## Section - I : MENTAL ABILITY
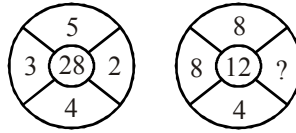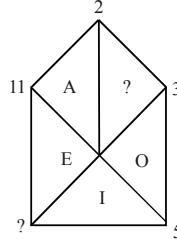
❖ *Q.No. 1 to Q.No. 25 Single correct answer type: In this type there is only one correct answer.*
*Choose only one option for an answer : (Correct Answer : +3, Wrong Answer : –1, Unattempted: 0)*

1. What comes in place of question mark (?) in the following number series : 3,5,13,49,241, ?, ......
   (A) 1541      (B) 4411      (C) 1600      (D) 1441

2. Replace the question mark (?) in the series given below with the suitable option.
   2,3,7,16,32, ?,......
   (A) 57      (B) 37      (C) 48      (D) 55

3. What comes in place of question mark (?) in the series given below ?
   B,C,E,H,L, ?
   (A) M      (B) N      (C) P      (D) Q

4. Replace the question mark (?) in the following series.
   L, LL, LLLL, LLLLLLL, ?
   (A) LLLLLLLL      (B) LLLLLLLLLL      (C) LLLLLLLLL      (D) LLLLLLLLLL

5. In the following question, there is a certain relationship between two given words on one side of (::) and one word is given on another side (::) while another word is to be found from the given alternatives having the same relation with this word as the words of the given pair bear. Choose the correct alternative.
   House : Door : : Compound : ?
   (A) Gate      (B) Fence      (C) Foundation      (D) Wall

6. In the following question, there is a certain relationship between two given words on one side of (::) and one word is given on another side (::) while another word is to be found from the given alternatives having the same relation with this word as the words of the given pair bear. Choose the correct alternative.
   Truthfulness : Lair : : Loyalty : ?
   (A) Worker      (B) Traitor      (C) Dilligent      (D) Faithful

7. Find out the pair in which the words bear the same relationship to each other as similar to the words of the given pair bear.
   India : Tricolour
   (A) China : Sickle and Hammer      (B) UK : Red Cross
   (C) USA : Stars and Stripes      (D) None of these

8. Find out the pair in which the words bear the same relationship to each other as similar to the words of the given pair bear.
   Fish : Shoal
   (A) Audience : Theater    (B) Shark : School    (C) Elephant : Flock    (D) Whale : Herd

9. If 'SILVER' is coded as 'ZXYBDQ' and 'KAMAL' is coded as LNCNY, then what will be the code for 'VIKAS'
   (A) BXNLZ      (B) ZXYCN      (C) BXLNZ      (D) LNCBD

10. If B = 2 and BAG = 10, then BOX = ?
    (A) 36      (B) 39      (C) 41      (D) 52

11. Find the odd word.
    (A) Orange      (B) Apple      (C) Guava      (D) Grapes

12. Find the odd word.
    (A) Square      (B) Sphere      (C) Rectangle      (D) Circle

13. Find the missing value in the figure :



(A) 3          (B) 9          (C) 1          (D) 2

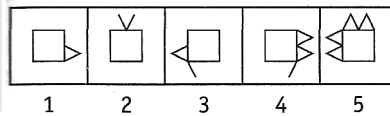14. Find the missing values in the figure :



(A) 8 and U      (B) 8 and V      (C) 7 and U      (D) 9 and V

15. Vandana 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. In which direction now is Vandana going ?

(A) North      (B) South – West      (C) South      (D) West

***Directions Q.no.16 :*** In the following questions a group of five figures following a certain sequence is given as problem figures. Problem figures are followed by author group of five figures known as answer figures marked as (a),(b),(c) and (e). Find out the figure from the answer figures which placed next to the problem figures will continue the sequence of problem figures.
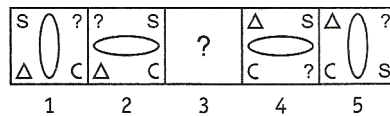
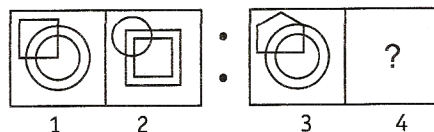16. Problem figures :



