)

Direction - Figures A and B are related in some way. According to same relationship among C and D figures choose the consent alternative (85-88)

83

84

85

86

87

88
Direction - Among five figures four figures are similar in a certain way. Find the different figure (89-90)

<table>
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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
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Direction - In question 91-93) question figure is embedded in one of the answer figures. Find the correct one in which it is embedded.

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<tr>
<th>93</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
</table>

Direction - In question (94) square/circular paper has been folded as shown with the dotted lines in the given figures. The last figure (2) shows how the paper has been cut. How would the paper look like when unfolded.

**Question Figure**

<table>
<thead>
<tr>
<th>94</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
</table>

**Answer Figure**

| (1) | (2) | (3) | (4) |
Directions Q (95-96) In each of the following questions there is a relationship between two figures on the left side of the sign :: , the same relationship exists between the two, to the right side of sign ::, Find the correct alternative.

95 Question figure

Answer figure

96 Question figure

Answer figure

97

If the mirror image of the above figure is rotated to 90° in clockwise direction, It will look like :

(1) 
(2) 
(3) 
(4)
98. Find the water image of given figure

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

99. Find the water image of given figure

Workno.1hard

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

100. Given below are three different positions of dice. Find the number of dots on the face opposite the face bearing (3) three dots?

(1)  
(2)  
(3)  

(B)  
(d)  

(C)  
(d)  

(B)  
(d)  

(C)  
(d)  

(B)  
(d)  

(C)  
(d)  

(B)  
(d)  

(C)  
(d)  

(B)  
(d)  

(C)  
(d)  

(B)  
(d)  

(C)  
(d)  

(B)  
(d)  

(C)  
(d)
Instructions for candidates:

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2. It consists of questions related to Science, Mathematics and Social Science.

3. Each question carries one mark. All questions are compulsory.

4. You have been provided with an answer sheet (OMR) for this question paper. Darken the correct option of each question in the answer sheet (OMR) with black/blue ball pen.

5. Rough work may be done on the blank space provided for this purpose.

6. There is no negative marking in this test.

7. Do not use white fluid on OMR Answer Sheet.

8. Half an hour extra should be given to visually impaired candidates only.
\[
\begin{align*}
\cos^2(45^\circ - \theta) + \cos^2(45^\circ + \theta) \\
\frac{\tan(60^\circ + \theta) \cdot \tan(30^\circ - \theta)}{\tan^2(90^\circ - 45^\circ) + \tan(90^\circ - 45^\circ)} \\
\cos(90^\circ + 60^\circ) \cdot \cos(90^\circ + 30^\circ) \\
\end{align*}
\]
1. A body is thrown vertically upwards against gravity alone with velocity 'u'. The greatest height 'h' to which it will rise and time taken 't' to attain this height is given by

\[
(1) \frac{u}{g}, \frac{2u}{g} \quad (2) \frac{u}{2g}, \frac{u}{g} \\
(3) \frac{u^2}{g}, \frac{2u}{g} \quad (4) \frac{u}{g}, \frac{u}{2g}
\]

2. What is the equivalent resistance between A and B.

\[
A \quad 2\Omega \quad 2\Omega \quad 2\Omega \quad 2\Omega \quad 2\Omega \quad 4\Omega \\
B \quad 2\Omega \quad 2\Omega \quad 2\Omega \quad 2\Omega \quad 2\Omega \quad 2\Omega
\]

\[
(1) 16\Omega \quad (2) 1\Omega \\
(3) 7\Omega \quad (4) 3\Omega
\]

3. A lady is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of same size and that of legs smaller. Which of the following is the correct order of combination for the magic mirror from the top.

(1) Plane, Convex, Concave
(2) Convex, Plane, Concave
(3) Plane, Concave, Convex
(4) Concave, Plane, Convex

4. An electric Kettle consumes 1 KW of electric power when operated at 220 V. A fuse wire of what rating must be used for it.

\[
(1) 1A \quad (2) 2A \\
(3) 5A \quad (4) 4A
\]
5. A person cannot see objects distinctly kept beyond 2m. This defect can be corrected by the which type of the lens and of what power of its.

