ASchools

MENTAL ABILITY TEST

(For Students of Class X)

Time allowed : 45 Min.Maximum Marks : 50

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1. 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 words could possibly mean "light fly"?
(1) pie zie   (2) pie mie   (3) aie zie   (4) aie mie
Ans. **(1)**
Sol. light means pie. & mie can not fly.
So, that 'light fly' means can be pie zie.

2. If in 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
Ans. **(3)**
Sol.

S T U D E N T
-1 -1 -1 $+1$ -1 -1 -1
↓ ↓ ↓ ↓ ↓ ↓ ↓
R S T E D M S

Similarly

T E A C H E R
-1 -1 -1 $+1$ -1 -1 -1
↓ ↓ ↓ ↓ ↓ ↓ ↓
S D Z D G D Q

3. Which group of letters is different from others ?
(1) CBAED   (2) IJHGK   (3) SRQPT   (4) TVWYZ
Ans. **(4)**
Sol. In this option T, V, W, Y, Z are not continuous.

4 In the following letter sequence, some of the letters are missing. These are given in order as one of the alternatives below. Choose the correct alternative.
αβ__αα__βββ__ααα__ββ
(1) αββα   (2) βαβα   (3) αααβ   (4) αβαβ
Ans. **(2)**
Sol. α β β̲, α α α̲, β β β β̲, α α α α α̲, β β β ....

5. Fill in the missing number

–C	2B	–3A
2A	?	–B
–3C	–A	–2B

(1) –3C   (2) –2C   (3) 3C   (4) 2B
Ans. **(3)**
Sol. missing term is 3c.

6. Vimla used to board the train from Metro Station A for going to her office. Since Station A is a terminus. she had no problem in getting a seat. Ever since she shifted to Locality B she finds it difficult to get a seat, as by the time the train reaches Locality B it becomes crowded. Find the statement among the alternatives which must be true as per the given information.

(1) Vimla would prefer to take a bus rather than the metro

(2) Vimla's travel to office has become less comfortable ever since she has shifted.

(3) Commuters staying in and around Locality B would demand metro services originating from station near Locality B.

(4) Vimla would look for a job close to her home.

Ans. **(2)**

Sol. Simple logic.

7. Ramesh started going for regular morning walks for controlling his blood sugar level. He did so for a month and also started taking Yoga lessons, without going for any pathological examination. He underwent pathological test after two months and found that the blood sugar level has come down. Presuming that he had no changed his food habits during these two months, which statement among the alternatives given below follows most logically ?

(1) Blood sugar level comes down after doing regular morning walk.

(2) Blood sugar level comes down after doing Yoga.

(3) Blood sugar level comes down on doing regular morning walk and Yoga

(4) Regular morning walk, Yoga or both may bring down sugar level despite not changing food habits.

Ans. **(4)**

Sol. Simple logic.
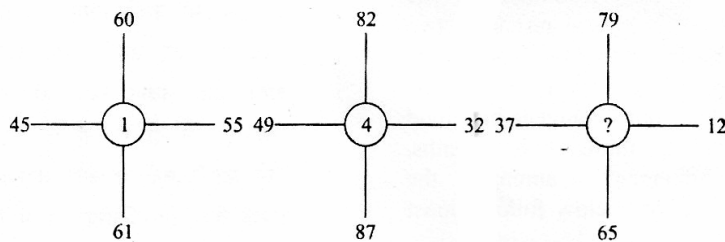
8. Find the number in the position of '?'.
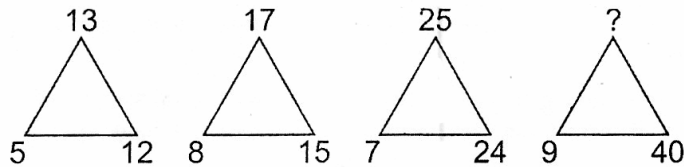
(1) 41   (2) 45   (3) 50   (4) 52

Ans. **(1)**

Sol.
$$5^2 + 12^2 = 13^2$$
$$8^2 + 15^2 = 17^2$$
$$7^2 + 24^2 = 25^2$$
$$9^2 + 40^2 = 41^2$$

