

NATIONAL TALENT SEARCH EXAMINATION (FIRST LEVEL) 2018

MENTAL ABILITY TEST (For Students of Class X)

Date : 05/11/2017

Time : 45 Minutes

Max. Marks : 50

(For Blind Candidates Time : 60 Minutes)

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you open question booklet.

1. Answers are to be given on a **separate answer sheet (OMR sheet.)**
2. Please write your **Roll Number** as allotted to you in the admission card very clearly on **the test-booklet** and darken the appropriate circles on the **answer sheet** as per instructions given.
3. There are 50 questions in this test. All are compulsory.
4. Please follow the instructions given on the answer sheet for marking the answers.
5. If you do not know the answer to any question, do not waste time on it and pass on to the next one. Time permitting, you can come back to the questions, which you have left in the first instance and attempt them.
6. Since the time allotted for this question paper is very limited, you should make the best use of it by not spending too much time on any one question.
7. **Rough work** can be done **on the given Blank Pages at the back of the booklet** but not on the answer sheet/loose paper.
8. Every correct answer will be awarded one mark. There will be no negative marking.
9. **Please return the Answer sheet (OMR) only to the invigilator after the test.**
10. Hindi version of the question paper will be considered as final in case of any dispute arising out of variation in translated version.



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Direction (1 – 4) : In each of the questions 1 to 4 a letter series is given with one term missing shown by question mark (?). This term is one of four alternatives given under it. Find the right alternative.

1. G, K, O, S, ?

- (1) U (2) W (3) V (4) X

Ans. (2)

Sol.
$$\begin{array}{ccccccc} G & , & K & , & O & , & S & , & W \\ 7 & & 11 & & 15 & & 19 & & 23 \\ & +4 & & +4 & & +4 & & +4 & \end{array}$$

2. DX, HT, KQ, OM, ?

- (1) SJ (2) RK (3) QJ (4) RJ

Ans. (4)

Sol.
$$\begin{array}{ccccccc} D & X & , & H & T & , & K & Q & , & O & M & , & R & J \\ 4 & 24 & & 8 & 20 & & 11 & 17 & & 15 & 13 & & 18 & 10 \\ & +4 & & +3 & & +4 & & +3 & \end{array}$$

3. H, D, A, Y, X, ?

- (1) X (2) W (3) T (4) V

Ans. (1)

Sol.
$$\begin{array}{ccccccc} H & , & D & , & A & , & Y & , & X & , & X \\ 8 & & 4 & & 1 & & 25 & & 24 & & 24 \\ & -4 & & -3 & & -2 & & -1 & & -0 & \end{array}$$

4. KLE, IND, GPC, ?, CTA.

- (1) DRB (2) BSE (3) ERB (4) ECR

Ans. (3)

Sol.
$$\begin{array}{ccccccc} K & L & E & , & I & N & D & , & G & P & C & , & E & R & B & , & C & T & A \\ 11 & 12 & 5 & & 9 & 14 & 4 & & 7 & 16 & 3 & & 5 & 18 & 2 & & 3 & 20 & 1 \\ & -2 & & -2 & & -2 & & -2 & \end{array}$$

Direction (5 – 8) : In each of the questions 5 to 8 a number series is given with one term missing shown by question mark (?). This term is one of the four alternatives given under it. Find the right alternative.

5. 4, 9, 25, ?, 121, 169.

- (1) 36 (2) 49 (3) 64 (4) 81

Ans. (2)

Sol. 4, 9, 25, 49, 121, 169

$2^2, 3^2, 5^2, 7^2, 11^2, 13^2$

(Square of prime number)

6. 1, 3, 7, 13, 21, ?, 43, 57.

- (1) 31 (2) 29 (3) 30 (4) 32

Ans. (1)

Sol.
$$\begin{array}{ccccccc} 1 & , & 3 & , & 7 & , & 13 & , & 21 & , & 31 & , & 43 & , & 57 \\ & +2 & & +4 & & +6 & & +8 & & +10 & & +12 & & +14 \end{array}$$

7. 5, 3, 10, 8, 17, 15, ?, 24.