(1) Convex Lens, +0.5 D
(2) Concave Lens, +0.5 D
(3) Convex Lens, -0.2 D
(4) Concave Lens, -0.5 D

6. Action and Reaction according to Newton's third law act on.

(1) Same body in opposite direction.
(2) Different bodies in same direction.
(3) Different bodies in opposite direction.
(4) Same body in same direction

7. A passenger, in a moving bus tosses a coin which falls behind him. It means that motion of the bus is:

(1) Uniform
(2) Accelerated
(3) Retarded
(4) Circular motion

8. A current of 2 amp is drawn by a filament by an electric bulb. No. of electrons passing through a cross section of the filament in 8 seconds would be approximately.

(1) $10^{26}$
(2) $10^{27}$
(3) $10^{32}$
(4) $10^{40}$

9. The voltage can be written as:

(1) Work done × charge × time
(2) Work done × time
(3) Work done × Current /
(4) Work done × time

10. The strength of magnetic field inside a long current carrying straight solenoid is:

(1) Minimum in the middle
(2) More at the ends than at the centre
(3) Same at all points
(4) Found to increase from one end to the other.
11. In which of the following situations the distance moved and the magnitude of displacement are equal?
   (1) A Pendulum is moving to and fro
   (2) Moon is revolving around the earth
   (3) A boy is sitting in moving merry go round
   (4) A bus is moving on a straight road.

12. Ocean thermal energy is due to:
   (1) Energy stored by waves in the ocean
   (2) Pressure difference at different levels in the ocean.
   (3) Tides arising out in the ocean
   (4) Temperature difference at different levels in the oceans.

13. The major problem in harnessing nuclear Energy is how to:
   (1) Split nucleus
   (2) Sustain the reaction
   (3) Dispose off spent fuel safely
   (4) Convert nuclear energy into electrical energy

14. Calculate the number of atoms in 0.2 mole of Sodium Carbonate (Na₂CO₃).
   (1) 7.2264 x 10^{23} atoms
   (2) 12.044 x 10^{23} atoms
   (3) 6.022 x 10^{23} atoms
   (4) 1.505 x 10^{23} atoms

15. Which of the following radioactive isotope is used in the treatment of Cancer?
   (1) Iodine – 131
   (2) Uranium – 235
   (3) Sodium – 24
   (4) Cobalt – 60

16. In the given reaction the oxidizing agent is
   \[ \text{Br}_2 + 2\Gamma \rightarrow 2\text{Br}^- + \text{I}_2 \]
   (1) \( \text{Br}_2 \)
   (2) \( \Gamma \)
   (3) \( \text{Br}^- \)
   (4) \( \text{I}_2 \)
17. While cooking, if the bottom of utensil is getting blackened on the outside, it means that:-

(1) the food is not cooked completely
(2) the fuel is not burning completely
(3) the fuel is wet
(4) the fuel is burning completely

18. Which of the following is not base?

(1) NaOH  (2) KOH  (3) NH₃  (4) C₂H₅OH

19. When 200 ml of a gas at constant pressure is heated from 0°C to 100°C, the volume must be multiplied by:-

(1) \( \frac{100}{0} \)
(2) \( \frac{100}{100} \)
(3) \( \frac{273}{373} \)
(4) \( \frac{373}{273} \)

20. You are given the following chemical equation:

\[ \text{Mg}(s) + \text{CuO}(s) \rightarrow \text{MgO}(s) + \text{Cu}(s). \]

This equation represents:

(1) Decomposition and displacement reaction.
(2) Combination and double displacement reaction.
(3) Redox and displacement reaction.
(4) Double displacement and redox reaction.

