

FIITJEE Solutions to

NTSE-2012 –Stage-I (Delhi State)

(For Class X Students)

Paper-1 MAT

DATE OF EXAM : 18-11-2012

Time: 90 Minutes

Max Marks: 90

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you answer the question.

1. Answers are to be given on a **separate answer-sheet**.
2. Write your **eight-digit Roll Number** very clearly on the **test-booklet** and **answer-sheet** as given in your letter/ admission card.
3. Write down the **Booklet Number** in the appropriate box on the **answer sheet**.
4. There are 90 questions in this test. All are compulsory.
5. Please **follow the instruction** for marking the answers given on the answer sheet.
6. **For questions 1 – 90, put a cross mark (X) on the number of the correct alternative on the answer-sheet against the corresponding question number.**
7. If you do not know the answer to any question, do not spend much 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 try them again.
8. 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.
9. **Rough work** can be done **anywhere in the booklet** but not on the answer sheet/loose paper.
10. Every correct answer will be awarded one mark.
11. **Please return the Test-booklet and answer-sheet to the invigilator the test.**

PLEASE TURN OVER THE PAGE AND START YOUR WORK

1. Anshu correctly remembers that his sister's b'day is before 20th but after 15th Oct. but her father correctly remembers that his daughter's b'day is before 17th Oct. Anshu's sister's b'day falls on which day?
 (1) 19th Oct (2) 16th Oct
 (3) 18th Oct (4) 15th Oct

1. (2)
 Anshu's sister's birthday before 20th but after 15th Oct. i.e. her birthday possible 16th, 17th, 18th, 19th but according to father her birthday before 17th Oct. i.e. Anshu's sister birthday falls 16th Oct.

2. Sink is to float. In the same way, Destroy is to:
 (1) Enemy (2) Alive
 (3) Peace (4) Create
 2. (4)

Float is the antonym of sink, similarly in same way create is antonym of destroy.

3. Author is related to Book. In the same way,..... is related to
 (1) Human, Society (2) Engineer, Building
 (3) Mason, Building (4) Fruits, Tree

3. (3)
 Author create the book in the same way
 Mason create the building

4. Which of the following has the same relationship as that of 'PS' : 'TW'?
 (1) JM : RQ (2) AD : DI
 (3) AD : EH (4) FC : ZE

4. (3)

16	19	:	20	23
P	S		T	W
└──┬──┘	└──┬──┘		└──┬──┘	└──┬──┘
↑	↑		↑	↑

in the same way

A	D	:	E	H
1	4		5	8
└──┬──┘	└──┬──┘		└──┬──┘	└──┬──┘
↑	↑		↑	↑
+3			+3	

5. Which of the following will come in the place of question mark in the given series?
 BYA, CXB, ?, EVD :

(1) DVE (2) DCW
 (3) DXB (4) DWC
 5. (4)

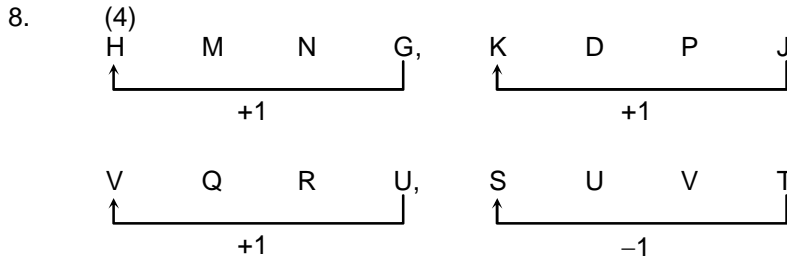
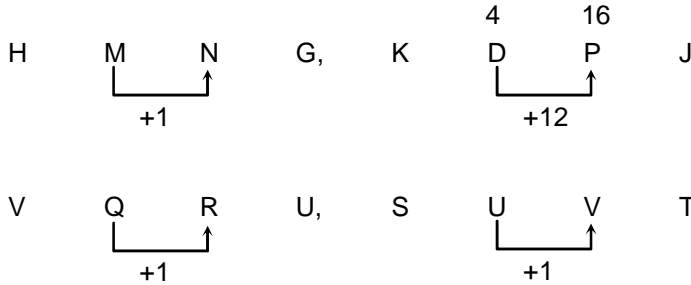
1 st letter →	B	C	D	E
2 nd letter →	Y	X	W	V
3 rd letter →	A	B	C	D

Directions: (Q. 6 to 8): Select the alternative which is different from others.