- (1) 25 (2) 23 (3) 26 (4) 27

Ans. (3)

Sol.
$$\begin{array}{ccccccc} 5 & , & 3 & , & 10 & , & 8 & , & 17 & , & 15 & , & 26 & , & 24 \\ & -2 & & +7 & & -2 & & +9 & & -2 & & +11 & & -2 \end{array}$$

8. 97, 77, 59, ?, 29, 17.
 (1) 34 (2) 39 (3) 37 (4) 43
 Ans. (4)

Sol.

$$\begin{array}{cccccc}
 97 & , & 77 & , & 59 & , & \underline{43} & , & 29 & , & 17 \\
 \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow \\
 10^2-3 & & 9^2-4 & & 8^2-5 & & 7^2-6 & & 6^2-7 & & 5^2-8 \\
 & & & & & & = 49-6 & & & & \\
 & & & & & & = 43 & & & &
 \end{array}$$

9. In the given question there are two statements and they have two conclusions I and II. You have to take the given statements to be true even if they seem to vary to commonly known facts. Read the conclusions and decide which of the given conclusions logically follows from the two given statements even disregarding commonly known facts.

Statements :

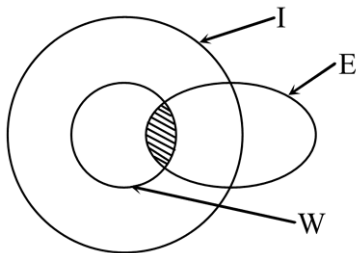
- (i) : All women are intelligent.
 (ii) : Some women are educated.

Conclusions :

- (I) : All educated women are intelligent.
 (II) : All intelligent are women.

- (1) Only conclusion I is true (2) Only conclusion II is true
 (3) Both conclusions I and II are true (4) Neither conclusion I nor conclusion II is true.

Ans. (1)



Sol.

Conclusion – 1 \Rightarrow All educated women are intelligent (True)

Conclusion – 2 \Rightarrow All intelligent are women (False)

10. In the given question, a statement is followed by two arguments I and II. You have to decide which of the following arguments is 'strong' or 'weak'.

Statements :

Continuous and comprehensive evaluation system should be implemented at school level.

Arguments :

- (I) Yes, it helps in all-round development of the child.
 (II) No, it puts more burden on teachers.

- (1) Arguments I and II both are strong (2) Arguments I and II both are weak
 (3) Argument I is strong and II is weak (4) Argument I is weak and II is strong

Ans. (3)

Sol. **Statement \Rightarrow**
 continuous & comprehensive evaluation system should be implement at school level

Argument – 1 \Rightarrow

Yes, it helps in all round development of child \rightarrow strong

Argument – 2 \Rightarrow

No, it puts more burden on teacher \rightarrow weak

11. In the question given below, a statement is followed by a reason. Choose correct option for them.

Statement :

Narmada river flows to west.

Reason :

Narmada river falls in the Bay of Bengal.

- (1) Statement and reason both are true (2) Statement is true but reason is false
(3) Statement is false but reason is true (4) Statement and reason both are false

Ans. (2)

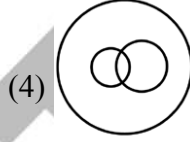
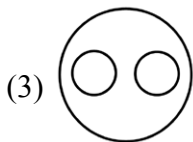
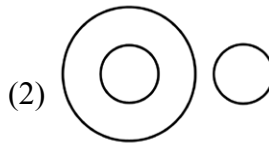
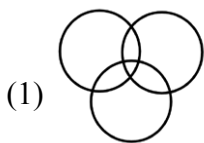
Sol. **Statement** \Rightarrow Narmada river flow to west (true)

Reason \Rightarrow Narmada river falls in Bay of Bengal (False)

\Rightarrow (Narmada river falls in Arabian sea)