(A)     (B)     (C)     (D) 

***Directions Q.no.17 :*** In the following questions consists of five problem figures marked as 1,2,3,4 and 5, followed by five answer figures marked as (a),(b),(c),(d) and (e). If one of the five answer figures is placed in the place of '?' in the problem figure, a series is established and the figure which replaces the '?' is your answer.
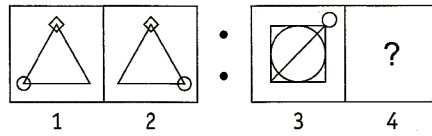
17. Problem figures :



(A)     (B)     (C)     (D) 

18. Find the figure from the answer figure that will replace the question mark (?) from the problem figure ?
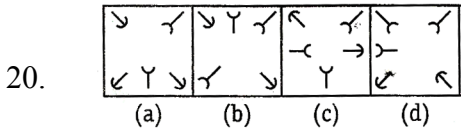Problem figures :
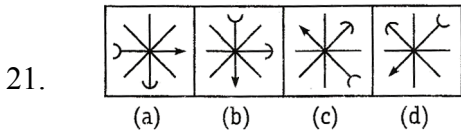


(A)     (B)     (C)     (D)

19.    Problem figures :



(A)           (B)           (C)           (D) 

***Directions Q.no.20 and 21 :*** In the following questions a group of four or five figures are given. Out of which three /four figures are similar to each other in a certain pattern. Find the figure which does not belong to the group.
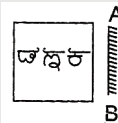
20.    

    (A) a                    (B) b                    (C) c                    (D) d
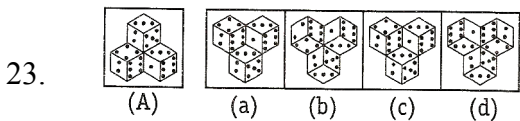
21.    

    (A) a                    (B) b                    (C) c                    (D) d

***Directions Q.no.22 :*** In the following questions, choose the correct mirror image of the figure given from amongst the four alternatives. (a) , (b), (c) and (d). When mirror is placed on the line AB.
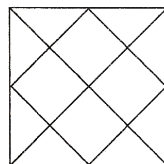
22.    Problem figure :



(A)           (B)           (C)           (D) 

***Directions Q.no.23 :*** Find the water image of the object given in the question figure denoted by (A), out of the figures given in the answer choices, (a) , (b), (c) and (d)

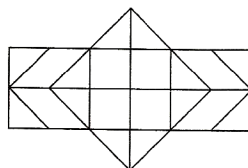23.    

24.    How many triangles are there in the figure given below ?



    (A) 20              (B) 27              (C) 18              (D) 29

25.    How many hexagons are there in the figure given below ?



    (A) 4              (B) 5              (C) 11              (D) 8

## Section - II :  SCIENCE

❖ *Q.No. 26 to Q.No.35 Single correct answer type: In this type there is only one correct answer.*
*Choose only one option for an answer : (Correct Answer : +3, Wrong Answer : –1, Unattempted: 0)*

26. Why is the bulb brighter when it is powered by two cells rather than one?
(A) Because the flow of electricity in the circuit is less.
(B) Because the flow of electricity in the circuit is the same.
(C) Because the flow of electricity in the circuit is greater.
(D) None of these

27. Which of the following is an electrical conductor?
(A) Silver                          (B) Cork
(C) Silver- coloured plastic                          (D) Wood

28. Which of the following is an example of a self - luminous body?
(A) Sun                    (B) Moon                    (C) Electric bulb                    (D) Earth

29. Two blocks A and B moving with different  speed are to be stopped. If speed of A is more than speed of B. Which one  is easier to stop.
(A) A                          (B) B                          (C)  Depends on mass    (D)  None of these

30. Identify the correct statement
(A) All acid salts turn blue litmus red.                          (B) All normal salts are neutal to litmus
(C) All basic salts turn red litmus blue                          (D) All of these

