State Level National Talent Search Examination – 2016
Mental Ability Test

1. ab - cc - abb - cc - bbc - c
   (1) abcca   (2) bccba   (3) bcaba   (4) bccac
   Answer (4)
   Solution
   ab – cc – abb – cc – bbc – c
      b   c   c   a   c

2. - xyx - xxy - xxx - xxy - y
   (1) xyxyx   (2) xxyyy   (3) xxyxy   (4) yyyyx
   Answer (3)
   Solution
   - xy x – x xy – xxx – xxy - y
   x   x   y   x   y

3. M – MN – MNNN – NNN – MNN
   (1) NNMN   (2) MMNN   (3) NNNN   (4) MNMN
   Answer (1)
   Solution
   M – MN – MNN – MNN – MNN

4. Ecology is related to environment in the same way as Histology is related to
   (1) Hormones   (2) Tissues   (3) Bones   (4) Histology
   Answer (2)
   Solution
   Histology y $\rightarrow$ study of tissues

   Questions 5- 6: Find the missing number in the given series

5. 17, 33, 70, 131, 278?
   (1) 581   (2) 531   (3) 541   (4) 575
   Answer (2)
   Solution
   17, 33, 70, 131, 278
   $17 \rightarrow 17 \times 2 - 1^2 = 34 - 1 = 33$
   $33 \rightarrow 33 \times 2 + 2^2 = 66 + 4 = 70$
   $70 \rightarrow 70 \times 2 - 3^2 = 131$
   $131 \rightarrow 131 \times 2 + 4^2 = 278 \therefore 2 \times 278 - 5^2 = 531$

6. 5, 25, 61, 113, 181?
   (1) 265   (2) 375   (3) 275   (4) 365
   Answer (1)
   Solution
   5, 25, 61, 113, 181?
    ∨ ∨ ∨   ∨
   20 36 52 16
   $\therefore$ 68 16 = 81
   181 + 84 = 265
   $\therefore$ 265

Questions 7 – 9

7. If ROYAL is coded as 18, 4, 25, 1, 12. What is the code for LIVES?
(1) 12, 4, 23, 5, 8   (2) 12, 2, 19, 22, 1   (3) 12, 4, 1, 15, 22   (4) 12, 3, 22, 2, 19
Answer (4)
Solution
ROYAL $\rightarrow$ 18 4   25   1   12
Lt AEIOU $\rightarrow$ 123   45   (vowels)
$\therefore$ YEAR $\rightarrow$ 25 2   1   18
Vowels
R $\rightarrow$ 18   Lt A $\rightarrow$ 1 $\therefore$ L $\rightarrow$ 12
O $\rightarrow$ 4   E $\rightarrow$ 2   I $\rightarrow$ 3
Y $\rightarrow$ 25   I $\rightarrow$ 3   V $\rightarrow$ 22
A $\rightarrow$ 1   O $\rightarrow$ 4   E $\rightarrow$ 2
L $\rightarrow$ 12   U $\rightarrow$ 5   S $\rightarrow$ 19
$\therefore$ 12, 3, 22, 2, 19

8. If DIVE is coded as 9, 19, 45, 11. What is the code for YEAR?
(1) 51, 11, 3, 37   (2) 25, 11, 5, 37   (3) 51, 11, 5, 36   (4) 25, 11, 3, 36
Answer (1)
Solution
D = 4 $\rightarrow$ 2x 4 + 1 = 9 $\therefore$ Y = 25 $\rightarrow$ 2x 25 + 1 = 51
1 = 9   = 2 x 9 + 1 = 19   E= 5 $\rightarrow$ 2x 5 + 1 =11
V = 22 = 2 x 22 + 1 = 45   A = 1 $\rightarrow$2x + 1 +=3
E = 5   = 2 x 5 + 11 = 11   R = 18 $\rightarrow$ 2 x 18 + 1 = 37
                                                              51, 11, 3, 37

