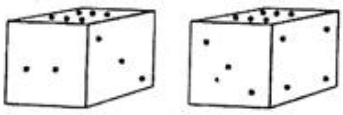
NATIONAL TALENT SEARCH EXAMINATION-2019-20, HARYANA
MENTAL APTITUDE TEST (MAT) PAPER

Direction : (Q. 1 to 3) Two positions of a block with 1 to 6 dots on its sides are shown below. Observe the dots on block.

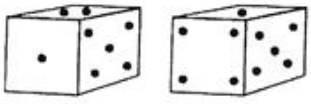
1. If the block is resting on the side with three dots. What will be the number of dots on the side at the top?



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

Sol. (1)

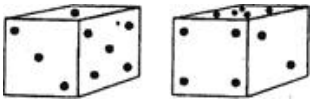
2. How many dots are contained on the face opposite to that containing four dots?



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

Sol. (1)

3. What is the number of dots on the face opposite 2 dots?

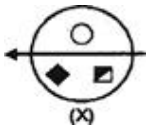


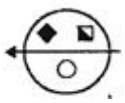
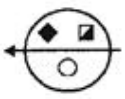
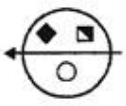
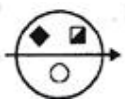
(1) 1 (2) 3 (3) 4 (4) 6

Sol. (2)

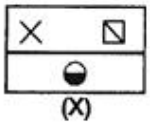
Direction : (Q. 4 to 6) Choose the correct water image of the figure (x) from amongst the alternatives given along with its.

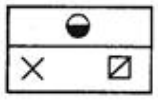
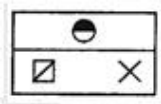
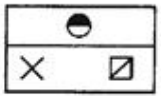
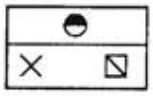
4.



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

Sol. (1)

5. 
(X)

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

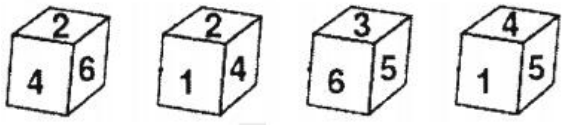
Sol. (3)

6. 
(X)

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

Sol. (4)

7. Which number is opposite to 3?



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

Sol. (2)

Direction : (8 to 12) A cube painted red on two adjacent faces and black on the faces opposite to the red faces and green on the remaining faces is cut into sixty four smaller cubes of equal size.

8. How many cubes are there which have no face painted?

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

Sol. (3)

9. How many cubes have only one face painted?

(1) 8 (2) 16 (3) 24 (4) 32

Sol. (3)

10. How many cubes are there with three faces painted?

(1) 4 (2) 8 (3) 16 (4) 24

Sol. (2)

11. How many cubes are there with two faces painted?

(1) 24 (2) 8 (3) 32 (4) 12

Sol. (1)

12. How many cubes have one face green and one of the adjacent faces black or red?

(1) 8 (2) 16 (3) 24 (4) 28

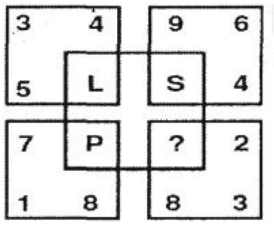
Sol. (2)

13. Which group of letters is different from other?

(1) CBAED (2) TSRVU (3) KJMJ (4) WVUYX

Sol. (3)

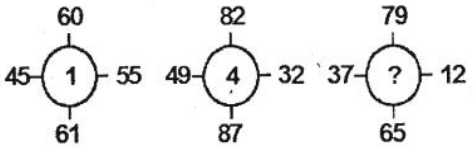
14. Find the letter to be placed in place of (?) in the figure given.



(1) M (2) N (3) Q (4) R

Sol. (1)

15. Identify the number in the position of (?)



(1) 4 (2) 5 (3) 6 (4) 7

Sol. (2)

16. A sprinter goes off the starting block for 100 m run and a that instant the second hand of a stop watch had pointed towards North. He touches the finishing line exactly after 12 seconds. In which direction did the second hand point when he just crossed the finishing line?