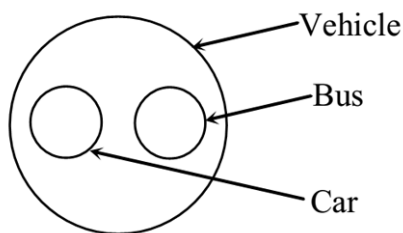
\Rightarrow Statement is true but reason is false

12. Which of the following Venn diagrams correctly represents Bus, Car and Vehicle ?

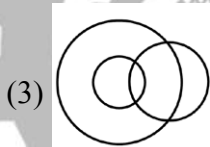
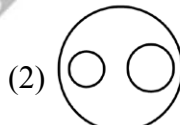
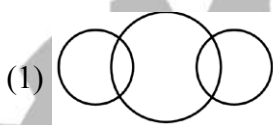


Ans. (3)

Sol.

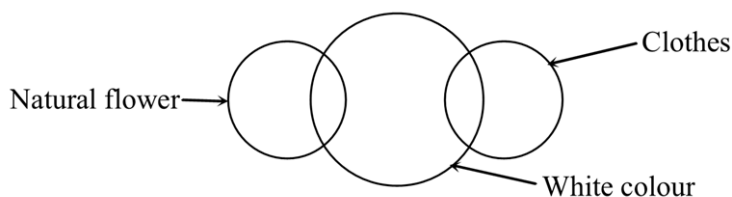


13. Which of the following Venn diagrams correctly represents white colour, clothes and natural flowers ?

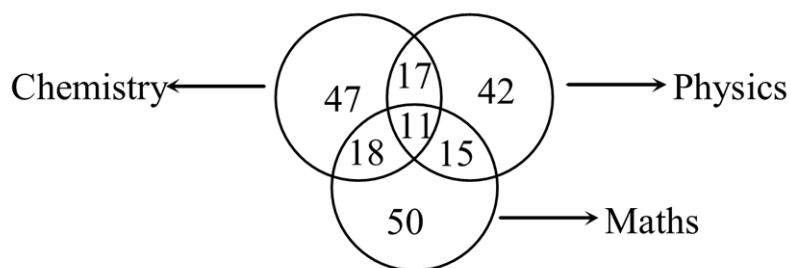


Ans. (1)

Sol. White colour, clothes and natural flowers



Direction (14 – 15) : Out of 500 students, the following Venn diagram represents the number of students who got Distinction in Physics, Chemistry and Maths subjects. Answer Q.14 and Q.15 based on Venn diagram.



14. How many students got Distinction in both Physics and Maths subjects, when the students who got Distinction in Chemistry subjects is not included ?

(1) 26 (2) 15 (3) 28 (4) 24

Ans. (2)

Sol. Who got distinction in maths & physics but not in chemistry = 15

15. What is the percentage of students who got Distinction in all the three subjects ?

(1) 28% (2) 35% (3) 38% (4) 40%

Ans. (4)

Sol. % of student who got distinction

$$= \frac{\text{Total student who got distinction}}{\text{Total students}} \times 100$$

$$= \frac{200}{500} \times 100 = 40\%$$

Direction (16 – 17) : In questions 16 and 17 three alternatives are alike in a certain way but the rest one is different. Find out the odd one and write correct answer.

16. (1) Afghanistan (2) Kabul (3) Spain (4) Iraq

Ans. (2)

Sol. Afghanistan, Spain, Iraq.

Kabul is odd one out (Because beside Kabul all are countries & Kabul is a capital)

17. (1) 1 (2) 729 (3) 144 (4) 64

Ans. (3)

Sol. (1) $1 \rightarrow (1)^3$

(2) $729 \rightarrow (9)^3$

(4) $64 \rightarrow (4)^3$

Option 1, 2, & 4 are cube of a natural number but 144 is not

18. 'A + B' means A is the son of B. 'A – B' means A is the wife of B. Then what does P + R – Q means ?