31. Which of the following is a difference between thermoplastic and thermosetting plastics ?
(A) Thermoplastics can be processed repeatedly
(B) Thermosetting plastics cannot be softened by heating
(C) Thermoplastics do not undergo chemical change on heating
(D) All the above

32. The polyatomic ion is
(A) Sulphide                    (B) Chloride                    (C) Sulphate                    (D) nitride

33. A mutually beneficial relationship between two living organisms is called _____ and an example of this is _____.
(A) parasitism, mycorrhiza                          (B) predation, mycorrhiza
(C) symbiosis, lichens                          (D) parasitism, lichens

34. The dental formula for adult human beings is
(A) 2123 / 2123          (B) 3142 / 3143          (C) 2120 / 2120          (D) 3131 / 3121

35. What are the products of aerobic respiration?
(A) $C_6H_{12}O_6 + CO_2$          (B) $CO_2 + C_2H_5OH$          (C) $CO_2 + H_2O$          (D) $H_2O + O_2$

❖ *Q.No. 36 to Q.No.40 Multiple correct answer type: In this type there are one or more than one correct answer. Marks will be awarded only if all the correct options are marked.*

**(Correct Answer : +4, Wrong Answer : 0)**

36. If density of a substance A and B is $5\,gm/cm^3$ and $1500\ kg/m^3$. The relative density of A and B are
(A) Relative density of A = 10                          (B) Relative density of B = 15
(C) Relative density of A = 5                          (D) Relative density of B = 3

37. A block is at rest on a rough horizontal surface when 4N force is applied on it. How much is the friction force on it___
(A) 2N                    (B) 4 N                    (C) 8 N                    (D) Zero

38.  Which of the following is correct about oxygen
     (A) Oxygen is having Atomic Number – 16
     (B) Oxygen is bivalent
     (C) Correct electronic configuration of oxygen is 2 , 8 , 6
     (D) Oxygen is formed by photosynthesis is plants

39.  Select the combinations of the correct statement/s.
     (i) a tadpole respires through gills.
     (ii) Birds and mammals possess lungs for gaseous exchange.
     (iii) Gills in fish are richly supplied with blood vessels.
     (iv) Amoeba and Paramoecium possess spiracles for gaseous exchange.
     (A) (i) and (iv)          (B) (i) and (ii)          (C) (ii) and (iii)          (D) (iv) and (ii)

40.  Select the correct statement out of the following.
     (i) Large intestine is called large because its length is greater then small intestine.
     (ii) Minerals and vitamins do not need to be broken down during digestion.
     (iii) Mecous of stomach protects the lining of stomach from the action of enzymes and acids.
     (iv) Small intestine is smaller in diameter than large intestine.
     (A) (i)          (B) (ii)          (C) (iii)          (D) (iv)

❖    *Q.No.41 Matrix Match Type: In this type statements are given in 2 columns which have to be matched. The statements in Column – I are labeled with choices A, B, C and D, while the statements in Column- II are labeled with choices p,q,r,s and t. For each option in column-I, there is only one correct option available in column-II :*

     *(Correct Answer : + 1.25 marks for each correct match, Wrong Answer : 0)*

41.  Match the following:

| Column A (Element) | Column B (Valency) |
|---|---|
| (A) Neon | (p) 6 |
| (B) Oxygen | (q) 10 |
| (C) Potassium | (r) 8 |
| (D) Boron | (s) 5 |
| | (t) 19 |

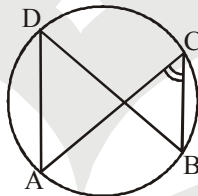❖    *Q.No. 42 to Q.No.46 Integer type: The answer to each question is an integer ranging from 0 to 9 :*