9. If POCKET is coded as JKWOUF, what is the code word for BEAUTY?
(1) XUYEFA   (2) YXZFGA   (3) YTZGVB   (4) UYXAFE
Answer (1)
Solution
POCKET $\rightarrow$ JKWOUF   BEAUTY =?
ic P $\rightarrow$ 16 $\rightarrow$ 26 – 16 = 10 $\rightarrow$ J $\therefore$ B $\rightarrow$ 2 $\rightarrow$ 26 – 2 = 24 $\rightarrow$ X
    O $\rightarrow$ 15 $\rightarrow$ 26 – 15 = 11 $\rightarrow$ K   E $\rightarrow$ 5 $\rightarrow$ 26 – 5 == 21 $\rightarrow$ U
    C $\rightarrow$ 3 $\rightarrow$ 26 – 3 = 23 $\rightarrow$ W   A $\rightarrow$ 1 $\rightarrow$ 25 – 1 = 25 $\rightarrow$ Y
    K $\rightarrow$ 11 $\rightarrow$ 26 – 11 == 15 $\rightarrow$ O   T $\rightarrow$ 20 $\rightarrow$ 26 – 20 = 6 $\rightarrow$ R
    T $\rightarrow$ 20 $\rightarrow$ 26 – 20 = 6 $\rightarrow$F   y – 25 $\rightarrow$ 26 – 25 = 1 $\rightarrow$ A

10. In Vinod's bag, except six books all remaining books all remaining books are English books and except six books all remaining books are Malayalam books. Then totally how many books are there in Vinod's bag?
(1) 9   (2) 10   (3) 15   (4) 12
Answer (1)
Solution
Lt Books are Mt, Mt, Mt, Eg, Eg, E, Mr, Mr, Mr $\therefore$ Total no of Books = 9
In there Except 6, Remaining are Maths
      "   "   "   English
                              Malayalam

Questions 11 – 14: Read the following information and answer the question 11 – 14 based on it
(i) The length, breadth and height of a rectangular piece of wood are 4 cm, 3 cm are 5 cm respectively
(ii) Opposite sides of 5 cm x 4 cm are coloured in white
(iii) Opposite sides of 4 cm x 3 cm are coloured in black
(iv) Rest 5 cm x3 cm are coloured in yellow in both sides
(v) Now the places are cut in such a way that a cube 1 cm x 1 cm x 1cm will be made
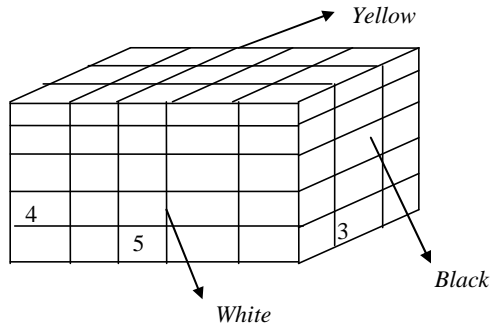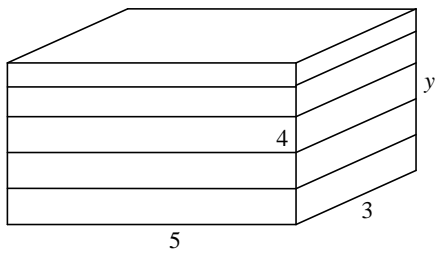
11. How many cubes shall have only one colour?
(1) 20   (2) 22   (3) 18   (4) 16
Answer (2)
Solution
Cubes that have only our colour = 12 + 4 + 6 = 22

12. How many cubes have all the three colours?
(1) 10   (2) 12   (3) 8   (4) 6
Answer (3)
Solution
Cube that have three colour = 8

13. How many cubes shall not have any colour?
(1) 6   (2) 8   (3) 10   (4) 12
Answer (1)
Solution
Cube that have three on colour 60 – (8 + 24 + 22) = 6
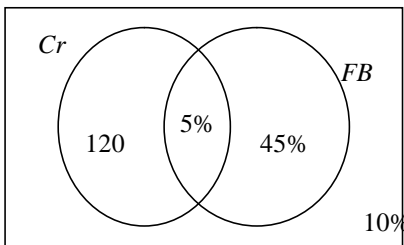
14. How many cubes shall have only two colours white and yellow in their tow sides?
(1) 10   (2) 14   (3) 16   (4) 12
Answer (4)
Solution
Cube that one white are yellow = 12