6. (1) 729 (2) 343
 (3) 576 (4) 512
 6. (3)
 Except 576, remaining all the cubes.
7. (1) 1764 (2) 1875
 (3) 1321 (4) 1542

7. (3)
 $1764 = 1 + 7 + 6 + 4 = 18$
 $1875 = 1 + 8 + 7 + 5 = 21$
 $1321 = 1 + 3 + 2 + 1 = 07$
 $1542 = 1 + 5 + 4 + 2 = 12$
 except 1321 all are divisible by 3.

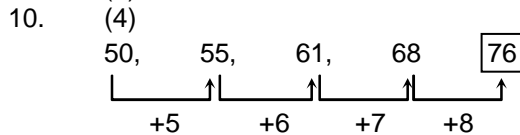
8. (1) HMNG (2) VQRU
 (3) KDPJ (3) SUVT
 8. (3)



9. When Amir saw Manjeet, he recalled that he is son of the father of the mother of his daughter.
 Manjeet is Amir's:
 (1) Brother-in-law (2) Brother
 (3) Cousin (4) Uncle
 9. (1)
 Amir's daughter's mother i.e. Amir's wife
 Amir's wife's father's son (Manjeet) i.e. brother of Amir's wife hence Manjeet is Amir's brother in law.

Directions: (Q. 10 to 14): Complete the given series in each questions:

10. 50, 55, 61, 68,
 (1) 81 (2) 80
 (3) 75 (4) 76



11. 144, 121, 100, 81,
 (1) 80 (2) 72
 (3) 64 (4) 60
 11. (3)

16. (1) Arm, Hair, Legs (2) Car, Tyre, Steering
 (3) Tree, Leaf, Trunk (4) Universe, Solar System, Galaxy
16. (1)
 In remaining three, 2nd and 3rd are the parts of first one.
17. (1) Orange, Pineapple, Sweet lime (Mausmbi) (2) Mango, Plum, Peach
 (3) Banana, Guava, Grapes (4) Melon, Watermelon, Cucumber
17. (3)
 Except (3) all belongs to a particular group.
18. (1) India, China, Japan (2) Canada, Mexico, Australia
 (3) South Africa, Kenya, Zimbabwe (4) United kingdom, France, Spain
18. (2)
 Canada, Mexico are in North America and Australia itself a continent.
 Except (2) all are in one continent.
19. Race : Fatigue : : :
19. (1) Fast : Hungry (2) Fast : Energy
 (3) Fast : Food (4) Fast : Fatigue
19. (1)
 As race leads to Fatigue in the same way fast leads to Hungry.
20. Penology : Punishment : Seismology :
20. (1) Law (2) Earthquake
 (3) Liver (4) Medicine
20. (2)
 Penology is the studied by punishment in the same say seismology is the studied of earthquake.

Directions: (Q. 21 to 26): Choose the odd one out:

21. (1) Steel (2) Copper
 (3) Bronze (4) Brass
21. (2)
 Except (2) rest all are alloys.
22. (1) Seismograph (2) Earthquake
 (3) Cyclone (4) Tsunami
22. (1)
 Except (1) all are natural disaster.
23. (1) \bar{K} (2) \bar{r}
 (3) \notin (4) \$
23. (1)
 Except (1) all are authentic symbols.
24. (1) Bhopal (2) Mumbai
 (3) Hyderabad (4) Allahabad
24. (4)
 Except (4) rest of all are capitals.
25. (1) 145 (2) 120
 (3) 90 (4) 105
25. (1)
 Except (1) rest of all are divisible by 3.

26. (1) 67 (2) 79
(3) 69 (4) 97

26. (3)
Except (3) rest of all are prime numbers.

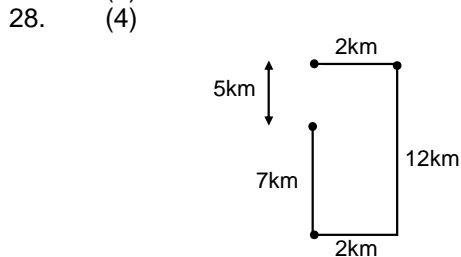
27. Amit is now 6 times as old as his son. Four years from now, the sum of their ages will be 43 years. Determine Amit's present age:

- (1) 30 years (2) 32 years
(3) 34 years (4) 28 years

27. (1)
Let present age of Amit's son = x yrs.
and age of Amit = 6x yrs.
Four yrs from now, $6x + x + 8 = 43$
 $7x = 35$
 $x = 5$, i.e., present age of Amit = 30 yrs.