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

Ans. (1)

$$P + R - Q$$

$$P + R \rightarrow P \text{ is son of R}$$

$$R - Q \rightarrow R \text{ is wife of Q}$$

$$R^{\ominus} \longleftrightarrow Q^{\oplus}$$

$$\begin{array}{c} | \\ P^{\oplus} \end{array}$$

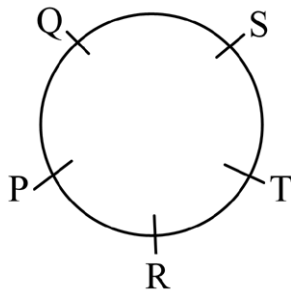
Q is father of P

Sol.

19. P, Q, R, S and T are sitting around a circular table facing centre to the table. R is just the right of P and is second to the left of S. T is not between P and S. who is second to the left of R ?

(1) Q (2) S (3) T (4) P

Ans. (1)



Sol.

Second to left of R \rightarrow Q

20. If ' $<$ ' means ' $-$ ', ' $>$ ' means ' $+$ ', ' $=$ ' means ' \times ' and ' $\$$ ' means ' \div ', then what will be the value of $27 > 81 \$ 9 < 6$?

(1) 6 (2) 36 (3) 30 (4) 54

Ans. (3)

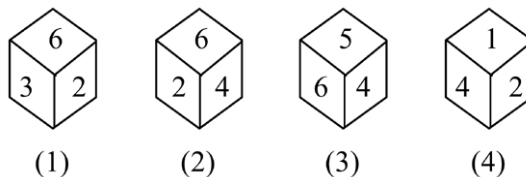
Sol. $27 > 81 \$ 9 < 6$

$$27 + 81 \div 9 - 6$$

$$27 + 9 - 6$$

$$27 + 3 = 30$$

21. The four different positions of the dice are given below. Which number is on the face opposite to 6 ?



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

Ans. (1)

Sol. According to given figure
Adjacent faces to 6 are 2, 3, 4, 5
 \therefore face opposite to 6 is 1

22. All faces of a solid cube of edge 8 cm are coloured. It is divided equally in the cubes of edge 2 cm. How many cubes will have all faces coloured ?

(1) 1 (2) 0 (3) 8 (4) 4

Ans. (2)

Sol. Number of cubes with all faces are coloured = 0

23. In a coded language the word 'SOLID' is written as 'HLORW', then in the same code language 'GAS' will be written as

(1) THZ (2) TYI (3) TZH (4) ZHT

Ans. (3)

Sol. SOLID \rightarrow HLORW (opposite letter coding)
GAS \rightarrow TZH

24. If in a certain code I = 9 and GIRL = 46, then BOY = ?

(1) 37 (2) 39 (3) 24 (4) 42

Ans. (4)

Sol. I \rightarrow 9

$$\Rightarrow \text{GIRL} = 46$$

$$7 + 9 + 18 + 12 = 46$$

$$\Rightarrow \text{BOY}$$

$$\Rightarrow 2 + 15 + 25 = 42$$

25. If Ranjana is the sister of the son of Sohan's son, how is Ranjana related to Sohan ?

- (1) Daughter (2) Sister (3) Granddaughter (4) Uncle

Ans. (3)

Sohan

|

Son

|

Son—Sister—Ranjana

Sol.

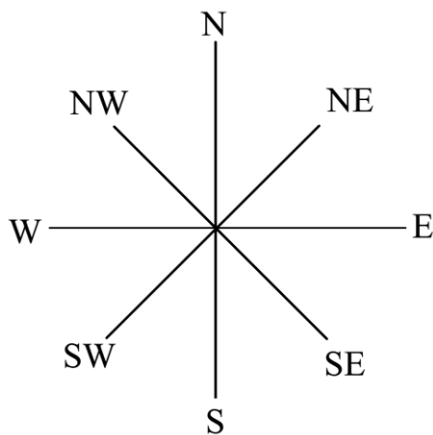
Ranjana is granddaughter of Sohan

26. If North direction is called East and South direction is called West, then what will be called North-East direction ?