Questions 15 – 17: In a region, it was observed that 120 people liked only cricket 45% of the people liked only football 5% of the people liked both cricket and football. 10% of the people liked neither cricket nor football

ie 100% - (5% + 45% + 10%) = 100% - 60%
                                        = 40%
40% of total = 120
        Total = 300

15. How many people like exactly one game?
(1) 255   (2) 180   (3) 165   (4) 170
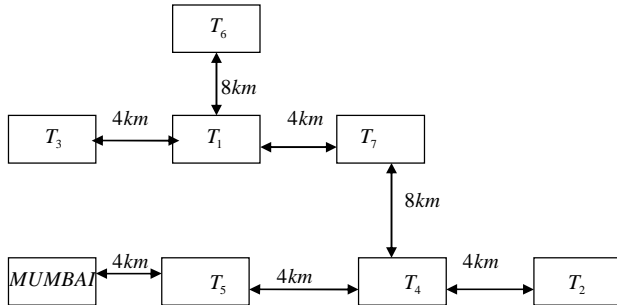**Answer (1)**
Solution
Exactly are same = 120 + 45% of 300
                = 120 + 135
                = 255

16. How many people do not like any of the two games?
    (1) 10   (2) 20   (3) 30   (4) 40

    Answer (3)

    Solution

    Do not like any same = 10T of total
                  = 10% of 300
                  = 30

17. How many people like only football?
    (1) 100   (2) 135   (3) 145   (4) 155

    Answer (2)

    Solution

    Only foot ball = 45% = $\dfrac{45}{100}$ x 300 = 135

Questions 18 – 19: Given below is a series of letters, numbers and symbols. Study the series carefully and answer the questions $A\triangle\varnothing B3C8F\sqcup KW\#*6N5*\Uparrow PA\triangle7B45\sqcup Q6\Uparrow B\sqcup$

L = A, B, C, F, K, W, N, P, Q = 9

18. What is the ratio between the letters and numbers in the series? If a letter or number has been used more then once, it is to be counted as only
    (1) 2: 1   (2) 5: 3   (3) 4: 3   (4) 3: 2

    Answer (4)

    Solution

    Number = 3, 8, 6, 5, 7, 4 = 6
    9: 6= 3: 2

19. How many letters have symbols on their left as well as on their right?
    (1) 1   (2) 2   (3) 3   (4) 4

    Answer (1)

    Solution

    Conceptual

Questions 20 – 21: Which of the following will come in the position of (?)

20. 4A, 10D, 22G, 46J, 94M?
    (1) 168N   (2) 128P   (3) 190P   (4) 156L

    Answer (3)

    Solution

    4A, 10D, 224, 465, 94M
    4, 10, 22, 46, 94   A, D, G, J, M
    4x2 + 2 = 10   1 4 7 10 13
    10x 2 x 2 = 22   ∴ 13 + 3 = 16
    22x 2 + 2 = 46   = P
    46 x 2 + 2 =94
    94 x 2 + 2 = 190   ∴ Answer = 190P

21. 2Z57Y714X923W1134V13?
    (1) 45U14   (2) 47U15   (3) 27W24   (4) 47V14

    Answer (2)

    Solution

    2Z5, 7Y7, 14 x 9, 23W11, 34V13

    2 5 = 9   5   Z
    7 + 9 = 14   7   Y
    14 + 9 = 23   9   X
    23 + 11 = 34   11   W
    34 + 13 = 47   13   V
                     15   U
    ∴ 47U15

Questions 22 -24: Seven towns $T_1, T_2, T_3, T_4, T_5, T_6$ **and** T_7 **are situated as follows**

T_5 is 8 km to the west of T_2

T_6 is 8 km to the north of T_1

T_4 is 8 km to the south of T_7

T_7 is 8 km to the east of T_3

T_3 is 4 km to the west of T_1

T_4 is exactly in the middle of T_2 and T_5

22. How far is T_1 from T_7 ?

(1) 8 km   (2) 4 km   (3) 6 km   (4) 12 km

Answer (2)

Solution

$T_1 T_7 = 4 km$

23. Raju starts from T_1 and goes to Mumbai via T_3 how much distance was covered by Raju if Mumbai is 4 km to the west of T_5 ?