28. Aman starts walking in south and walks for 7 km, then turns left and walks for 2km, Then, once again turns left and walks for 12km, turns left one more time and walks for 2km. How much distance he has to cover to reach the starting point?

- (1) 7km (2) 12km
(3) 4km (4) 5km



29. A is 3 times more efficient than B. Hence, he takes 60 days less in painting a room. In how many days, work will be completed, if A and B both work together?

- (1) 30 days (2) 45 days
(3) $22\frac{1}{2}$ days (4) $17\frac{1}{2}$ days

29. Efficiency \rightarrow A : B

$$n = 3n$$

$$3n - n = 60$$

$$n = 30$$

$$\Rightarrow A = 30, B = 90$$

$$\Rightarrow (A + B) = \frac{30 \times 90}{120} = 22\frac{1}{2}$$

Directions: (Q. 30 to 31): Complete the series using one of the alternatives.

30. Bulgaria, Ecuador, Germany, Norway,
(1) Russia (2) India
(3) Afghanistan (4) Africa

30. All are arranged in dictionary order.

31. 2197, 2744, 3375, 4096,
(1) 4761 (2) 4232
(3) 4913 (4) 3291

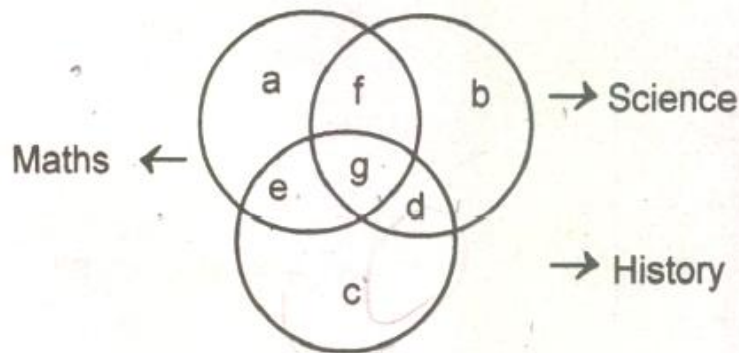
31. (3) $13^3, 14^3, 15^3, 16^3, 17^3$ i.e., 4913

32. Arrange the words in the correct order:
 (A) Tissues (B) Cells
 (C) Organ System (D) Body
 (E) Organ
 (1) B, A, C, E, D (2) C, A, B, E, D
 (3) A, E, C, D, B (4) B, A, E, C, D
32. (4) is the correct order
33. If the position of the letters in the word 'GOVERNMENT' are re-arranged in such a way that the position of the 1st and 2nd letters are interchanged, similarly the position of the 3rd and 4th letters are interchanged and so on. Which of the following will be the 3rd from the right end after the re-arrangement?
 (1) M (2) F
 (3) V (4) R
33. (1)
 OGEVNREMTN
34. A girl facing north turns 90° in the anticlock direction and then turns 45° in the clockwise direction and then again turns 135° in the anticlockwise, Which directions in she facing now?
 (1) South (2) East
 (3) North (4) West
34. (1)
 South
35. The ration of boys to girls in a school is 5 : 2. The number of boys is more by 450 than that of girls. How many students are there in that school?
 (1) 650 (2) 1050
 (3) 400 (4) 950
35. (2)
 Boys : Girls
 5n : 2n
 5n – 2n = 450
 $\Rightarrow 3n = 450 \Rightarrow n = 150$
 $\therefore \text{Total} = 5n + 2n \Rightarrow 7n \Rightarrow 1050.$
36. A train travels 92.4km/hr. How many metres will it travel in 10 minutes?
 (1) 15400 (2) 1540
 (3) 154 (4) 15.40
36. (1)
 $\frac{92.40 \times 10}{60} \Rightarrow 15.4 \text{ km} \Rightarrow 15400 \text{ m}.$
37. Given that : $x + y - z + 100 = 350$. If $x = 2y$ and $y = 2z$, then $z = ?$
 (1) 30 (2) 50
 (3) 70 (4) 90
37. (2)
 $z = 50$
38. Srawn spends 20% of his monthly salary on food, 40% of the remaining on house rent and balance amount spends on other items of routine expense. What is his yearly salary if he spends Rs. 5760 per month on other items of routine expenses?
 (1) Rs 1, 20, 000 (2) Rs 2, 44, 000
 (3) Rs 1, 44, 000 (4) Rs 1, 54, 000