9. Identify the number in the position of '?'

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

Ans. **(3)**

Sol. $\rightarrow$ 60 + 61 = 121   and

45 + 55 = 100

$\sqrt{(121)} = 11, \sqrt{100} = 10$

i.e.   11 – 10 = 1

$\rightarrow$ 82 + 87 = 169   and

49 + 32 = 81

$\sqrt{169} = 13, \sqrt{81} = 9$

i.e.   13 – 9 = 4

$\rightarrow$ 79 + 65 = 144   and

37 + 12 = 49

$\sqrt{144} = 12, \sqrt{49} = 7$

i.e.   12 – 7 = 5.

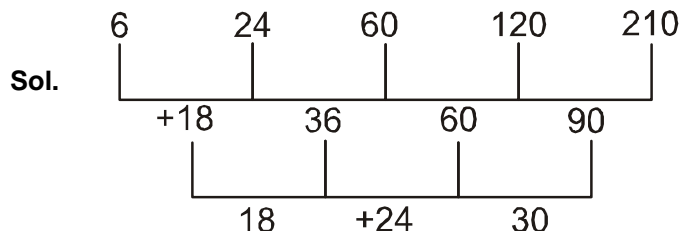**10.** Find the next number in the sequence 0, 2, 24, 252 . _____
(1) 620   (2) 1040
(3) 3120   (4) 5430

Ans. **(3)**
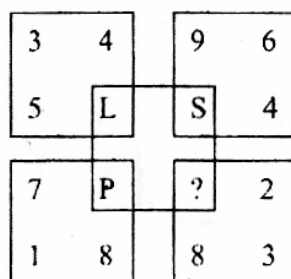**Sol.** $1^1 - 1, 2^2 - 2, 3^3 - 3, 4^4 - 4, 5^5 - 5.$

11. Find the next number in the sequence 6, 24, 60, 120 _____
(1) 180   (2) 210
(3) 240   (4) 360

Ans. **(2)**

Sol.