21. A metal 'X' forms a water-soluble salt XNO₃. When an aqueous solution of XNO₃ is added to common salt solution, then a white precipitate of compound 'Y' is formed along with sodium nitrate solution. Metal 'X' is said to be the best conductor of electricity and it does not evolve hydrogen when put in dilute hydrochloric acid. What is metal 'X', salt XNO₃, and compound 'Y'? 

(1) Metal 'X' is Silver (Ag), Salt is Silver Nitrate and compound 'Y' is Silver Chloride.
22. The salt which will give a neutral solution on dissolving in water will be:

(1) $\text{CH}_3\text{COONa}$  (2) $\text{NH}_4\text{Cl}$
(3) $\text{KCl}$  (4) $\text{Na}_2\text{CO}_3$

23. Which of the following is the correct electronic configuration of Nickel with an atomic number 28?

(1) $1s^22s^22p^63s^23p^63d^8$
(2) $1s^22s^22p^63s^23p^63d^10$
(3) $1s^22s^22p^63s^23p^63d^104s^2$
(4) $1s^22s^22p^63s^23p^63d^104s^2$

24. Which of the following gives the correct increasing order of acidic strength?

(1) Water, Acetic acid, Hydrochloric Acid
(2) Water, Hydrochloric acid, Acetic acid
(3) Acetic acid, Water, Hydrochloric acid
(4) Hydrochloric acid, Water, Acetic acid

25. Which of the following metals form an amphoteric oxide:

(1) Na  (2) Ca
(3) Al  (4) Cu

26. A common metal which is highly resistant to corrosion is:

(1) Iron  (2) Copper
(3) Aluminium  (4) Magnesium
27. Mitochondria and Plastids are able to synthesize some of their proteins because they have

(1) DNA
(2) RNA
(3) DNA and Ribosomes
(4) RNA and Ribosomes

28. Which of the following statement is correct about Cardiac Muscles.

(1) Cardiac Muscles are uninucleate and Unbranched.
(2) Cardiac Muscles are multinucleate and unbranched.
(3) Cardiac Muscles are uninucleate and branched.
(4) Cardiac Muscles are multinucleate and branched.

29. The correct pathway of blood in circulatory system is:

(1) Auricles → Ventricles → Artery → Veins
(2) Ventriles → Auricles → Veins → Artery
(3) Ventriles → Veins → Auricles → Artery
(4) Auricles → Artery → Veins → Ventriles

30. Which one of the following is an incorrect match.

(1) Ovary – Estrogen
(2) Pancreas – Insulin
(3) Pituitary gland – Adrenaline
(4) Testis – Testosterone

31. Concentration of urine depends on the presence of

(1) Thyroxine
(2) Testosterone
(3) ADH (Antidiuretic hormone)
(4) Melatonin

32. Which leaves have parallel venation.

(1) Peepal leaves
(2) Hibiscus leaves
(3) Banana leaves
(4) Banyan leaves
33. Which of the following equation is the summary of photosynthesis.

(1) \[ 6\text{CO}_2 + 12\text{H}_2\text{O} \stackrel{\text{Chlorophyll}}{\text{Sunlight}} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O} \]

(2) \[ 6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O} \]

(3) \[ 6\text{CO}_2 + 6\text{H}_2\text{O} \stackrel{\text{Chlorophyll}}{\text{Sunlight}} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O} \]

(4) \[ 6\text{CO}_2 + \text{H}_2\text{O} \stackrel{\text{Sunlight}}{\rightarrow} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O} \]

34. The breakdown of Pyruvate to give Carbon dioxide, water and energy takes place in ...........

(1) Cytoplasm (2) Mitochondria (3) Chloroplast (4) Nucleus

35. Choose the correct statements.

(1) The female gamete is called zygote.

(2) Twins are always Identical.

(3) Gregor Mendel is the father of Genetics.

(4) In human beings sex is determine by presence of X and Y Chromosome

(1) Statement 1 and 2 are correct.

(2) Statement 2 and 3 are correct.