(1) 18º North of East (2) 18º East of north

(3) 72º North of East (4) 82º East of North

Sol. (1)

Directions : (Q.17 to 21) : Each letter of alphabet from A to Z has been given a value from 1 to 26 serially. Solve the questions on the basis of value of words.

17. BUSH = 50 CAMP = 33, then LIKE = ?

(1) 40 (2) 41 (3) 32 (4) 37

Sol. (4)

18. Which word has the maximum value?

(1) BURN (2) CURT (3) DUCK (4) BUOY

Sol. (4)

19. Which words have the equivalent value?

(1) KING : CAST (2) BURY : SURE (3) RICH : BOATS (4) BLUE : CANT.

Sol. (3)

20. Which equation is correct?

(1) X + Y = 50 (2) Z – T = 6 (3) B × V = 41 (4) R ÷ 5

Sol. (2)

21. Which word is equivalent to 106 ?

(1) MONKEY (2) DOG JACKY (3) HAI HAPPY (4) SO LUCKY

Sol. (4)

19 + 15 + 12 + 21 + 3 + 11 + 25 = 106

22. What will come at the place of '?'

T	E	Y
O	K	Z
R	G	?

(1) W (2) X (3) Y (4) Z

Sol. (3)

T = 20	E = 5	Y = 25
O = 15	K = 11	Z = 26
R = 18	G = 7	Y = 18 + 7 = 25

23. How many times in 24 hours the hands (hour & minute) of a clock will be at right angles?

(1) 24 (2) 30 (3) 72 (4) 48

Sol. (Bonus)

In 24 hours the hands (hour & minute) of a clock will be at right angle at 44 times.

24. If a train runs at a speed of 92.7 km/hr, then the distance covered in the metres in 17 minutes will b

(1) 26265 (2) 26700 (3) 30002 (4) 29365

Sol. (1)

Distance = $92.7 \times \frac{5}{18} \times 17 \times 60$ = 26265.

Direction: (Q. 25 to 26) A lady runs 12 km towards North, then 6 km towards south and then 8 km East.

25. How far is she from her starting point?

(1) 26 km (2) 18 km (3) 14 km (4) 10 km

Sol. (4)

Distance = $\sqrt{8^2 + 6^2}$

Distance = 10 km

26. Which direction is she from her starting point?

(1) North - East (2) North (3) East (4) North – West

Sol. (1)

She is north east from stading poing

27. Here are some words translated from an artificial language

Mie pie is blue light

Mie tie is blue berry

aie tie is rasp berry

Which word could possibly mean " light fly"

(1) pie zie (2) pie mie (3) zie zie (4) aie mie

Sol. (1)

mie pie $\rightarrow$ blue light

mie tie $\rightarrow$ blue berry

aie tie $\rightarrow$ raspa berry

Code of blue $\rightarrow$ mie

Code of light $\rightarrow$ pie

Code of tie $\rightarrow$ berry

So 'Pie' Zie' could possibly mean light fly".