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   6      24      60      120     210
   |       |       |       |       |
      +18     36      60      90
       |       |       |       |
          18      +24     30
```

12. Find the letter to be placed in place of '?' in the figure given.

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

Ans. **(1)**
Sol. $3 + 4 + 5 = 12 \equiv L$
                        $9 + 6 + 4 = 19 \equiv S$
                        $7 + 1 + 8 = 16 \equiv P$
i.e. $8 + 3 + 2 = 13 \equiv M$

13. In this multiplication question the five letters represent five different digits. What are the actual figures ? There is no zero.
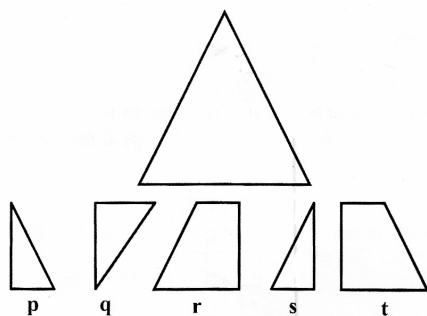
  SEAM
     T
――――
MEATS
(1) M = 3, E = 9, A = 7, T = 4, S = 8
(2) M = 3, E = 9, A = 7, T = 8, S = 4
(3) M = 4, E = 3, A = 9, T = 7, S = 8
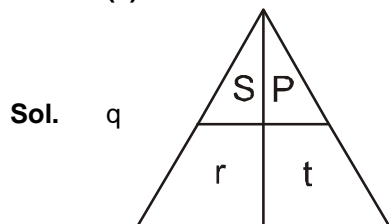(4) M = 4, E = 9, A = 3, T = 7, S = 8

Ans. **(2)**
Sol.   4973
                    ×8
               ――――
               39784

14. Identify which among the pieces given below will not be required to complete the triangular pattern shown below.

(1) q   (2) r   (3) s   (4) t

Ans. **(1)**

Sol. q

15. Find the missing number in the series
2, 10, 26, _____, 242
(1) 80   (2) 81   (3) 82   (4) 84

Ans. **(3)**

Sol.
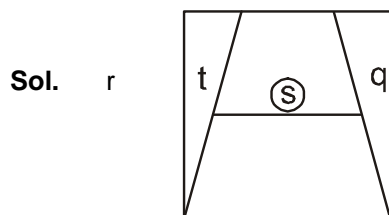$$2 \times 3 + 4 = 10$$
$$10 \times 3 - 4 = 26$$
$$26 \times 3 + 4 = 82$$
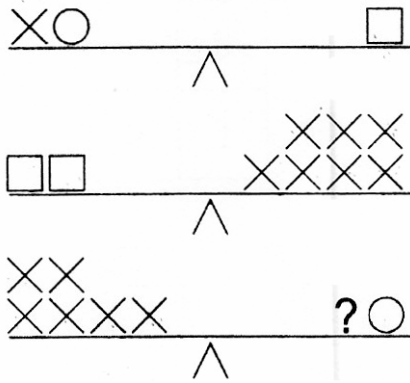$$82 \times 3 - 4 = 242.$$

16. A pattern is given below. You have to identify which among the following pieces will not be required to complete the pattern.

(1) q   (2) r   (3) s   (4) t

Ans. **(2)**

Sol. r
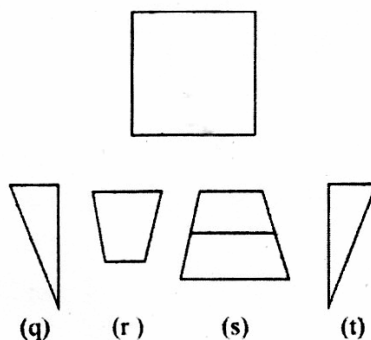
17. Which symbol replaces the '?'. Figure below represent a balance.

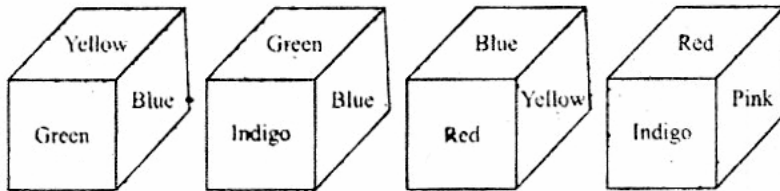(1) ✕   (2) ◯   (3) ▢   (4) ▢◯

Ans. **(3)**

Sol. ▢

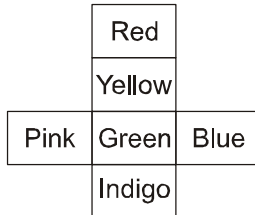**18.** On the basis of the four positions of a dice given below find the colour of the face opposite 'Yellow'.
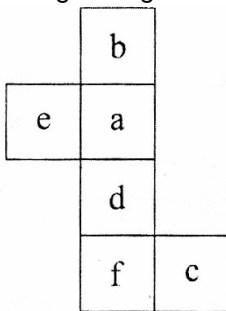

(1) Indigo   (2) Red   (3) Pink   (4) Blue

Ans. **(1)**

Sol. Net pattern will be :

	Red	
	Yellow	
Pink	Green	Blue
	Indigo	

i.e. Indigo is opposite to yellow.

19. If the given figure is folded a form a box, which among the boxes below will be formed ?

(1)   (2)   (3)   (4)
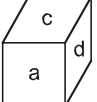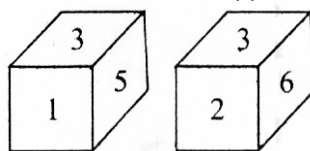
Ans. **(4)**

Sol. b is opposite to d.
a is opposite to f.
e is opposite to c.

i.e. [c, d, a box] is correct.

20. Two positions of a dice are shown. Which number will appear on the face opposite the one having 5 ?