(1) 6 km   (2) 8 km   (3) 4 km   (4) 12 km

Answer (4)

Solution

T_1 to MUMBAI via T_3 = 4 + 8 = 12km

24. If Mumbai is located 4 km to the west of T_3 how far it would be form T_4

(1) 4 km   (2) 12 km   (3) 8 km   (4) 6 km

Answer (3)

Solution

T_4 to Mumbai = 4 + = 8 km

Question: 25

25. If ⌐ represents '+'

X represents '-'

S represents 'X'

ᴜ represents '÷'

∅ represents '=', which of the following is correct?

(1) 9 X 2 ⌐ 10 ᴜ 3 ∅ 14 S 4   (2) 9 ⌐ 2 S 10 X 3 ∅ 14 ᴜ 4

(3) 9 S 4 X 14 ⌐ 10 ᴜ 2 ∅ 27   (4) 9 ᴜ 3 X 2 ⌐ 10 ∅ 14 S 4

Answer (3)

Solution

9 S 4 X + 14 ⌐ 10 ᴜ 2 ∅ 27

$$\Rightarrow (9 \times 4) - 14 + (10 \div 2) = 27$$

$$\Rightarrow 36 - 14 + 5 = 27$$

$$27 = 27$$

Question: 26 Read the information and answer the question No 26

Find friends R, S, T, U and X wore shirts of brown, yellow, green, pink and blue colours and shorts of white, black, grey, blue and yellow colours

Nobody wore shirt and shorts of same colour

T wore yellow shorts and U wore blue shirt

The one who wore yellow shirt wore white shorts and one who wore blue shots wore pink shirt

R wore black shorts and brown shirt

X did not water pink shirt

26. Who wore blue shorts?
    (1) T   (2) U   (3) S   (4) X
    Answer (3)
    Solution

Shirts $\rightarrow$	Br.	Yel	Grn $\rightarrow$ X	Pink $\rightarrow$ No X	Blue $\rightarrow$ T
Short $\rightarrow$	Wht	Blk	Grey	Blue $\rightarrow$ S	Yellow

Questions 27- 28: The numerals are given on the basis of some rule and one space is marked by (?). Find the correct answer from the four alterative to replace the question mark

27.
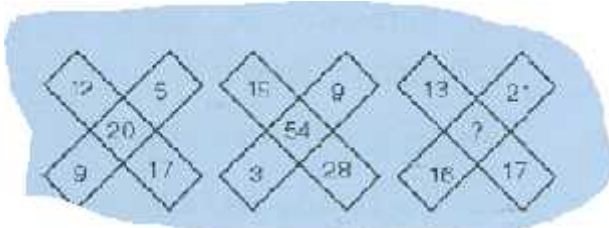
(1) 15   (2) 20   (3) 23   (4) 40
Answer (2)
Solution

$17 - 12 = 5$	$28 - 19 = 9$	$17 - 13 = 14$
$9 - 5 = 4$	$9 - 3 = 6$	$21 - 16 = 5$
$5 \times 4 = 20$	$9 \times 6 = 54$	$4 \times 5 = 20$

28.
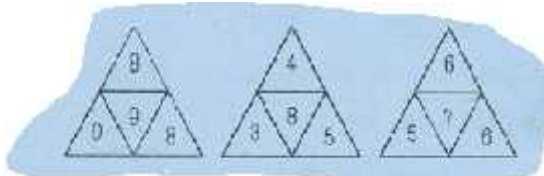
(1) 2   (2) 3   (3) 4   (4) 5
Answer (4)
Conceptual

Question 29: is bases on various faces of a cube. Six sides of cube are numbered 1 to 6. Study the faces and answer the questions
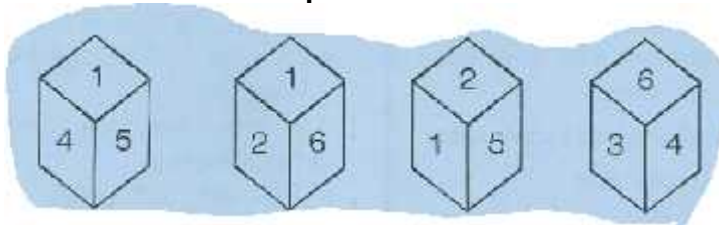
29. Which number is on opposite of 1?
    (1) 3   (2) 4   (3) 5   (4) 6