38. (3)
 Monthly salary = x
 Food expenses = $x/5$
 House Rent = $\frac{8x}{25}$
 Hence $\frac{12x}{25} = 5760$
 $x = 12000$ and $12x = 144000$.
39. If the simple interest on a certain sum of money @ 4% for 5 years is Rs. 800, find the sum.
 (1) Rs 4, 000 (2) Rs 9, 000
 (3) Rs 12, 000 (4) None of the above
39. (1)
 $\frac{800 \times 100}{4 \times 5} = \text{Rs. } 4000$.
40. The weight of a sand bag is 40kg. In a hurry it was weighted as 40.8kg. The error percentage is:
 (1) 1% (2) 0.5%
 (3) 1.5% (4) 2%
40. (4)
 Error % = $\frac{40.8 - 40}{40} \times 100 = 2\%$.
41. The product of two positive numbers is 120 and the sum of their square is 289. The difference between them is:
 (1) 7 (2) -7
 (3) 2 (4) 14
41. (1)
 $8^2 + 15^2 = 289$
 \therefore difference is $15 - 8 = 7$.
42. If $A : B = 6 : 7$ and $B : C = 8 : 9$. Find the value of $C : A$?
 (1) $\frac{9}{6}$ (2) $\frac{16}{21}$
 (3) $\frac{21}{16}$ (4) $\frac{6}{9}$
42. (3)
 $A : B = 6 : 7$
 $B : C = 8 : 9$
 $\therefore C : A = \frac{63}{48} = \frac{21}{16}$.
43. The value of $\frac{0.525 \times 0.525 - 0.275 \times 0.275}{0.525 - 0.275}$ is:
 (1) 0.5 (2) 0.6
 (3) 0.4 (4) 0.8
43. (4)
 $\frac{(0.525 + 0.275)(0.525 - 0.275)}{(0.525 - 0.275)} = 0.8$

44. The smallest number which when reduced by 7 is divisible by 12, 16 and 18:
 (1) 199 (2) 223
 (3) 295 (4) 287
44. (3)
 295
45. In a class of 250 students, 75.8% took French and 49.4% took Latin. How many students took both French and Latin?
 (1) 189.0 (2) 123.0
 (3) 63.0 (4) 90.0
45. (3)
 25.2% of 250 = 63.0. (Approx.)

Directions: (Q. 46 to 49): Read the statements and choose the letter of the region which correctly represents the statement.



46. Students who took science but opted neither maths nor history:
 (1) b (2) e
 (3) d (4) g
46. (1)
47. Students who took maths and history both:
 (1) c (2) a
 (3) e (4) g
47. (3)
48. Students who took all three subjects i.e. maths, history and science:
 (1) f (2) g
 (3) e (4) d
48. (2)
49. Students who took science and history both:
 (1) g (2) e
 (3) f (4) d
49. (4)
50. Solve the following problem:
 $27 \div 3(4 + 5) - 17 + 9 \times 2$
 (1) 17 (2) 81
 (3) 82 (4) 69
50. (3)

51. In a basket, $\frac{3}{4}$ of the total fruits are apples, $\frac{2}{3}$ of the remaining are peach and the rest 300 are oranges. Find the total number of fruits in the basket.

- (1) 2000 (2) 2400
 (3) 3000 (4) 3600

51. (4)
 $8.5\% = 300$

$\therefore 100\% = 300 \times 12 = 3600.$

52. 12 men can complete a piece of work in 16 days. How many days will 4 men take to complete the task?

- (1) 60days (2) 45 days
 (3) 54 days (4) 48 days

52. (4)
 $\frac{12 \times 16}{4} = 48$ days.

53. In a certain code 'Them' is written as '1234' and 'WHEN' is written as '5238'. How is 'MENT' written in that code?"

- (1) 3418 (2) 3481
 (3) 4381 (4) 4318

53. (3)
 M E N T
 ↓ ↓ ↓ ↓
 4 3 8 1

54. In a certain code language, 'NOTE' is coded as 'OPUF'. Similarly, 'TASK' is coded as 'UBTL'. How will 'CORE' be coded in the same code language?