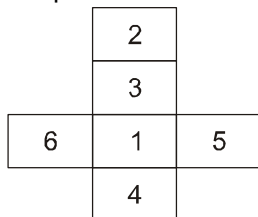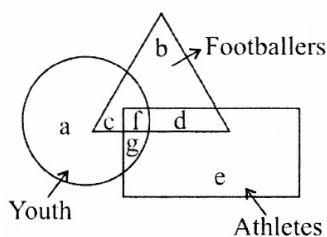

(1) 1   (2) 2   (3) 4   (4) 6

Ans. **(4)**

Sol. Net pattern will be :

	2	
	3	
6	1	5
	4	

i.e. 6 is opposite to 5.

21. In the figure, the circle represents youth, the triangle represents footballers and the rectangle represents athletes. Which letter (s) represent(s) athletes among youths who are not footballers ?
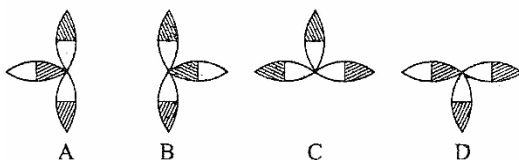

(1) g   (2) g and c   (3) f   (4) f and d

Ans. **(1)**

Sol. only g.

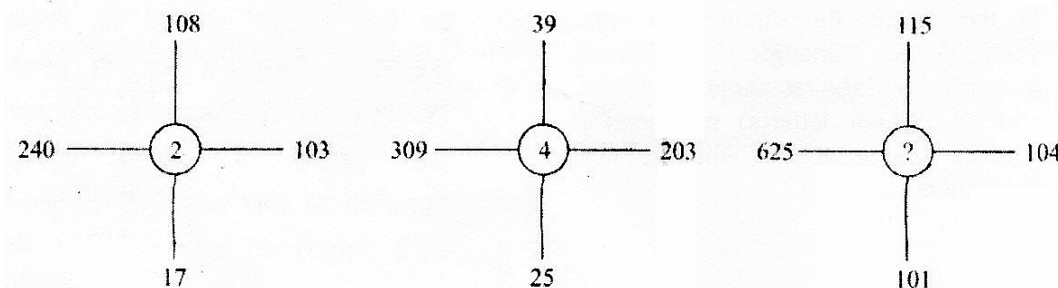**22.** Find the odd man out

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

Ans. **(3)**

Sol. C is odd man out.

23. Identify the number corresponding to the '?'

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

Ans. **(1)**

Sol. $\rightarrow$ $108 + 17 = 125 = (5)^3$ and $240 + 103 = 343 = (7)^3$

i.e. $7 - 5 = 2$

$\rightarrow$ $39 + 25 = 64 = (4)^3$ and $309 + 203 = 512 = (8)^3$

i.e. $8 - 4 = 4$

$\rightarrow$ $115 + 101 = 216 = (6)^3$ and $625 + 104 = 729 = (9)^3$

i.e. $9 - 6 = 3.$

24. Which of the given alternative is the mirror image of REASON, if the mirror is placed below the word ?
(1) ᴚƎⱯƧOИ (2) ᴚƎⱯƧOИ (3) ᴚƎⱯƧOИ (4) ᴚƎⱯƧOИ

Ans. **(4)**
Sol. By observation.

25. A sprinter goes off the starting block for 100 m run and at that instant the second-hand of a stopwatch 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) 18° North of East (2) 18° East of North (3) 72° North of East (4) 82° East of North

Ans. **(1)**
Sol. After 12 sec, seconds hand will make angle of 72º.
i.e. it will be 18º North of East.

26. Two candles are of different lengths and thicknesses. The short and the long ones can burn respectively for 3.5 hour and 5 hours. After burning for 2 hour, the lengths of the candles become equal in length. What fraction of the long candle's height was the short candle initially ?

(1) $\dfrac{2}{7}$ (2) $\dfrac{5}{7}$ (3) $\dfrac{3}{5}$ (4) $\dfrac{4}{5}$

Ans. **(2)**
Sol. Let lengths are ℓ_1 & ℓ_2 and thickness are x_1 and x_2.
$\ell_1 \equiv 3.5$ hr and $\ell_2 \equiv 5$ hr.

$$\ell_1 - 2\left(\frac{\ell_1}{3.5}\right) = \ell_2 - 2\left(\frac{\ell_2}{5}\right)$$

$$\frac{3.5\ell_2 - 2\ell_1}{3.5} = \frac{5\ell_2 - 2\ell_2}{5}$$

$$\frac{1.5\ell_1}{3.5} = \frac{3\ell_2}{5}$$

$$\frac{\ell_1}{\ell_2} = \frac{3.5 \times 3}{1.5 \times 5} \Rightarrow \frac{7}{5} \quad \text{or} \quad \frac{\ell_2}{\ell_1} = \frac{5}{7}$$

27. Mother was asked how many gifts she had in the bag. She replied that there were all dolls but six, all cars but six, and all books but six. How many gifts had she in all ?
(1) 9 (2) 18 (3) 27 (4) 36

Ans. **(1)**
Sol. Let total gift are x.