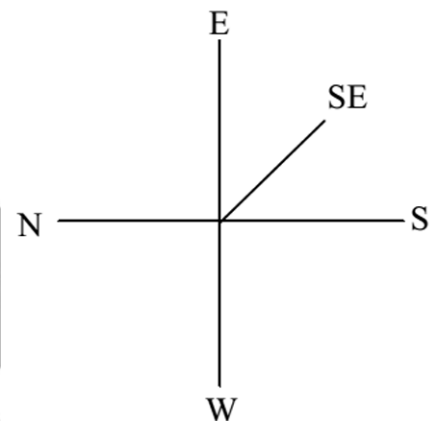
- (1) North-East (2) East-South (3) West-South (4) North-West

Ans. (2)

Sol. **Original Directions :**



According to question :



North east is called south east

27. How many pairs of successive numbers have a difference of 2 in the following sequence ?

6, 4, 1, 2, 2, 8, 7, 4, 2, 7, 5, 3, 8, 6, 2, 1, 7, 0, 4, 1, 3, 2, 8, 6

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

Ans. (4)

Sol.

6, 4, 1, 2, 2, 8, 7, 4, 2, 7, 5, 3, 8, 6, 2, 1, 7, 0, 4, 1, 3, 2, 8, 6

28. Arrange the following in a meaningful sequence :

A – Medicine

B – Diagnosis

C – Doctor

D – Fever E-Recovery

(1) D C A B E

(2) D E C A B

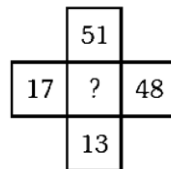
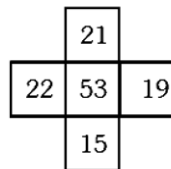
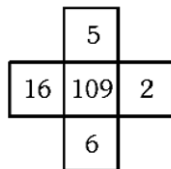
(3) D C B A E

(4) C D B A E

Ans. (3)

Sol. Fever – Doctor – Diagnosis – Medicine – Recovery

29. Find the missing number (?) from the given alternatives, when same rule is applied in all three situations.



(1) 7

(2) 25

(3) 49

(4) 129

Ans. (2)

Sol. $(17 - 13)^2 + (51 - 48)^2$

$(4)^2 + (3)^2 = 25$

30. As 'Part' is related to 'whole', in the same way an 'Arc' is related to which of the following ?

(1) Rectangle

(2) Circle

(3) Triangle

(4) Square

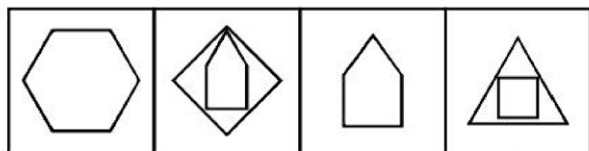
Ans. (2)

Sol. Part : Whole :: Arc : Circle

First quantity is the part of second quantity.

Direction (31 – 34) : In questions 31 to 34 there are two sets of figures. One set contains problem-figures while the other has answer-figures. There is a sequence according to which the problem-figures are arranged. You have to select an answer-figure which can be added in sequence with the problem-figures. Choose the correct figure.

31. Problem figures



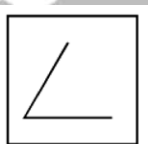
(A)

(B)

(C)

(D)

Answer figures



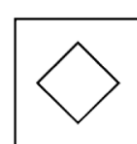
(1)



(2)



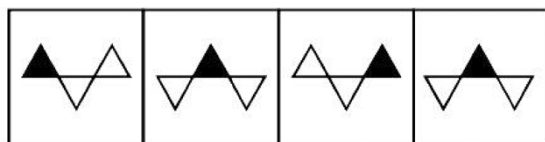
(3)



(4)

Ans. (4)

32. Problem figures



(A)

(B)

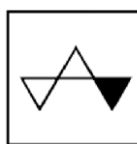
(C)

(D)

Answer figures



(1)



(2)



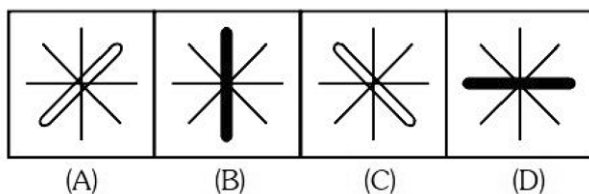
(3)