(3) Statement 3 and 4 are correct.

(4) Statement 1 and 4 are correct.

36. The nature of nerve impulse is ...............

(1) Chemical

(2) Magnetic

(3) Electrochemical

(4) Electromagnetic

37. Which of the following are called “Amphibians of plant kingdom”?

(1) Bryophytes (2) Pteridophytes

(3) Thallophytes (4) Gymnosperms
38. The Centre of sense of smell in brain is:
(1) Mid brain (2) Olfactory lobes
(3) Cerebellum (4) Cerebrum

39. A tissue which makes up the husk of coconut and whose cells are dead, elongated and lignified is:
(1) Chlorenchyma (2) Collenchyma
(3) Parenchyma (4) Sclerenchyma

40. Which of the following is not a part of male reproductive system in human being.
(1) Testes (2) Prostate gland
(3) Vas deferens (4) Fallopian tube

41. Three digit numbers are formed using the digits 0, 2 and 5 without repetition. Find the probability that the number is divisible by 5.
(1) 3 4 2
(2) 1 2
(3) 1 4

42. If \( \alpha \) and \( \beta \) are the roots of the equation \( 2x^2 - 3x + 4 = 0 \), then find the equation whose roots are \( \alpha^2 \) and \( \beta^2 \).
(1) \( 4x^2 + 7x + 1 = 0 \) (2) \( 4x^2 + 7x + 6 = 0 \)
(3) \( 4x^2 + 7x + 16 = 0 \) (4) \( 4x^2 - 7x + 16 = 0 \)

43. If \( p^a \) term of an A.P. is \( \frac{1}{q} \) and \( q^b \) term is \( \frac{1}{p} \) then (pq)\(^{a+b}\) term of this A.P. will be.
(1) 1 (2) 0
(3) \( \frac{pq}{p+q} \) (4) \( \frac{p-q}{pq} \)

44. If \( \tan \theta + \sin \theta = p \) and \( \tan \theta - \sin \theta = q \), then \( p^2 - q^2 \) is equal to:
(1) \( 4pq \) (2) \( 4\sqrt{pq} \)
(3) \( 2pq \) (4) \( 2\sqrt{pq} \)
45. If mid-point of the line segment joining the points A(3, 4) and B(k, 6) is P(x, y) and \(x + y - 10 = 0\), then the value of 'k' is.

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<thead>
<tr>
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<tbody>
<tr>
<td>(1)</td>
<td>-7</td>
<td>(2) 7</td>
</tr>
<tr>
<td>(3)</td>
<td>10/3</td>
<td>(4) 13</td>
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46. The average age of a group of eight persons is same as it was 3 years ago, when a young member is substituted for an old member of the group. How many years the new member is younger to the outgoing member.

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<tr>
<td>(1) 11 years</td>
<td>(2) 28 years</td>
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<tr>
<td>(3) 16 years</td>
<td>(4) 24 years</td>
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47. If \(x^3 + \frac{1}{x} = 2\) then value of \(x^2 + \frac{1}{x}\) is

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<tr>
<td>(1) -1, 2</td>
<td>(2) 1, 2</td>
<td></td>
</tr>
<tr>
<td>(3) -1, -2</td>
<td>(4) 1, -2</td>
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48. In the given figure, If A, B and C are the three points on a circle such that the angles subtended by the chords AB and AC at centre 'O' are 60° and 100° respectively, then find the value of \(\angle BAC\).

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<td>(1) 20°</td>
<td>(2) 50°</td>
<td></td>
</tr>
<tr>
<td>(3) 80°</td>
<td>(4) 30°</td>
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49. 'A' takes 6 days less than the time taken by 'B' to finish a piece of work. If both A and B together can finish it in 4 days, find the time taken by 'B' to finish the work.