i.e.   dolls are $= x - 6$
              cars are $= x - 6$
          books are $= x - 6$.
i.e. $x = 3(x - 6)$

$x = 3x - 18$

$18 = 2x$

$x = 9$

28. Question given below has a problem and two statements I & II. Decide if the information given in the statement is sufficient for answering the problem:
K, R, S and T are four players in Indian Cricket team. Who is the oldest among them?
I : The total age of K & T together is more than that of S
II : The total age of R & K together is less than that of S.
(1) Data in statement I alone is sufficient (2) Data in statement II alone is sufficient
(3) Data in both statements together is sufficient (4) Data in both statement together is not sufficient

Ans. **(4)**
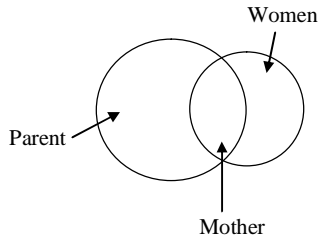**Sol.** From the given information we can say that R<S, K<S. But, we cannot confirm if T<S or T>S. So we cannot determine the oldest.

29. Which of the following diagram/sets indicate the relation between women, mothers and parents ?

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

Ans. **(1)**

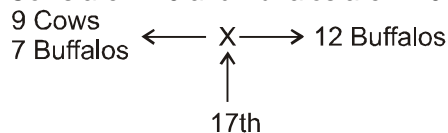**Sol.** Sol. Mother is represented by the common part of Women and Parent.

30. In a diary, 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

Ans. **(3)**

Sol. Cows are = 40 and Buffalos are = 20.

31. What is the mirror image of

b3k4s

(1) s4ʞƐd   (2) s4ʞƐd   (3) s4ʞ3d   (4) s4ʞ3b

Ans. **(1)**

Sol. By observation.

32-36 **Question 32 to 36 are based on the following information:**

$\alpha, \beta, \gamma, \delta, \in, \phi, \Psi, \eta$ are sitting on a merry-go-round facing at the centre. δ is second to the left on η who is third to the left of α. β is fourth to the right of γ who is immediate neighbour of η. Ψ is not a neighbour of β or γ. ϕ is not a neighbour of β.

32. Who is third to the left of β ?

(1) α (2) γ (3) ϕ (4) Ψ

33. In which of the following pairs is the first person sitting to the immediate right of the second person ?

(1) δ, Ψ (2) $\beta, \in$ (3) η, β (4) Ψ, η

34. What is ϕ's position with respect to Ψ ?

(1) Third towards right   (2) Third towards left

(3) Second towards right   (4) Second towards left
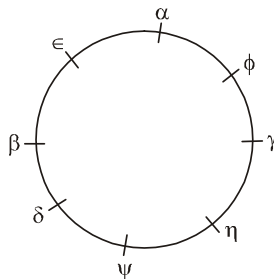
35. Who is sitting between α and β ?

(1) Both $\in$ and η (2) Both ϕ and γ (3) Only $\in$ (4) Only ϕ

36. How many of them are sitting between γ and β ?

(1) 0 or 6   (2) 1 or 5   (3) 2 or 4   (4) 3

32-36

32.
Ans. **(3)**
Sol. φ

33.
Ans. **(2)**
Sol. β, ∈

34.
Ans. **(1)**
Sol. Third towards right.

35.
Ans. **(3)**
Sol. Only ∈

36.
Ans. **(4)**
Sol. 3

37. In a school 120 boys have registered for a singles carom tournament. Each match eliminates one player. How many matches are to be organized to determine the champion ?