- (1) BNRE (2) PSFD
 (3) DSFP (4) DPSF

54. (4)

C	O	R	E
+1↓	+1↓	+1↓	+1↓
D	P	S	F

55. Which one is in the descending order in the following?

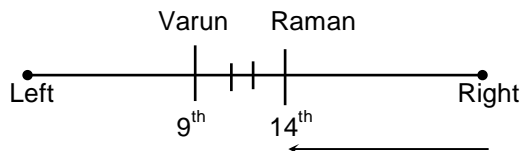
- (1) $\frac{6}{7}, \frac{4}{5}, \frac{3}{4}, \frac{7}{9}$ (2) $\frac{6}{7}, \frac{4}{5}, \frac{7}{9}, \frac{3}{4}$
 (3) $\frac{3}{4}, \frac{7}{9}, \frac{4}{5}, \frac{6}{7}$ (4) $\frac{7}{9}, \frac{3}{4}, \frac{6}{7}, \frac{4}{5}$

55. (2)

56. In a row of twenty five children Raman is 14th from the right end. Varun is third to the left of Raman. What is Varun's position from the left end of the row?


- (1) Eighth (2) Ninth
 (3) Seventh (4) Tenth

56. (2)

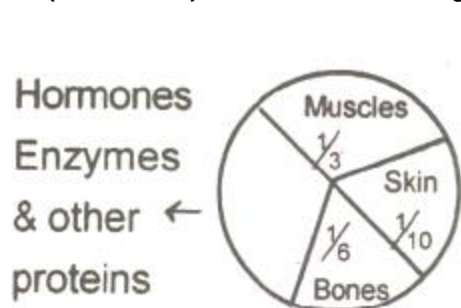


57. How many such pairs of letters are there in the word 'RAZORS' each of which has as many letters between them as in the English alphabet series:

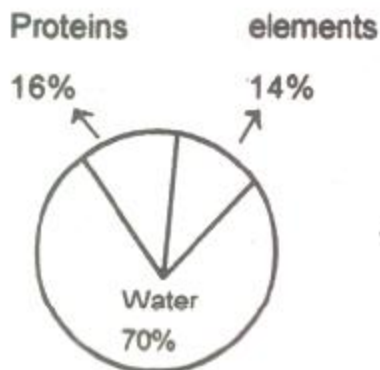
- (1) None (2) One
 (3) Two (4) Three

57. (3)


Directions: (Q. 58 to 61): Refer to the following pie charts and answer.



Distribution of protein in human Body



Distribution of elements in human body

58. What is the ratio of the distribution of proteins in the muscles to that of the distribution of proteins in the bones?

- (1) 1 : 2 (2) 2 : 1
 (3) 1 : 18 (4) 18 : 1

58. (2)
 $\frac{1}{3} : \frac{1}{6} = 2 : 1.$

59. What percentage of the total weight of the human body is equivalent to the weight of the skin in the human body?

- (1) 1.6 (2) 0.16
 (3) 0.016 (4) Insufficient data

59. (4)

60. To show the distribution of proteins and other dry elements in the human body, the arc of the circle should subtend at the centre an angle of:

- (1) 120° (2) 54°
 (3) 108° (4) 252°

60. (3)
 $\frac{360^\circ \times 30}{100} = 108^\circ.$

61. What is the quantity of water in the body of a person weighing 50 kg?

- (1) 35kg (2) 120kg
 (3) 71.42kg (4) 20kg

61. (1)
 Human body constitutes 70% of water $\therefore \frac{70}{100} \times 50 = 35\text{Kg}$

62. Pointing to a boy, Mamta said, "he is the only son of my father-in-law's only child." How is the boy related to Mamta?

- (1) Brother (2) Daughter
 (3) Son (4) Husband

62. (3)

Mamta's father-in-law's only child is Memta's husband and only child's only son is her husband's only son i.e. Memta's son.

63. Complete the series: 5, 6, 10, 19., 35,
- (1) 50 (2) 60
(3) 40 (4) 70
63. (2)
5, 6, 10, 19, 35,
- gap is perfect square 1, 4, 9, 16 so next gap should be 25, so $35 + 25 = 60$.

Directions: (Q. 64 to 67): Read the data carefully and answer the questions.

LAP BUT CAR SON HID

(New words to be formed may or may not necessarily be meaningful English words.)