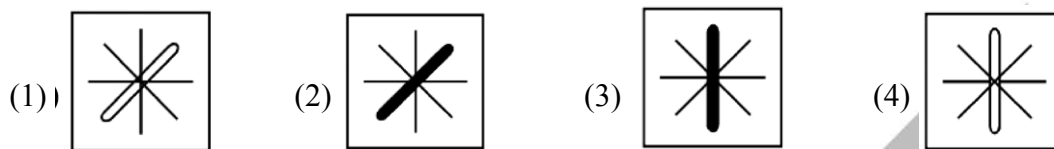
(4)

Ans. (3)

33. Problem figures

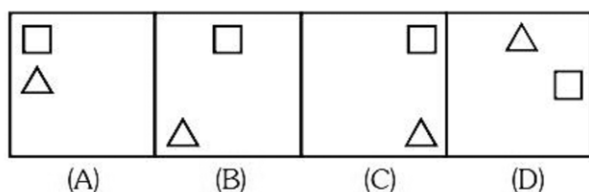


Answer figures



Ans. (1)

34. Problem figures



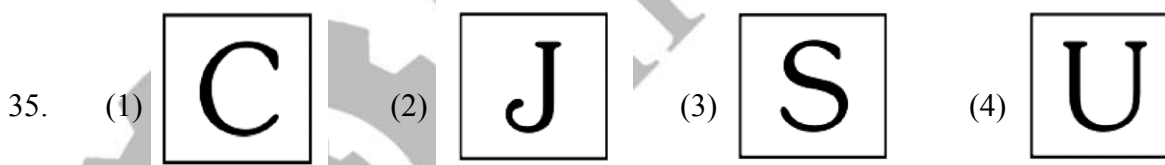
Answer figures



Ans. (4)

Sol. Δ is moving (0.5), (1), (1.5) than (2) and square is moving (0.5) clockwise

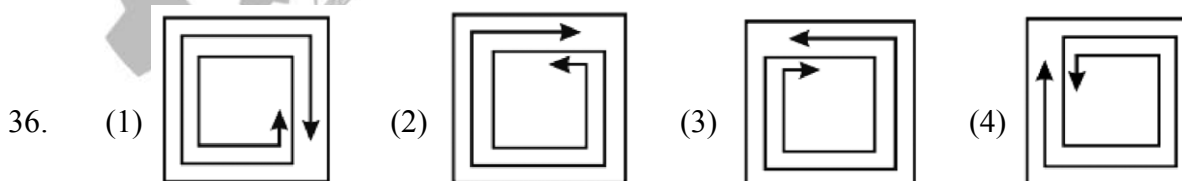
Direction (35 – 38) : In questions 35 to 38 there are four figures given in each. One of these does not correlate with the rest of the figures. Select that odd figure.



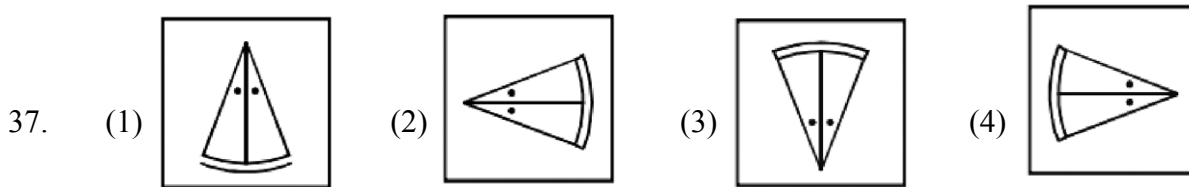
Ans. (2)

Sol. C-3, J-10, S-19, U-21

Only J is at even no.



Ans. (3)



Ans. (1)



Ans. (4)

Sol. Difference between two shaded parts is 2 triangles. In rest all this is 3 triangles.

Direction (39 – 40) : In questions 39 and 40 find the correct mirror image of the given figure, when mirror is placed on right side of the figure.