    Answer (3)

    Solution
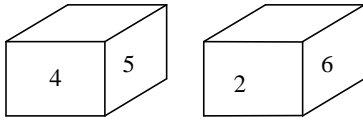
    $4 \rightarrow 2$ opp to 1 = 3
    $5 \rightarrow 6$
    $1 \rightarrow 3$

30. What letter should replace the question mark?

F	J	P	L	G	P	K
R	K	F	I	N	F	J
X	F	V	G	U	J	?

    (1) U   (2) A   (3) K   (4) 1

    Answer (3)

    Solution

$6\overset{\oplus}{_F}$	$10\overset{-}{_5}$	$16\overset{\oplus}{_P}$	$12\overset{-}{_2}$	$7\overset{\oplus}{_4}$	$\overset{-}{P}$	$\overset{\oplus}{_K}11$
18R	4D	6F	9 1	14N	F	J 10
+ 24 X	6F	22V	3C	21U	J	? 21

    $\therefore 21 \rightarrow U$

Question 31

	0	1	2	3	4	5	6	7	8	9
0	A	Q	E	R	C	X	O	N	E	H
1	D	G	B	F	Q	P	D	Y	K	M
2	X	M	L	M	K	P	C	J	W	V
3	N	P	U	S	B	Q	I	G	B	F
4	O	C	L	G	W	Y	H	T	U	A
5	H	I	Y	K	R	S	L	F	I	E
6	Z	N	O	V	J	A	G	J	Z	D

The columns of the matrix are numbered from 0 to 9 and rows are numbered form 0 to 6. A letters form this matrix can be represented first by its row and next by its column. For example, N can be represented by 30 or 61 etc. Now find the answer for the following question

31. Identify the set of numbers corresponding to the word MATCH
    (1) 23, 10, 43, 40, 56   (2) 21, 49, 43, 41, 64   (3) 21, 65, 47, 26, 50   (4) 19, 46, 47, 04, 46

    Answer (3)

    Solution

    MATCH $\rightarrow$ 21, 65, 47, 26, 50

32.

    Question 32: In the following question two statements are followed by four conclusions numbered I, II, III and IV. You have to take the two given statements to be true even if they seem to be at variance form commonly known facts. Read all the conclusions together and then decided which of the given conclusions logically follows form the two given statements

    Statements

    (a) All red are green
    (b) All green are white

Conclusions

(i) Some green are red
(ii) Some white are red
(iii) Some red are not white
(iv) All white are green

(1) Only I and II follows
(2) Only II and III follows
(3) Only I and IV follows
(4) Only I and IV follows

Answer (1)
Solution
Conceptual

Questions 33 – 34: Each of the items 33-34 consists of a square of 9 cells in three rows and three columns. The designs in each row or column follow the same rule. Choose the correct answers form among the given alternatives to suit the cell indicated by the question mark

33.

Answer (4)
Solution
Conceptual

34.

Answer (2)
Solution
Conceptual

Questions 35 – 36: P, Q, R, S, T, U are six members of a family. P is son of R and T is the daughter of P, S is the daughter of U, who is the mother of T, Q is the spouses of R

$$A = B - C \qquad R = Q$$
$$\qquad\quad | \qquad\qquad\quad |$$
$$\qquad\quad D \qquad\qquad P - U$$
$$\qquad\quad | \qquad\qquad\quad |$$
$$\qquad E - F \qquad\quad T \quad S$$
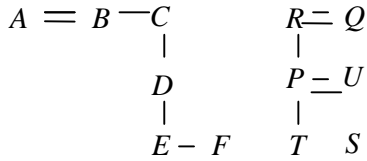
Here □ → *male*