64. If the positions of the 1st and the 3rd alphabets of each of the word are interchanged, which of the following would form meaningful words with the new arrangement?
- (1) HID (2) SON
(3) TUB (4) CAR
64. (3)
BUT when interchanged will form a meaningful word TUB.
65. If the given words are arranged in the order as they would appear in a dictionary from the left to right, which of the following will be 4th from the left?
- (1) LAP (2) BUT
(3) CAR (4) SON
65. (1)
The order of words in dictionary will be BUT, CAR, HID, LAP, SON
66. Which alphabet is one same place in two words given in the question?
- (1) u (2) i
(3) a (4) n
66. (3)
LAP and CAR both have 'A' at the same position.
67. If second alphabet in each of the words is changed to next alphabet in the English alphabetical order, how many words having no vowels will be formed?
- (1) One (2) Two
(3) Three (4) More than three
67. (4)
All 5 will have no vowels.
68. If "road" is called "water", "water" is called "ice", "ice" is called "Sugar" and "Sugar" is called "bowl". Then, on what the vehicles move?
- (1) Ice (2) Bowl
(3) Sugar (4) Water
68. (4)
'vehicles' moves on road and road is called 'water'.
69. Arrange the following according to dictionary and determine the one at 4th place:
- (1) Zamaica (2) Zidane
(3) Zeast (4) Zinedine
69. (4)
The order will be
Zamaica, Zeast, Zidane, Zinedine

70. In a 729 ml mixture milk and water are in the ratio of 7 : 2. How much quantity of water should be added in the new mixture so that the ratio of milk and water becomes 7 : 3?
 (1) 72 ml (2) 81ml
 (3) 85ml (4) 90ml

70. (2)

original quantity of water in 729 ml mixture = $\frac{2}{9} \times 729 = 162\text{ml}$

let x ml of water is to be added to get milk and water ratio as 7 : 3

$$\text{so } \frac{3}{10}(729 + X) = 162 + x$$

$$\Rightarrow 2187 + 3X = 1620 + 10x$$

$$\Rightarrow 567 = 7x \Rightarrow x = 81 \text{ ml}$$

71. The total surface area of a cube is 384 m^2 . Its volume will be:

- (1) 343m^3 (2) 616m^3
 (3) 512m^3 (4) 660m^3

71. (3)

Total surface area of cube = $6 \times \text{side}^2 = 384 \text{ m}^2$

$$\Rightarrow \text{side}^2 = 64 \Rightarrow \text{side} = 8\text{m}$$

$$\text{so, its volume} = (\text{side})^3 = (8)^3\text{m}^3 = 512\text{m}^3$$

72. When the price of TV set was increased by 30%, then number of TV sets sold decreased by 20%. What was the effect on the sales?

- (1) 8% decrease (2) 8% increase
 (3) 4% decrease (4) 4% increase

72. (4)

For any two dimension change

$$\text{Use the formula} = a + b + \frac{a \times b}{100}$$

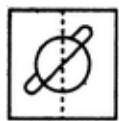
$$\therefore \text{effect on sale} = (30) + (-20) + \frac{(30) \times (-20)}{100}$$

$$= 30 - 20 - \frac{600}{100} = 4$$

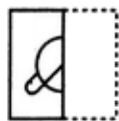
If answer is +ve so sale is increased by 4%, if it is -ve so sale is decreased.

Directions: (Q. 73 to 74): Select the alternative which correctly depicts how a paper will appear, when it is folded along the dotted line?

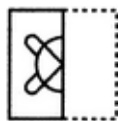
73.



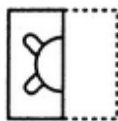
(X)



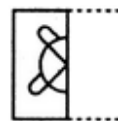
(A)



(B)



(C)



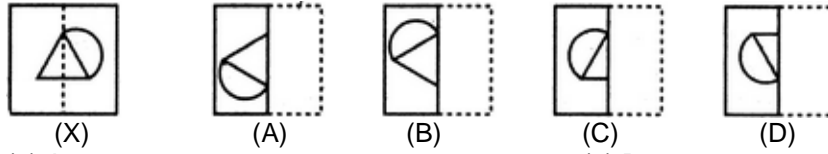
(D)

- (1) A
 (3) C

- (2) B
 (4) D

73. (4)

74.



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

74.

75.