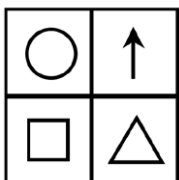
39. STOP



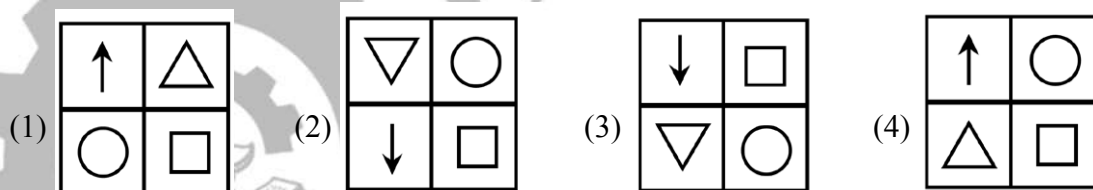
Ans. (2)



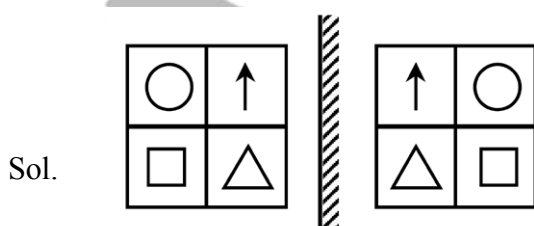
40. Question Image



Answer Image



Ans. (4)

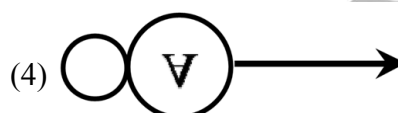
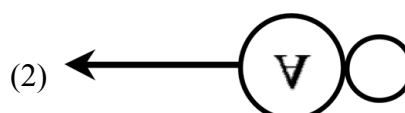
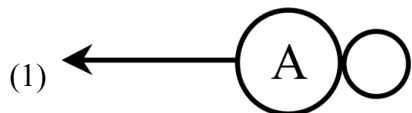


Direction (41 – 42) : In questions 41 and 42 select the correct water image of the given figure.

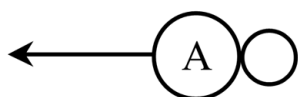
41. Question figure



Answer figure



Ans. (2)



Sol.



42. Question figure

X 7 W 4

Answer figure

(1) XΔM†

(2) X7M 4

(3) XΔM†

(4) XLM†

Ans. (1)

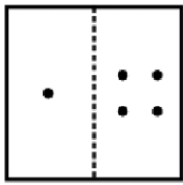
X 7 W 4

Sol.

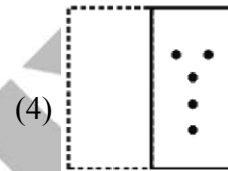
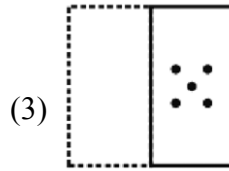
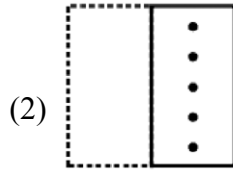
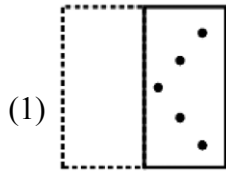


Direction (43 – 44) : A square transparent sheet with a pattern is folded along the dotted line. Which of the following answer figure is formed after folding the transparent sheet ?

43. Transparent Sheet

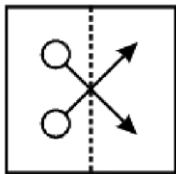


Answer-figures

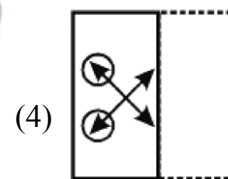
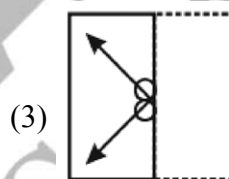
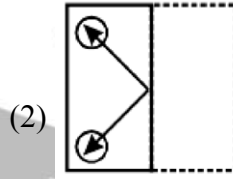
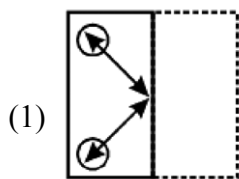