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<tr>
<td>(1) 2 days</td>
<td>(2) 12 days</td>
<td></td>
</tr>
<tr>
<td>(3) 6 days</td>
<td>(4) 10 days</td>
<td></td>
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50. Find the value of:
\[
\frac{\cos^2(45^\circ + \theta) + \cos^2(45^\circ - \theta)}{\tan(60^\circ + \theta) \tan(30^\circ - \theta)}
\]

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<tr>
<td>(1) 2</td>
<td>(2) (\frac{1}{2})</td>
<td></td>
</tr>
<tr>
<td>(3) (\frac{1}{3})</td>
<td>(4) 1</td>
<td></td>
</tr>
</tbody>
</table>
51. In a circle of diameter 40 cm, the length of the chord is 20 cm. Find the length of the minor arc corresponding to the chord.

\[
\begin{array}{ll}
1 & \frac{2\pi}{3} \\
2 & \frac{20\pi}{3} \\
3 & \frac{10\pi}{3} \\
4 & 10\pi
\end{array}
\]

52. If the roots of the polynomial \(x^3 - 3x^2 + x + 1\) are \((a-b), a\) and \((a+b)\) then find the values of 'a' and 'b'.

\[
\begin{array}{ll}
1 & a=\pm\sqrt{2}, b=1 \\
2 & a=1, b=2 \\
3 & a=2, b=\pm\sqrt{2} \\
4 & a=1, b=\pm\sqrt{2}
\end{array}
\]

53. If \(\sec\theta - \tan\theta = 2\), then the value of \(\sec\theta + \tan\theta\) will be equals to (Where \(\theta\) is an acute angle).

\[
\begin{array}{ll}
1 & 1 \\
2 & \frac{1}{\sqrt{2}} \\
3 & 0 \\
4 & \frac{1}{2}
\end{array}
\]

54. Two dices are thrown together, find the probability that the sum of numbers of both up sides of both dices is a perfect cube.

\[
\begin{array}{ll}
1 & \frac{6}{36} \\
2 & \frac{7}{36} \\
3 & 0 \\
4 & \frac{5}{36}
\end{array}
\]

55. 'B' speaks truth in 75% cases and 'A' speaks truth in 80% cases. Find the probability that they contradict each other in a statement is:-

\[
\begin{array}{ll}
1 & \frac{13}{20} \\
2 & \frac{3}{5} \\
3 & \frac{2}{5} \\
4 & \frac{7}{20}
\end{array}
\]

56. Ashok, Usha, Rani and Sonu have to give speeches in a class. In how many different ways, the teacher can arrange the order of their presentation.

\[
\begin{array}{ll}
1 & 4 \\
2 & 12 \\
3 & 256 \\
4 & 24
\end{array}
\]
57. For any \( \triangle ABC \), find the value of \( \cos \left( \frac{A+B+C}{2} \right) \):

\[
\begin{array}{ll}
(1) & \frac{1}{2} \\
(2) & 1 \\
(3) & \frac{3}{2} \\
(4) & 0
\end{array}
\]

58. If \( \frac{2 + \frac{1}{3} + \frac{1}{4}}{3 + \frac{1}{4}} = x \) then find the value of \( 'x' \):

\[
\begin{array}{ll}
(1) & \frac{1}{7} \\
(2) & \frac{3}{7} \\
(3) & 1 \\
(4) & \frac{8}{7}
\end{array}
\]

59. The capacity of a cylindrical tank is 246.4 litres. If the height of tank is 4 metres, then what is the diameter of its base?

\[
\begin{array}{ll}
(1) & 1.4 \text{ m} \\
(2) & 2.8 \text{ m} \\
(3) & 14 \text{ m} \\
(4) & 28 \text{ m}
\end{array}
\]

60. If the area of a squared field is 69696 cm\(^2\). Then what is the length of its diagonal.

\[
\begin{array}{ll}
(1) & 313.296 \text{ cm} \\
(2) & 353.296 \text{ cm} \\
(3) & 373.296 \text{ cm} \\
(4) & 393.296 \text{ cm}
\end{array}
\]