2	4		22	24	...	12	14		
6	8		26	28	...	16	18		

(1)

32	38
34	36

(2)

32	34
50	36

(3)

42	44
46	48

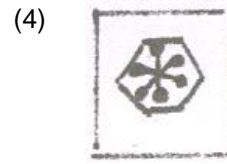
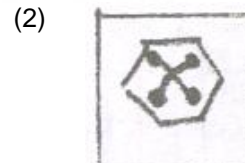
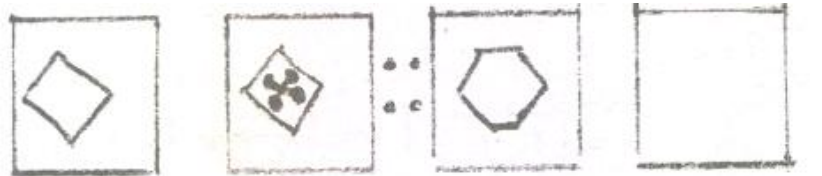
(4)

28	30
34	32

75.

(3)

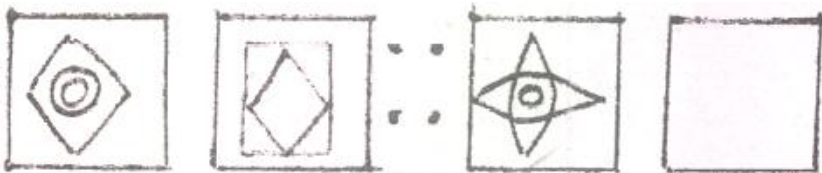
76.

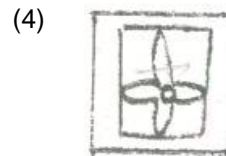
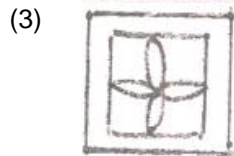
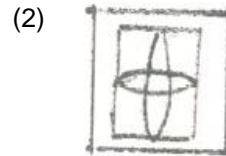
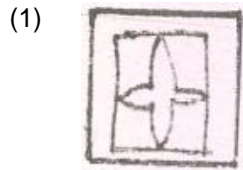


76.

(4)

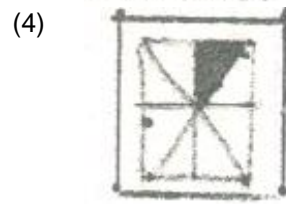
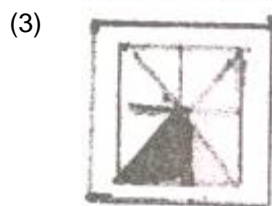
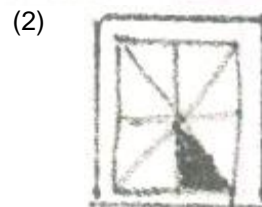
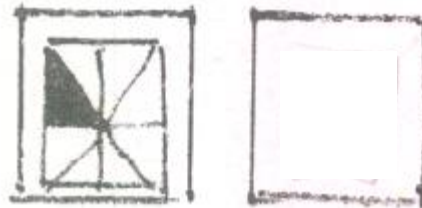
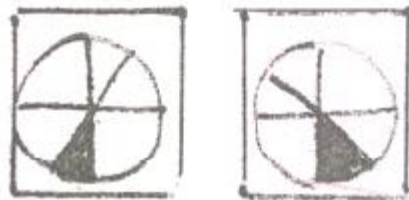
77.





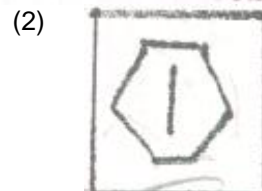
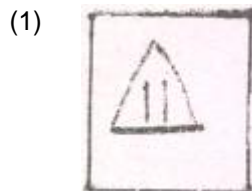
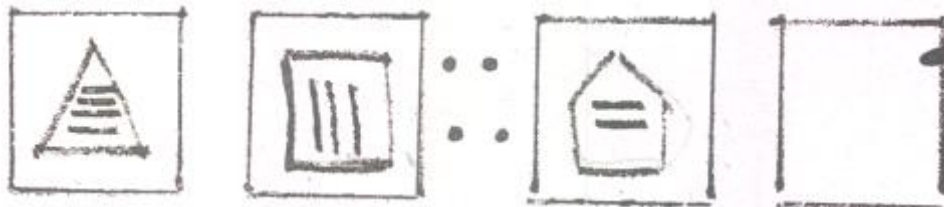
77. (1) inner figure is removed, only boundary is left.