     *(Correct Answer : +4, Wrong Answer : 0)*

42.  If two plane mirror are inclined at an angle of 90°, the number of image formed is ___

43.  What is the acceleration in m/s$^2$ of a 5kg block if 15 N force is acting on it.

44.  Which among the following are oxyacids
     $HNO_2$, $HNO_3$ , HClO, $HClO_2$, HCl , $CH_3COOH$, KOH , $NH_4OH$

45.  The valency of 'Fe' in $Fe_2O_3$ is

46.  How many of the given plant parts are concerned with photosynthesis?
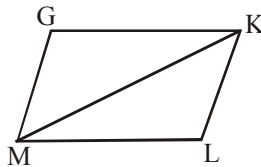     Leaf, Flower, Chloroplast, Chlorophyll, Stomata, Fruit, Seed

## Section - III : MATHEMATICS

❖ *Q.No. 47 to Q.No.56 Single correct answer type: In this type there is only one correct answer. Choose only one option for an answer : (Correct Answer : +3, Wrong Answer : –1, Unattempted: 0)*

47. Find the digit in the unit place of $(676)^{99}$

   (A) 9 (B) 2 (C) 4 (D) 6

48. If $x^2 + y^2 + xy = 1$ and $x + y = 2$ then find $xy$.

   (A) $-3$ (B) 3 (C) $-\dfrac{3}{2}$ (D) Does not exists

49. In a fraction if both the numerator and the denominator are decreased by one, it is equal to $\dfrac{1}{2}$. If the numerator is increased by 2, it is equal to $\dfrac{2}{3}$. then the fraction will be

   (A) $\dfrac{10}{9}$ (B) $\dfrac{15}{8}$ (C) $\dfrac{8}{15}$ (D) $\dfrac{12}{13}$

50. If $(1,1)$ is mid point of $(2, 2)$ and $(a, b)$ then $a + b$ equals

   (A) 4 (B) 0 (C) 2 (D) None of these

51. If 14 kg of pulses cost Rs. 441, then cost of 22 kg of pulses will be

   (A) 627 (B) 649 (C) 671 (D) 693

52. The compound interest when Rs. 125000 is invested for 9 monts at 8% per annum, compounded quarterly.

   (A) 7651 (B) 7652 (C) 7653 (D) 7654

53. In the following figure, if $\angle ACB = 30°$, then $\angle ADB =$



   (A) 60° (B) 36° (C) 30° (D) 40°

54. Given $GK = ML$, $\angle GKM \cong \angle LMK$ then $\triangle GKM$ and $\triangle LMK$ are



   (A) Congruent (B) Similar (C) Different (D) None of these

55. The altitude of the rhombus, whose area is $315 \text{ cm}^2$ and its perimeter is 180 cm, is

   (A) 6 cm (B) 7 cm (C) 8 cm (D) 9 cm
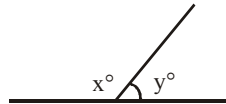
56. The mean of following data table is

| x | 40 | 42 | 34 | 36 | 46 |
|---|----|----|----|----|----|
| f | 6  | 6  | 15 | 14 | 7  |

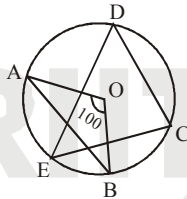   (A) 36.36 (B) 36.56 (C) 36.67 (D) 36

❖ **Q.No. 57 to Q.No.61 Multiple correct answer type: In this type there are one or more than one correct answer. Marks will be awarded only if all the correct options are marked.**
**(Correct Answer : +4, Wrong Answer : 0)**

57. Factors of $x^4 + y^4 - x^2 y^2$ will be

(A) $x^2 + y^2 + \sqrt{3}\, xy$     (B) $x^2 + y^2 + xy$     (C) $x^2 + y^2 - xy$     (D) $x^2 + y^2 - \sqrt{3}\, xy$

58. If $A(1,1)$, $B(-1,1)$, $C(-1, -1)$ and $D(1, -1)$ are 4 given points then

(A) ABCD is rectangle          (B) ABCD is a square
(C) Area of ABCD is 10         (D) Area of ABCD is 4

59. In a class of 50 students 40% are girls, then

(A) No. of girls = 20     (B) No. of girls = 30     (C) No. of boys = 30     (D) No. of boys = 20