28. If in a certain code, STUDENT is written as RSTEDMS, then how would TEACHER be written in the same code?

(1) SZZDGEQ (2) SZDDGEQ (3) SDZDGDQ (4) SDZCGDQ

Sol. **(3)**

$S \xrightarrow[-1]{} R$

$T \xrightarrow[-1]{} S$

$U \xrightarrow[-1]{} T$

$D \xrightarrow[-1]{} E$

$E \xrightarrow[-1]{} D$

$N \xrightarrow[-1]{} M$

$T \xrightarrow[-1]{} S$

TEACHER $\rightarrow$ SDZDGQ

29. If CHAIR is coded as FKDLU then RAID is coded as:

(1) ULGD (2) ULKG (3) ULDG (4) UDLG

Sol. **(4)**

$C \xrightarrow{+3} F$

$H \xrightarrow{+3} K$

$A \xrightarrow{+3} D$

$I \xrightarrow{+3} L$

$R \xrightarrow{+3} U$

$R \xrightarrow{+3} U$

$A \xrightarrow{+3} D$

$I \xrightarrow{+3} L$

$D \xrightarrow{+3} G$

30. In a certain code HNDT has been coded as 3694. How will you code THD in the same code?

(1) 604 (2) 428 (3) 439 (4) 349

Sol. **(3)**

H N D T

$\downarrow \downarrow \downarrow \downarrow$

3 6 9 4

H $\rightarrow$ 3

N $\rightarrow$ 6

D $\rightarrow$ 9

T $\rightarrow$ 4

So THD = 439

31. If the vord PENCIL is coded as LICNEP then how would the word INKPOT be coded?

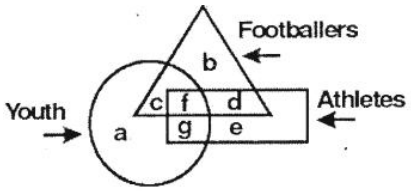
(1) TOPINK (2) JOLQPU (3) HMKOPS (4) TOPKNI

Sol. (4)

PENCIL $\xrightarrow[\text{Reverse of Letter}]{}$ LICNEP

INKPOT $\xrightarrow[\text{Reverse of Letter}]{}$ TOPKNI

32. In the figure, the circle represents youth, the triangle represents footballers and the rectangle represents athletes – which letter represents athletes among youth who are not footballers?



(1) c (2) g (3) d (4) f

Sol. (2)

By looking figure letter which represents othletes among yough. Who are not footballs is 'g'

33. **Statement :** All clocks are Alarms. No Clocks are cuckoos. All cuckoos are Alarms. Some cuckoos are Birds.

Conclusion : **(i) :** Some Alarms are Birds

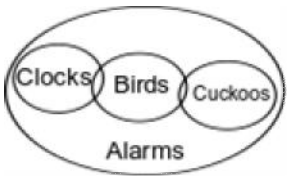
(ii) : No clock is a Bird

(iii) : All birds are Alarms

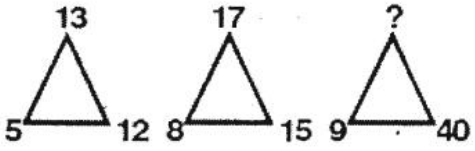
(1) Only conclusion I follows (2) Only conclusion II follows

(3) Only conclusion III flows (4) Both conclusions II and III follows

Sol. (1)



34. Find the number in the Position of '?'



(1) 42 (2) 40 (3) 41 (4) 45

Sol. (3)

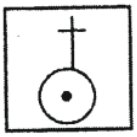
$\sqrt{5^2+12^2}=13$

$\sqrt{8^2+15^2}=17$

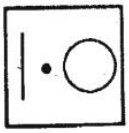
$\sqrt{9^2+40^2}=41$

Direction : (Q. 35 to 38) Find our which of the alternatives will exactly make up the key figure (X) ?

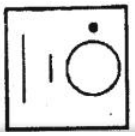
35.

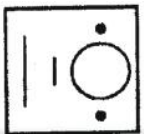


(X)

(1) 

(2) 

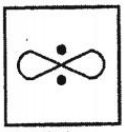
(3) 

(4) 

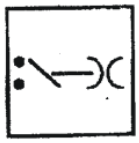
Sol. (3)

All parts are present in option (3)

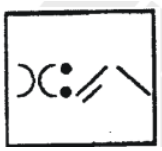
36.



(X)

(1) 

(2) 

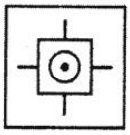
(3) 

(4) 

Sol. (1)

All parts are present in option (1)

37.



(X)

(1) 

(2) 

(3) 

(4) 

Sol. (1)

All parts are present in option (1)

38. 

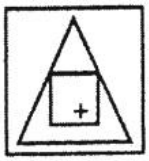
(X)

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

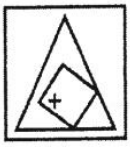
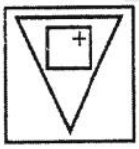
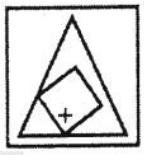
Sol. (3)

All parts are present in option (3)

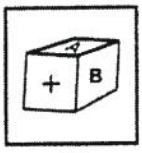
Direction : (39 to 40) : Find out how will the key figure (X) look like after rotation?