61. Aus, Aman and Boro, grown thrice in a year are the types of _______ crop.

\[
\begin{array}{ll}
(1) & \text{Maize} \\
(2) & \text{Rice} \\
(3) & \text{Millet} \\
(4) & \text{Wheat}
\end{array}
\]

62. Which type of soil is also known as 'Regur Soil'?

\[
\begin{array}{ll}
(1) & \text{Black Soil} \\
(2) & \text{Red Soil} \\
(3) & \text{Sandy Soil} \\
(4) & \text{Yellow Soil}
\end{array}
\]

57. यदि \( \triangle ABC \), तो \( \cos \left( \frac{A+B+C}{2} \right) \) का मान होगा।

\[
\begin{array}{ll}
(1) & \frac{1}{2} \\
(2) & 1 \\
(3) & \frac{3}{2} \\
(4) & 0
\end{array}
\]

58. यदि \( \frac{2 + \frac{1}{3} + \frac{1}{4}}{3 + \frac{1}{4}} = x \) हो तो \( 'x' \) का मान होगा।

\[
\begin{array}{ll}
(1) & \frac{1}{7} \\
(2) & \frac{3}{7} \\
(3) & 1 \\
(4) & \frac{8}{7}
\end{array}
\]

59. निकालिए \( \text{छेत्र की पावर} \) 246.4 \( \text{छिट} \) है। निकालिए \( \text{छेत्र की लंबाई} \) 4 \( \text{मीटर} \) तो \( \text{छिट} \) से \( \text{अंगिक} \) का \( \text{विकाश} \) क्या होगा?

\[
\begin{array}{ll}
(1) & 1.4 \text{ मीटर} \\
(2) & 2.8 \text{ मीटर} \\
(3) & 14 \text{ मीटर} \\
(4) & 28 \text{ मीटर}
\end{array}
\]

60. निकालिए \( \text{वर्ग क्षेत्र की लंबाई} \) 69696 \( \text{चौंक} \) है। \( \text{वर्ग क्षेत्र की दीर्घता} \) क्या होगा?

\[
\begin{array}{ll}
(1) & 313.296 \text{ मीटर} \\
(2) & 353.296 \text{ मीटर} \\
(3) & 373.296 \text{ मीटर} \\
(4) & 393.296 \text{ मीटर}
\end{array}
\]

61. ओम, अमर, वधु तीनों खेत खिलाफ़त करते हैं किन्तु दौड़ हामले करते हैं किंतु दौड़ हामले करते हैं। ज्ञात किये विभिन्न निकाललों की ज्ञात किये विभिन्न निकाललों की?

\[
\begin{array}{ll}
(1) & \text{ओम} \\
(2) & \text{अमर} \\
(3) & \text{वधु}
\end{array}
\]

62. \( \text{विभिन्न ग्राम} \) की \( \text{मिट्टी} \) \( \text{विभिन्न} \) \( \text{मिट्टी} \) की विभिन्न \( \text{संरचना} \) हो?

\[
\begin{array}{ll}
(1) & \text{वायु ग्राम} \\
(2) & \text{स्वच्छ मिट्टी} \\
(3) & \text{वेदना मिट्टी} \\
(4) & \text{पीली मिट्टी}
\end{array}
\]
63. The first cement plant of India was established at:

(1) Mumbai (2) Ahmadabad
(3) Madurai (4) Chennai

64. In which state the 'Kaziranga Sanctuary' is situated?

(1) Jammu & Kashmir (2) Assam
(3) Haryana (4) Kerala

65. What is the population density of India as per the census 2011?

(1) 382 person per sq. kilometer
(2) 482 person per sq. kilometer
(3) 582 person per sq. kilometer
(4) 682 person per sq. kilometer