60. In the given figure $\angle AOC$ and $\angle BOC$ form a linear pair of $x - y = 60°$, then



(A) $x = 120°$     (B) $x = 60°$     (C) $y = 60°$     (D) $y = 120°$

61. In following figure O is centre of circle AB and CD are equal chords if $\angle AOB = 100°$ then



(A) $\angle DOC = 100°$     (B) $\angle DEC = 50°$     (C) $\angle OAB = \angle OBA$     (D) None of these

❖ **Q.No.62 Matrix Match Type: In this type statements are given in 2 columns which have to be matched. The statements in Column – I are labeled with choices A, B, C and D, while the statements in Column- II are labeled with choices p,q,r,s and t. For each option in column-I, there is only one correct option available in column-II :**
**(Correct Answer : + 1.25 marks for each correct match, Wrong Answer : 0)**

62. 

| Column I | Column II |
|---|---|
| (A) Natural numbers | (p) 0,1,2,3,4,5,..... |
| (B) Whole numbers | (q) 1,2,3,4,5,...... |
| (C) Integers | (r) $\dfrac{3}{-5}, \dfrac{-7}{9}, \dfrac{13}{9}, \dfrac{-11}{36}$ |
| (D) Rational Numbers | (s) ...., -4, -3, -2, -1, 0, 1, 2, 3 |

❖ **Q.No. 63 to Q.No.67 Integer type: The answer to each question is an integer ranging from 0 to 9 :**
**(Correct Answer : +4, Wrong Answer : 0)**

63. If the value of $2x + 3$ is equal to $3 - 2x$ then find the value of $7 + x^{50}$

64. Number of lines which are parallel to $y = x$ at a distance 10 units from it will be

65. Henry sold a bicycle at 8% gain, had it been sold for Rs 75 more, the gain would have been 14% if the cost price of bicycle is x, then $\dfrac{x}{250}$ will be

66. If $A_1$ is area of circle having radius 2R and $A_2$ is area of circle having radius R then $\dfrac{A_1}{A_2}$ will be

67. If the mean of the following frequency distribution is 9, then value of $\left(\dfrac{a}{6}\right)$ will be

| $x_i$ | 4 | 6 | 8 | 10 | 12 | 15 |
|---|---|---|---|---|---|---|
| $f_i$ | 8 | 9 | 17 | a | 8 | 4 |

# ANSWERKEY

## Section - I : MENTAL ABILITY

| | | | | |
|---|---|---|---|---|
| 1. (D) | 2. (A) | 3. (D) | 4. (B) | 5. (A) |
| 6. (B) | 7. (C) | 8. (C) | 9. (C) | 10. (C) |
| 11. (D) | 12. (B) | 13. (D) | 14. (C) | 15. (A) |
| 16. (B) | 17. (D) | 18. (B) | 19. (A) | 20. (A) |
| 21. (B) | 22. (C) | 23. (B) | 24. (A) | 25. (B) |

## Section - II : SCIENCE

| | | | | |
|---|---|---|---|---|
| 26. (C) | 27. (A) | 28. (A) | 29. (C) | 30. (D) |
| 31. (D) | 32. (C) | 33. (C) | 34. (A) | 35. (C) |
| 36. (C) | 37. (B) | 38. (B , D) | 39. (B), (C) | |

40. (B), (C), (D)  41.  $A \to q$   $B \to r$   $C \to t$   $D \to s$

| | | | | |
|---|---|---|---|---|
| 42. (3) | 43. (3) | 44. (4) | 45. (+3) | 46. 4 |

## Section - II : MATHEMATICS

| | | | | |
|---|---|---|---|---|
| 47. (D) | 48. (B) | 49. (C) | 50. (B) | 51. (D) |
| 52. (A) | 53. (C) | 54. (A) | 55. (B) | 56. (B) |
| 57. (AD) | 58. (BD) | 59. (AC) | 60. (AC) | 61. (ABC) |
| 62. (A) | 63. (7) | 64. (2) | 65. (5) | 66. (4) |
| 67. (6) | | | | |