39. 

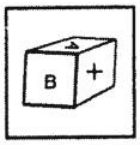
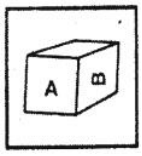
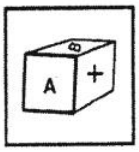
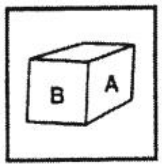
(X)

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

Sol. (3)

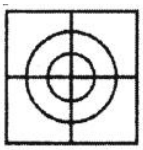
40. 

(X)

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

Sol. (3)

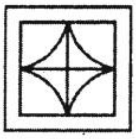
Direction : (41 to 43) Which figure is the rearrangement of the parts of the given figure ?

41. 

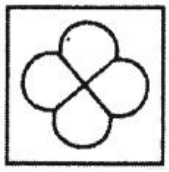
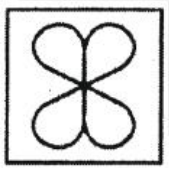
(X)

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

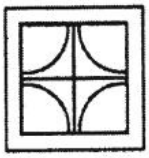
Sol. (1)

42. 

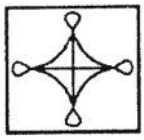
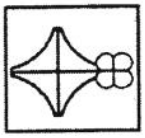
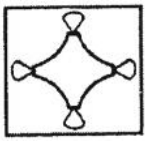
(X)

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

Sol. (1)

43. 

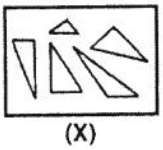
(X)

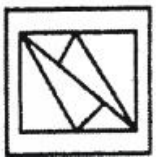
(1)  (2)  (3)  (4) 

Sol. (1)

Direction: (Q. 44 to 48) Find out which of the figures (1,2,3 and 4) can be formed from the pieces given in the figure (X)

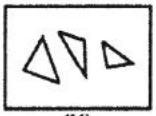
44.



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

Sol. (3)

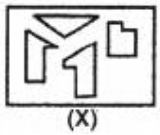
45.



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

Sol. (2)

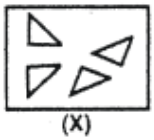
46.



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

Sol. (3)

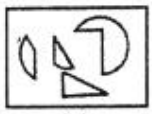
47.



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

Sol. (1)

48.



(X)

(1) 

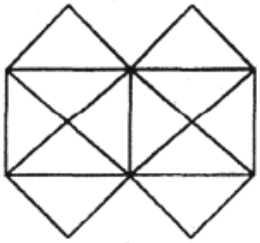
(2) 

(3) 

(4) 

Sol. (2)

Directions : (Q. 49 to 51) Study the following figure and answer the questions.



49. What is the minimum number straight lines that is needed to constructed the figure?

(1) 11 (2) 13 (3) 15 (4) 21

Sol. (2)

50. Count the number of triangle in the above figure.

(1) 22 (2) 16 (3) 20 (4) 24

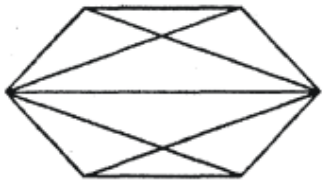
Sol. (1)

51. How many squares does the figure contain?

(1) 5 (2) 6 (3) 7 (4) 8

Sol. (3)

Direction: (Q. 52 & 53) Analyse the following figure and answer the questions.



52. Find the number of quadrilaterals.

(1) 6 (2) 7 (3) 9 (4) 10

Sol. **(Bonus)**

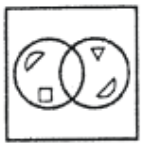
53. Find the number of Pentagons.