66. 'Konkan Railways' stretches along the

(1) Northern plains (2) East coast
(3) West coast (4) Great Indian desert

67. Which sea existed at the place of the present Himalayas?

(1) Arctic (2) Tethys
(3) Alps (4) Andes

68. Which of the following is the main tree of Tropical Evergreen vegetation?

(1) Coconut (2) Accacia
(3) Silver Fur (4) Mahogany

69. Which river is called 'sorrow' of West Bengal?

(1) Narmada river (2) Tapi river
(3) Damodar river (4) Indus river

70. On which tree the Silkworms are reared?

(1) Tahli (2) Accacia
(3) Mulberry (4) Mango

71. Which place is known as 'Silicon Valley' of India?

(1) Bangaluru (2) Mumbai
(3) Ahmedabad (4) Nagpur
72. Who made the law for the security of forests in 1855 A.D.?

(1) Lord Dalhousie  (2) Lord Cornwalis 
(3) Lord Rippan  (4) Lord Wellesley 

73. 'Safrej Movement' was related to which category of the society?

(1) Children  (2) Women
(3) Men  (4) Old people

74. Which Sikh Guru Sahib compiled 'Jap Sahib'?

(1) Shri Guru Nanak Dev ji  (2) Shri Guru Hargobind Raja ji
(3) Shri Guru Gobind Singh ji  (4) Shri Guru Teg Bahadur ji

75. When did 'The treaty of Bhairowal' take place?

(1) 24 Dec. 1846 A.D.  (2) 25 Dec. 1846 A.D.
(3) 26 Dec. 1846 A.D.  (4) 27 Dec. 1846 A.D.

76. When did Vietnam become a United Country?

(1) 15th April 1974 A.D.  (2) 30th April 1975 A.D.
(3) 30th April 1973 A.D.  (4) 15th April 1976 A.D.

77. Karl Marx was against:

(1) Democracy  (2) Capitalism
(3) Communism  (4) Socialism

78. Who was 'Giuseppe Mazzini'?

(1) An Italian Economist  (2) A German Nationalist
(3) A German Professor  (4) An Italian Nationalist

79. Which among the following cities is hub of the new print culture.

(1) Hong Kong  (2) Tokyo
(3) Shanghai  (4) Chicago

72. 1855 दी, दिन ब्रह्मण की विशाल कही विवाद वालु घटके मान?

(1) सच्च सच्चसी  (2) सच्च वाचक बिभाजिनी
(3) सच्च विभाजन  (4) सच्च वेदीस्थी

73. 'सहवेल वेदनेथ' भाषा दे दिवस ब्रह्मण वालु मान्यताही मान?

(1) वृत्तिमान  (2) ओर ओर
(3) पुनर्भुवन  (4) वादनान

74. 'नापु मानिस' दी उत्कर विवाद ब्रह्मण लालु मान्यताही वीज़ी?

(1) मी ब्रह्मण सहवेल उद्धव मी
(2) मी ब्रह्मण उद्धव सहवेल मी
(3) मी ब्रह्मण मानिस मानिस मी
(4) मी ब्रह्मण उद्धव मानिस मी

75. 'वैद्यक ली वैद्य' वैद्य वैद्य?

(1) 24 रमण 1846 दी
(2) 25 रमण 1846 दी
(3) 26 रमण 1846 दी
(4) 27 रमण 1846 दी.

76. बीमानही मृत्युः वालु मान्यताही क्षमिल वालु?

(1) 15 अनुपंस 1974 दी.
(2) 30 अनुपंस 1975 दी.
(3) 30 अनुपंस 1973 दी.
(4) 15 अनुपंस 1976 दी.

77. ब्रह्मण अवधारण विवाद मान्यताही?

(1) वेद वेद वेद वेद  (2) पुरुषी लालु
(3) मथुरा मथुरा लालु  (4) वादनान लालु

78. 'सिट्टिर्सिह' भक्तिरी वालु?

(1) लिटिल लालु अवधारण वालु
(2) नमम लालु अवधारण वालु
(3) नमम लालु पृथ्वीवत
(4) लिटिल लालु अवधारण वालु

79. वालु विवाद मान्यताही वालु वी ब्रह्मण वालु मान्यताही वी?