(1) 60 (2) 61 (3) 119 (4) 120
Ans. **(3)**
Sol. 119 matches will be played.

38. 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
Ans. **(1)**
Sol. Sadhana < Rani < Alka < Lata < Asha.

39. Twenty four teams are divided into 4 groups of six teams each. Within each group the teams play each other exactly once. The winners of each group then play in the semi-finals. Winners of the semi-finals play in the finals and losers for the 3 place. How many matches are played?
(1) 60 (2) 63 (3) 64 (4) 66
Ans. **(3)**
Sol. 64 matches will be played.

40-41. Take the given statement(s) as true and decide which of the conclusion logically follows from the statements.

40. Statement: All Actors are Musicians. No Musician is a Singer. Some Singers are Dancers. Some Dancers are Musicians.
Conclusions :
I : Some Actors are Singers
II : Some Dancers are Actors
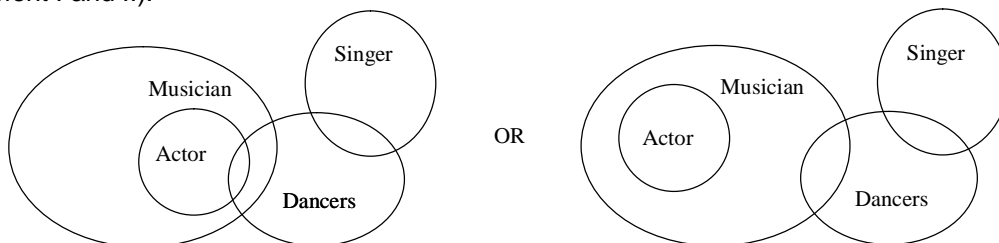III : No Actor is a Singer
1. Only conclusion I follows.
2. Only conclusion III follows.
3. Exactly one of conclusion I, III follows.
4. Only conclusion II follows.

Ans. **(2)**

Sol. From the given information, only conclusion III follows. I cannot follow as No Actor is a Singer (from Statement I and II).

OR

41. **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
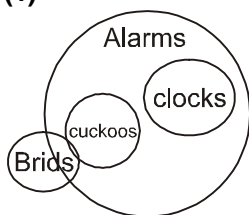III : All Birds are Alarms
(1.) Only conclusion I follows.
(2.) Only conclusion II follows.
(3.) Only conclusion III follows.
(4.) Both conclusions II and III follow

Ans. **(1)**

Sol.

42. Two players X and O play a game of "noughts and crosses" on a 3 × 3 grid. The purpose of the game is for a player to get 3 symbols belonging to the player in a straight line (vertically, horizontally or diagonally). Each player marks one symbol on his or her turn. After two moves (1 turn each), the grid looks as follows with X to play next. Where should X put his symbol next so that he will always win this game finally regardless of how well O plays?
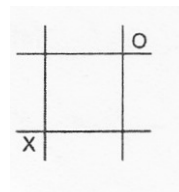
(1.) Bottom row right corner
(2.) Bottom row middle cell
(3.) Middle row left most cell
(4.) It is not possible to always ensure X wins if O plays carefully

Ans. **(1)**
Sol. We can label the cells as follows.

A	B	○
C	D	E
✕	F	G

If cross is put on the Cell G (bottom row right corner):
Case I – Circle is put in Cell F.
Then Cross puts it in Cell A. Now Circle will put either in Cell C or in Cell D. Then Cross puts it in the other one and Cross wins.

Cross puts in Cell F and wins.