○ → *female*

35. How many male members are in the family?
    (1) 1   (2) 2   (3) 3   (4) 4

    Answer (2)
    Solution
    Males = p and (either R or Q) = 2

36. Which of the following pairs represents parents?
    (1) PR   (2) RT   (3) QT   (4) PU

    Answer (4)
    Solution
    Pairs = (P, U) & (R, Q) = 2
           PU

Questions 37 – 38: in each of the questions a problem figure is followed by four answer figures. The problem figure is embedded in one of the answer figures. Find out that answer figure

37.
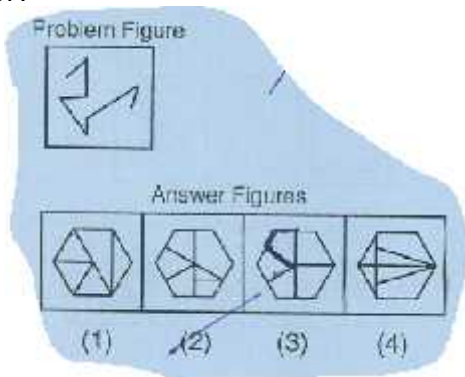
Answer (2)
Solution
Conceptual

38.
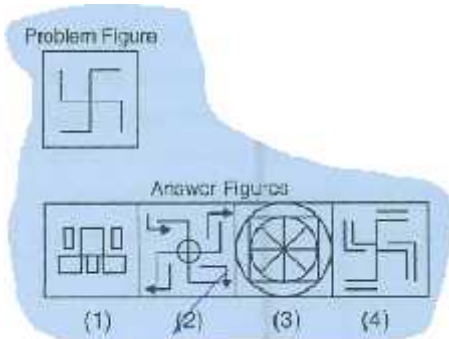
Answer (3)
Solution
Conceptual

39.

Question 39: In the following diagram, there are four rectangles labeled as Liac, Yellow, Indigo and Orange. Rectangle 'Lilac' represents the persons who like Lilac, 'Yellow' for those who like Yellow, 'Indigo' for those who like Indigo and 'Orange' for those who like Orange. Study the diagram and carefully answer the question
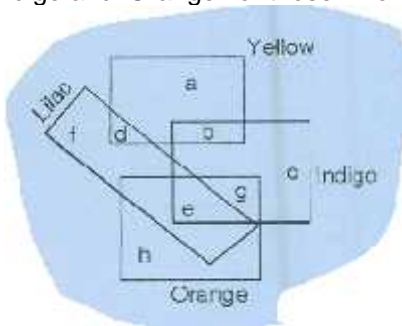
Persons who like Yellow and Lilac but not Indigo?

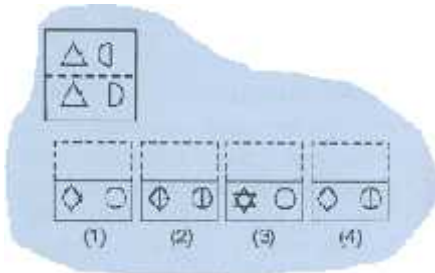   (1) d   (2) f   (3) a   (4) b

Answer (1)
Solution
Conceptual

Questions 10 – 41: In each of the questions a transparent sheet with a pattern is given. Find out from among the given alternatives as to how the pattern would appear when the transparent sheet is folded along the dotted line

40.

Answer (3)
Solution
Conceptual

41.
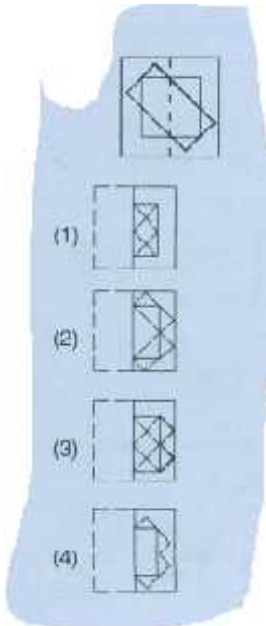
Answer (4)
Solution
Conceptual

Questions 42: Read the information carefully and answer the question 42

P ⊔ Q means P is the brother of Q
P Δ Q means P is the father of Q
P + Q means P is the mother of Q
P ∉ Q means P is the husband of Q
P – Q means P is the sister of Q