Ans. (3)

44. Transparent Sheet



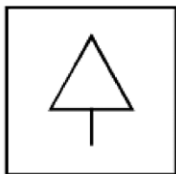
Answer-figures



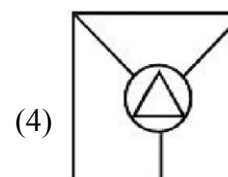
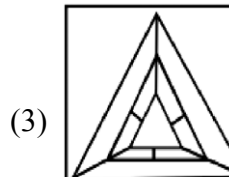
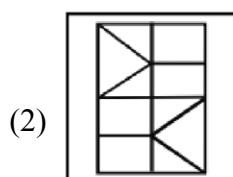
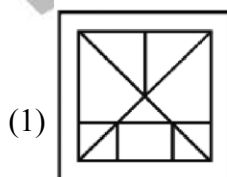
Ans. (2)

Direction (45 – 46) : In the following figures there is a question figure, which is embedded in one of the answer-figures. Trace out the correct figure-

45. Question-figure

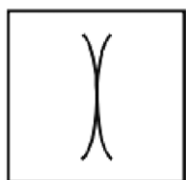


Answer-figures

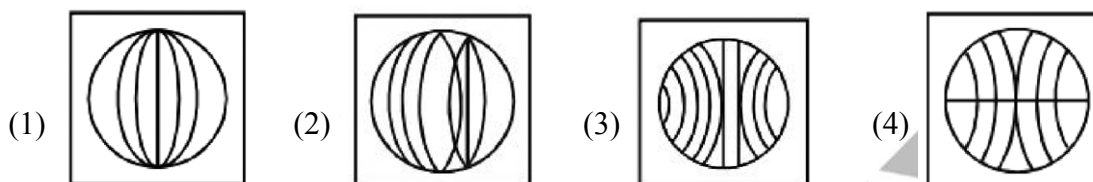


Ans. (3)

46. Question-figure

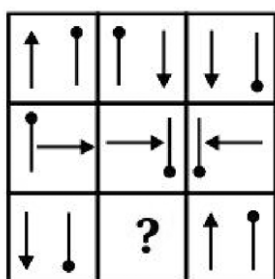


Answer-figures



Ans. (4)

47. Which of the answer-figures completes the given matrix figure ?



Ans. (1)

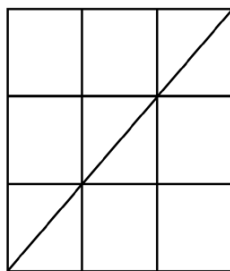
48. If $20 * 3 = 180$ and $4 * 5 = 100$, then what is the value of $7 * 7$?

- (1) 21 (2) 49 (3) 343 (4) 7

Ans. (3)

Sol. $(7) \times (7)^2 = 7 \times 49 = 343$

49. Determine the number of squares in the following figure :



(1) 14

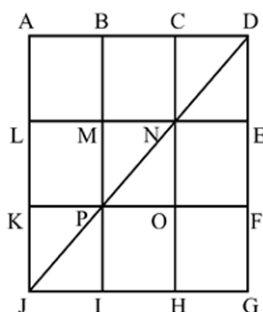
(2) 9

(3) 10

(4) 16

Ans. (1)

Sol. Squares are

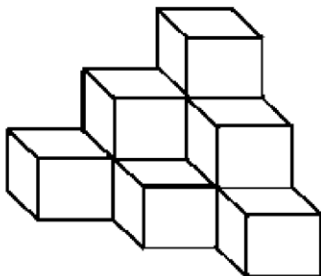


ABML, BCNM, CDEN, LMPK, MNOP, NEFO, KPIJ

POHI, OFGH, ADGJ, ACOK, BDFP, LNHJ, MEGI

Total 14 squares are there

50. How many cubes are laid on a plane as shown in the following figure ?



(1) 14

(2) 12

(3) 10

(4) 8

Ans. (3)

Sol. 10 squares are given