43. An electrical circuit for a set of 4 lights depends on a system of switches A, B, C and D. When these switches work they have the following effect on the lights: They each change the state of two lights (i.e. on becomes off and off becomes on). The lights that each switch controls are as follows.
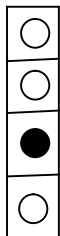
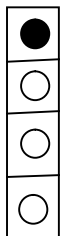| A	B	C	D
1 and 2	2 and 4	1 and 3	3 and 4
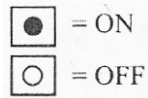
In configuration 1 shown below, switches CBDA are activated in turn, resulting in configuration 2. One switch did not work and had no effect at all. Which was that switch?

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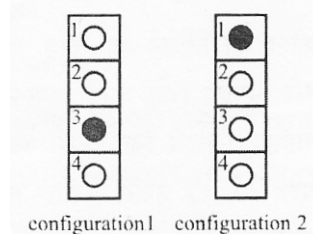
(1) A   (2) B   (3) C   (4) D

Ans. **(3)**

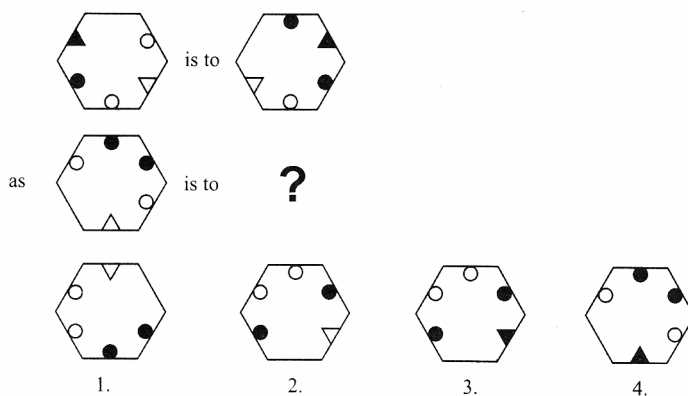**Sol.** If all the switches were on the configuration 2 would be:
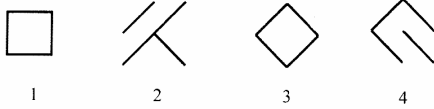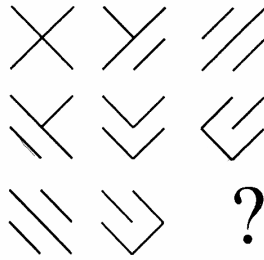

But the configuration 2 is given as:

There is difference only in Switches 1 and 3. So switch C is not working.

44.

Ans. **(3)**

Sol. By observation.

45.

Ans. **(3)**
Sol. By observation.

46. A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting next to E, who is sitting on the left end of the bench. C is on the second position from the Fight. A is to the right of B and E. Counting from the left, in which position is A sitting?
(1) 2   (2) 3
(3) 5   (4) Cannot be determined from the given conditions
Ans. **(2)**
Sol. E B A C D

47. I left home for bringing milk between 7am and 8am. The angle between the hour-hand and the minute-hand was 90° I returned home between 7 am and 8 am. Then also the angle between the minute-hand and hour-hand was 90°. At what time (nearest to second) did I leave and return home?
(1) 7h 18 m 35s & 7h 51m 24s   (2) 7h 19m 24s & 7h 52m 14s
(3) 7h 20m 42s & 7h 53m 11s   (4) 7h 21m 49s & 7h 54m 33s
Ans. **(4)**
Sol. Leaving time = 7 hr 21 m 49 sec.
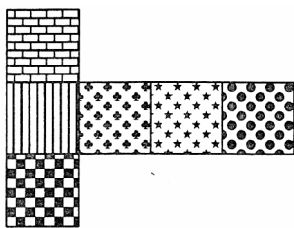**a**nd Returned time = 7 hr 54 m 33 sec.

48. I left home at 3:00pm and returned at 3:48pm. The clock was rotated by 45°, so that when I left, the hour-hand of a clock was pointing along the south-east direction. In which direction would the hour-hand point when I returned?
(1) 15° East of South   (2) 21° East of South   (3) 63° South of East   (4) 27° South of East
Ans. **(2)**
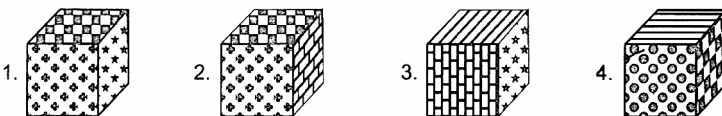**Sol.** 21⁰ East of South.

49.

When the above is folded into a cube, which is the only cube that can be produced amongst the following?

Ans. **(4)**
Sol. By observation.

50. What will be water image of CHICK ?
(1) CHICK   (2) ɔHIƆʞ   (3) KCIHC   (4) ꞍƆIHƆ
Ans. **(1)**
Sol. By observation.

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