42. Four statements 1, 2, 3, 4 are given which statement is correct form the
    Answer (3)
    Solution
 $A \notin B - C\Delta + E \sqcup F$
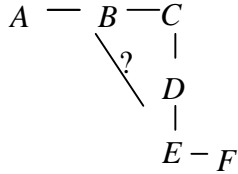
∴ B is aunt of D

Expression
A ∉ B – C Δ +E ⊔ F

Statements
(1) C is the father or E   (2) D is the grandmother of F   (3) B is the aunt of D   (4) A is the father of D

Questions 43 – 45: In the problem figures in each question there is a definite relationship between the first tow figures. From the set of the four answer figures given, find the figure that would establish the same relationship between the next tow figures
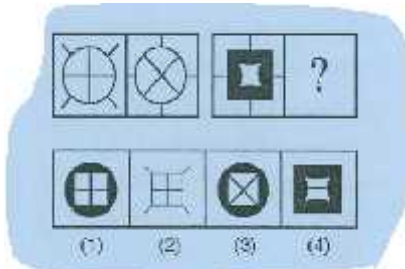
43.
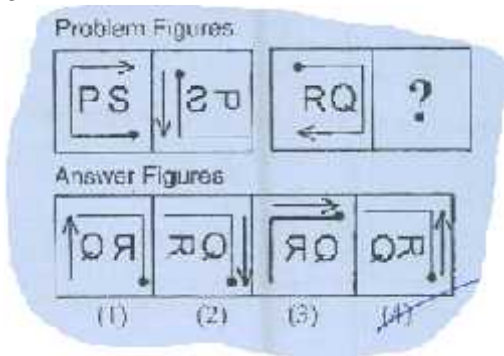
Answer (4)
Solution
Conceptual

44.

Answer (4)
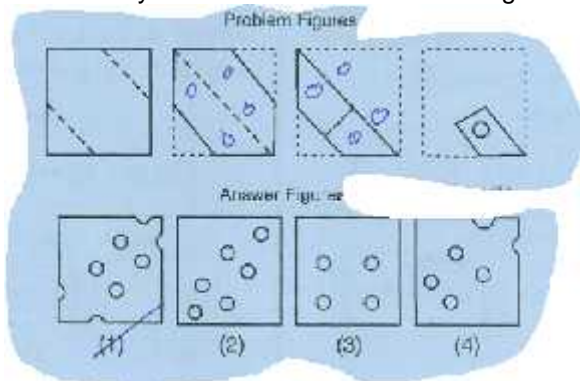**Solution**
Conceptual

45.

Answer (2)
Solution
Conceptual

46. A piece of paper is folded and punched as shown below in the problem figures. How will it appear when opened? Choose your answer from the answer figures
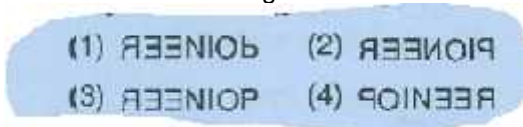

Answer (2)
Solution
Conceptual

47. Find the mirror image of the word 'PIONEER;

Answer (2)
Solution
Conceptual

48. Find the number of triangles in the figure

(1) 32   (2) 40   (3) 48   (4) 44
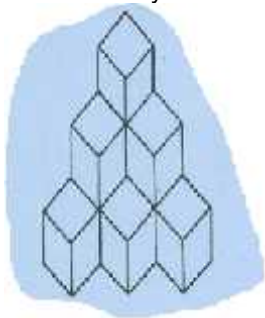
Answer (2)
Solution
Conceptual

49. How many cubes are there in the following figure?

(1) 5   (2) 9   (3) 10   (4) 12

Answer (3)

Solution

Conceptual

50. A mother said to her son " I was as old as you are at preset ant the time of your birth". If the mother's age is 36 years now the son's age 6 years back was

(1) 10   (2) 12   (3) 14   (4) 13

Answer (2)

Solution

When by born, let Mother's age = X

$\therefore$ After 'y' years,

Mother's age = x = y

Son's age = y

But x = y

Given x + y = 36

       2x = 36

       X = 18

$\therefore$ Son's are years back = 18 – 6 = 12