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

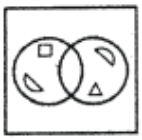
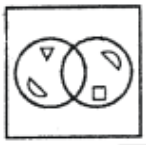
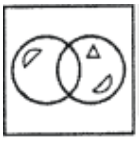
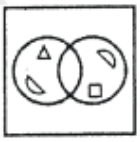
Sol. **(4)**

Direction : (Q. 54 to 58) Choose the mirror – image of the figure (X) from amongst the four alternatives 1,2,3 and 4 given along with it.

54.



(X)

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

Sol. **(2)**

55.

(X)

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

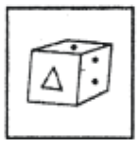
Sol. **(4)**

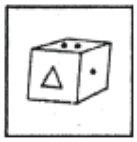
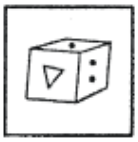
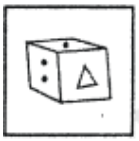
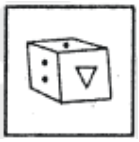
56.

(X)

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

Sol. **(2)**

57. 

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

Sol. (3)

58. 

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

Sol. (1)

59. Asha's house faces south direction. She runs ahead 10m, turns left and run 5 m. Then she turns left again and runs 15 m and them again turns left and runs 10 m. Finally she turns right and runs 5m to reach her friend' s house. What direction is Asha's friends' house facing?

(1) South (2) North (3) East (4) West

Sol. (1)

60. Mother was asked how many gifts she had in the bag. She replied that there were all dolls except six, all cars but six and all books but six. How many gifts had she in all?

(1) 36 (2) 37 (3) 18 (4) 9

Sol. (4)

Cars + Books = 6

Dools + Books = 6

Dools + Cars = 6

2 (Dolls + Cars + Boook) =18

$\therefore$ Dolls + Cars + Books = 9.

61. Which of the following diagram indicate the relation between women, mothers and parents?

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

Sol. (1)

62. In a dairy, there are 60 cows and buffalos. The number of Cows is twice that of buffalos. Buffalo X ranked seventeenth in terms of milk delivered. If there are 9 cows ahead of Buffalo X, how many buffalos are after in rank in terms of milk delivered?

(1) 10 (2) 11 (3) 12 (4) 13

Sol. (3)

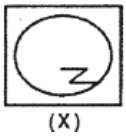
63. Amongst five friends Lata, Alka, Rani, Asha and Sadhana. Lata is older than only three of her friends. Alka is younger to Asha and Lata. Rani is older than only Sadhana. Who amongst them is the eldest**?**

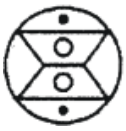
(1) Asha (2) Lata (3) Alka (4) Sadhana

Sol. (1)

Direction: (Q. 64 to 68) There is given a figure (x) followed by four figures 1,2,3 and 4 such that X is embedded in one of them. Trace out the correct alternatives.

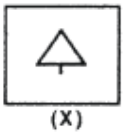
64.

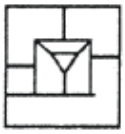


(1)  (2)  (3)  (4) 

Sol. (4)

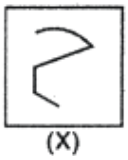
65.

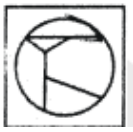


(1)  (2)  (3)  (4) 

Sol. (3)

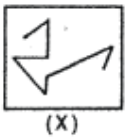
66.

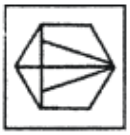


(1)  (2)  (3)  (4) 

Sol. (2)

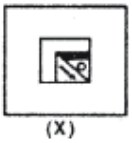
67.



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

Sol. (4)

68.

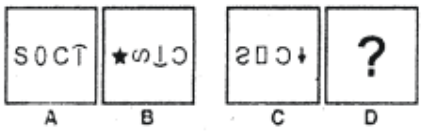


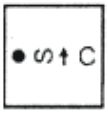
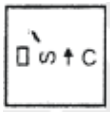
(1)  (2)  (3)  (4) 

Sol. (1)

Directions: (69 to 73) Figure 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 choosing a suitable figure (D) from the answer set.