(1) वृत्तिमान  (2) ओर ओर
(3) पुनर्भुवन  (4) वादनान
80. Which is the best literary work of Prem Chand?
(1) Do Bigha Zameen  (2) Godan
(3) Anand Math  (4) Sewa Sadan

81. Who formed 'Young Italy' a secret society?
(1) Bismarck  (2) Wilhelm Wolff
(3) Mazzini  (4) Metternich

82. Which of the following is the Presidency city?
(1) Lucknow  (2) Delhi
(3) Bombay  (4) Ahmedabad

83. Under which Article 'Untouchability' is abolished and its practice is punishable?
(1) Article - 15  (2) Article - 17
(3) Article - 16  (4) Article - 19

84. An individual who is not a member of either house of parliament, can be appointed a member of council of Ministers, but he has to become a member of either house within a period of ...........
(1) one month  (2) 3 months
(3) 1 year  (4) 6 months

85. Who is regarded as the supreme commander of the defence forces in India?
(1) President  (2) Prime Minister
(3) Defence Minister  (4) Chief of defence forces.

86. Which of the following institutions is not a part of the 'Rural' local self Government?
(1) Nagar Panchayat  (2) Panchayat
(3) Panchayat Samiti  (4) Zila Parishad

87. How many members are elected from Punjab in Lok Sabha?
(1) 7  (2) 13
(3) 21  (4) 17
88. Under which Fundamental Right in Indian Constitution 'Right to free and compulsory Education' has been given?

(1) Under - Right to equality  
(2) Under - Right against exploitation  
(3) Under - Right to Religious Freedom  
(4) Under - Right to Freedom

89. When was the charter of United Nation organization, accepted by 51 countries?

(1) 24th October 1945  
(2) 26th June 1945  
(3) 10th August 1939  
(4) 24th April 1954

90. Who was the President of constituent Assembly of India?

(1) Pt. Jawahar Lal Nehru  
(2) Dr. B.R. Ambedkar  
(3) Sardar Vallabha bhai Patel  
(4) Dr. Rajendra Prasad.

91. Who has said these words regarding the 'Panchsheel' principles, "By Implementing these Principles, there will be permanent world peace".

(1) Mahatma Gandhi  
(2) Dr. B.R. Ambedkar  
(3) Shri Lal Bahadur Shastri  
(4) Pandit Jawahar Lal Nehru

92. Which of the following features is not a federal feature of Indian constitution?

(1) Supremacy of the constitution  
(2) Distribution of powers between centre and states.  
(3) Appointment of Governors by president of India  
(4) Independent Judiciary.

93. Which of the following is the correct equation

(1) Savings = Income + Consumption  
(2) Savings = Consumption – Income  
(3) Income = Savings + Consumption  
(4) Consumption = Income + Savings
94. Which group belongs to all direct taxes?

(1) Income tax, Gift tax, Sale tax
(2) Income tax, Wealth tax, Sale tax
(3) Gift tax, Wealth tax, Sale tax
(4) Income tax, Gift tax, Wealth tax

95. Which is the Central Bank of India?

(1) SBI (2) RBI (3) HDFC (4) ICICI

96. In which sector, natural sources are used for production?

(1) Service Sector (2) Secondary Sector (3) Primary Sector (4) Financial Sector

97. Monetary Policy has one component of policy

(1) Bank Rate (Interest) (2) Public Income (3) Public Works (4) Deficit Financing

98. MGNREGA 2005 was initiated with the aim to provide

(1) Employment (2) Health Facilities (3) Education Facilities (4) Irrigation Facilities

99. Which service is not related to the basic infrastructure.

(1) Communication (2) Education (3) Irrigation (4) Banking

100. What is the effect of unfavourable balance of trade on Foreign Exchange Reserves?

(1) It reduces (2) It increases (3) No effect (4) It remains same