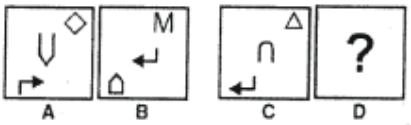
69.

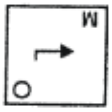


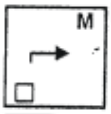
(1)  (2)  (3)  (4) 

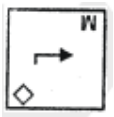
Sol. (1)

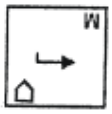
70.



(1) 

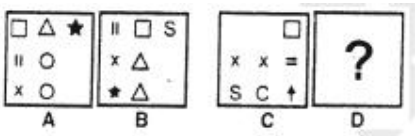
(2) 

(3) 

(4) 

Sol. (3)

71.



(1) 

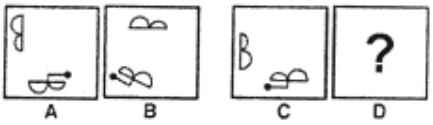
(2) 

(3) 

(4) 

Sol. (2)

72.



(1) 

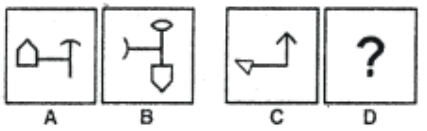
(2) 

(3) 

(4) 

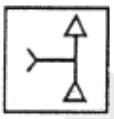
Sol. (4)

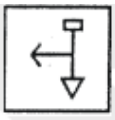
73.



(1) 

(2) 

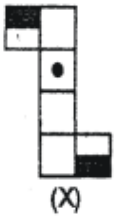
(3) 

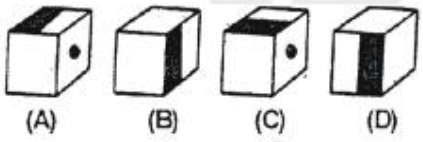
(4) 

Sol. (2)

Direction: (Q. 74 to 78) : The figure (X) given in each problem, is folded to form a box. Choose from amongst the alternatives, the boxes that are similar to the box formed.

74.

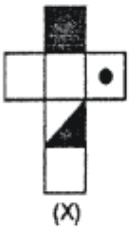


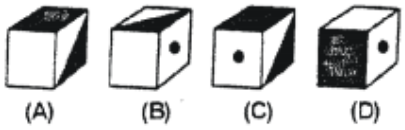


(1) A and B only (2) B and C only (3) B and D only (4) A, B, C and D

Sol. (4)

75.

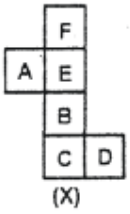


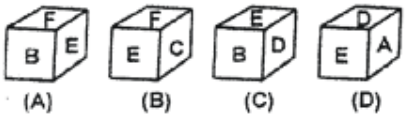


(1) A and C only (2) B, C and D only (3) B and D Only (4) C and D only

Sol. (3)

76.

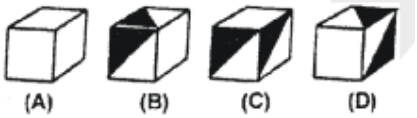




(1) A only (2) C only (3) A and C only (4) A and B only

Sol. (2)

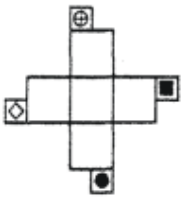
77.

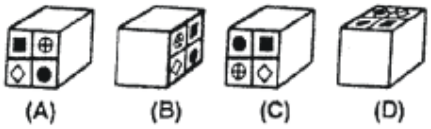


(1) A and D only (2) C and D only (3) A and B only (4) B and C only

Sol. (Bonus)

78.





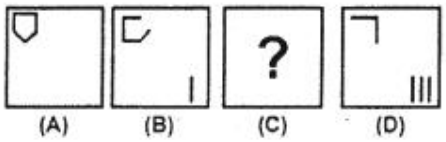
(1) A and B only (2) B Only (3) B and C only (4) A, B and D only

Sol. (2)

Directions (Q. 79 to 85) There are given a set of four figures (A, B C and D) Forming a certain series. However the figure at C is missing. Choose the figure from the given alternatives.

Problem Figures

79.

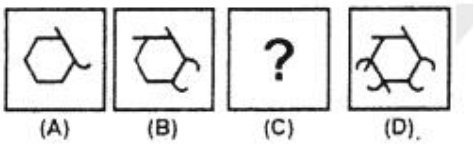


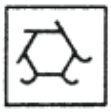
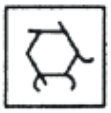
(1)  (2)  (3)  (4) 

Sol. (3)

Problem Figures

80.

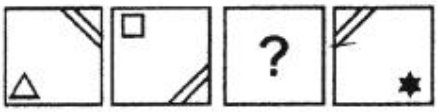


(1) 
(2) 
(3) 
(4) 

Sol. (4)

Problem Figures

81.



Answer Figures

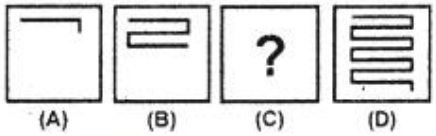
(1) 
(2) 
(3) 
(4) 

Sol. (4)

Side double line is shifting one- by one in each corner and figure like rectangle is not repeated.

Problem Figures

82.



Answer Figures

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

Sol. (1)

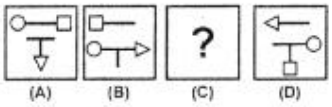
If Horizontal line

| Verticle line

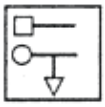
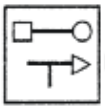
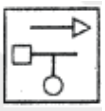
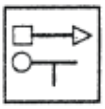
Pattern		
	1 Horizontal line	1 Verticle Line
	3 Horizontal line	2 Verticle Line
	5 Horizontal line	4 Verticle Line
	7 Horizontal line	7 Verticle Line

Problem Figures

83.



Answer Figures

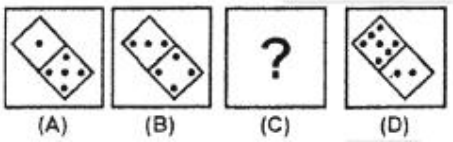
(1) 
(2) 
(3) 
(4) 

Sol. (3)

Observe the movement pattern of circle, square and triangle

Problem Figures

84.



Answer Figures

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

Sol. (4)

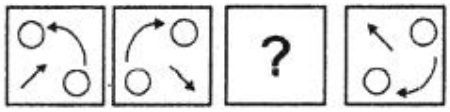
Number of dots

1,3,5,7 in upper square

5,4,3,2 in lower square.

Problem Figures

85.



Answer Figures

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

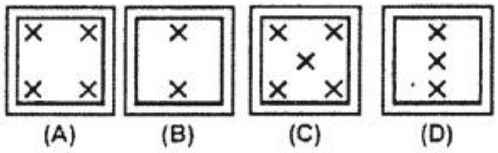
Sol. (4)

Observe the pattern.

Directions : (86 to 89) There are given four problem figures (A, B, C and D) arid four Answer figures (1,2,3 and 4). Select figure from amongst the answer figures which will continue the same series as given in the problem figures.

Problem Figures

86.



Answer Figure

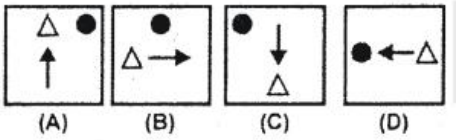
(1) 
(2) 
(3) 
(4) 

Sol. (2)

Observe the pattern.

Problem Figures

87.



Answer Figures

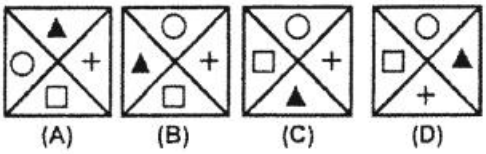
(1) 
(2) 
(3) 
(4) 

Sol. (1)

Aerrow is rotating in clockwise direction and observe the position of circles cd triangles.

Problem Figures

88.



Answer Figures

(1) 

(2) 

(3) 

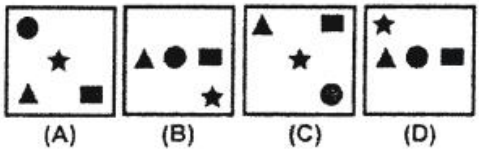
(4) 

Sol. (1)

Observe position of triangle and rectangle we get option (1)

Problem Figures

89.



Answer Figures

(1) 

(2) 

(3) 

(4) 

Sol. (3)

Observe the position of circle start which moves diagonally.

90. Find the missing number in series 2,10,26,50, ……., 122.

(1) 81 (2) 82 (3) 80 (4) 84

Sol. (2)

$1^2 + 1 = 2$

$3^2 + 1 = 10$

$5^2 + 1 = 26$

$7^2 + 1 = 50$

$9^2 + 1 = 82$

Directions : (Q. 91 to 94) In the questions, a series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

91. 6,24,60,120, ?

(1) 180 (2) 210 (3) 240 (4) 360

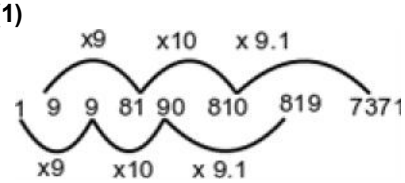
Sol. **(2)**

$2^3 - 2 = 6$
$3^3 - 3 = 24$
$4^3 - 4 = 60$
$5^3 - 5 = 120$
$6^3 - 6 = 210$

92. 1,9,9,81,90,810,819, ?

(1) 7371 (2) 900 (3) 8100 (4) 1638

Sol. **(1)**



93. 2,3,6,18,108, ?

(1) 1944 (2) 1658 (3) 648 (4) 1008

Sol. **(1)**

$2 \times 3 = 6$
$3 \times 6 = 18$
$18 \times 6 = 108$
$108 \times 18 = 1944$
Product of Previous two terms

94. 1,2,3,4,5,7,7,?,?

(1) 11,13 (2) 10,11 (3) 8,9 (4) 9,11

Sol. **(1)**

Direction : (Q. 95 to 98) Find the wrong number in the following series.

95. 24576,6144,1536,386,96,24

(1) 96 (2) 386 (3) 1536 (4) 6144

Sol. **(2)**

$24576 \div 6144 = 4$
$6144 \div 1536 = 4$
$1536 \div 386 \neq 4$
So 386 is wrong.

96. 3,4,10,32,136,658

(1) 685 (2) 10 (3) 136 (4) 32

Sol. **(4)**

3,4,10,32,136,685
$3 \times 1 + 1 = 4$
$4 \times 2 + 2 = 10$
$10 \times 3 + 3 = 33$
So 32 is wrong.

97. 3,8,13,24,42,70

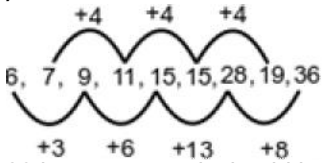
(1) 13 (2) 24 (3) 42 (4) 70

Sol. (3)

98. 6,7,9,11,15,15,28,19,36

(1) 15,1 (2) 28 (3) 19 (4) 70

Sol. (2)



28 is wrong term it should be 24

99. Shitin remembers that his mother's birthday is after 17th April but before twenty first April, where as his father remembers that his wife's birthday is after 19th April but before 24th April. Which of the following days in April is definitely his mother's birthday?

(1) 19th April (2) 20th April

(3) 21th April (4) Both Statements are not sufficient

Sol. (2)

20th April is the only day which coes after 19th April and before 21st April.

100. Day after tomorrow is my birthday. On the same day next week falls 'Holi'. Today is Monday. What will be the day after 'Holi'?

(1) Thursday (2) Friday (3) Wednesday (4) Saturday.

Sol. (1)

Today Birthday

Monday – Tuesday – Wednesday

So Holi is on Wednesday

And Next day is Thursday.