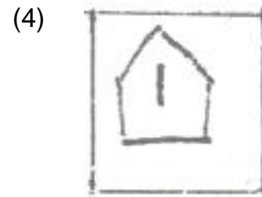
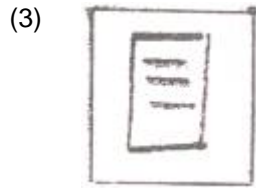
78.



78. (3) Shaded position is moved 45 degrees in anticlockwise direction.

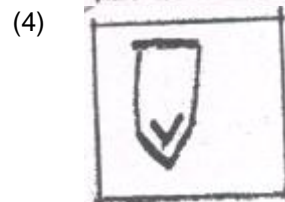
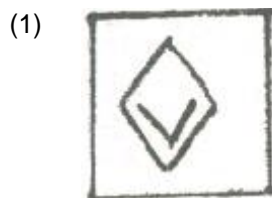
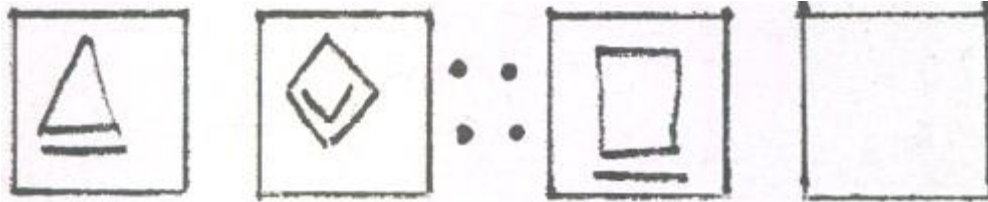
79.





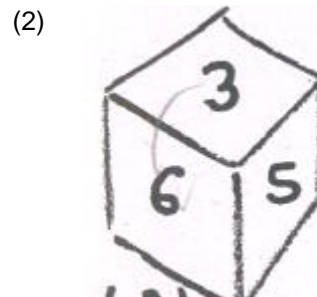
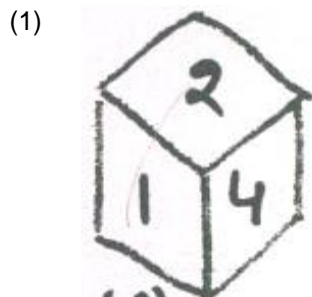
79. (2) Outer figure one line is increased and inner lines one line is decreased and line position is also changed its is vertical to horizontal

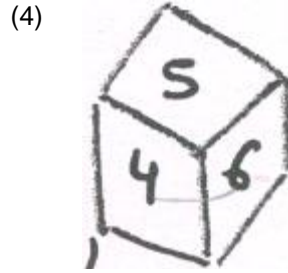
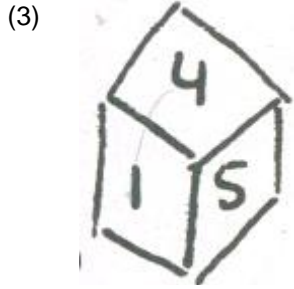
80.



80. (4) one side is increased in the figure and outer line taken inside and kept down in 'V' shape.

81. Observe the die given below and answer:



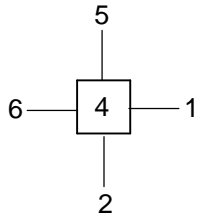


Which number is opposite 3 ?

- (1) 1
- (3) 4
- (3)

- (2) 2
- (4) 6

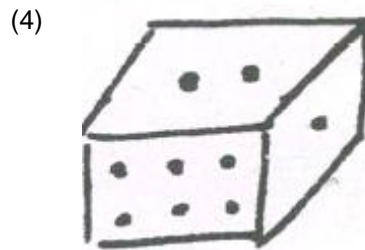
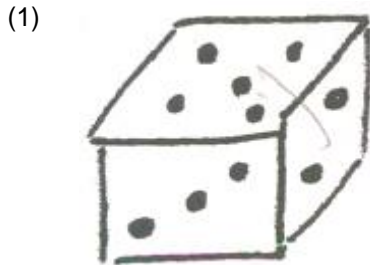
81.



No. opposite to 4 is 3. Hence no opposite to 3 is 4

82.

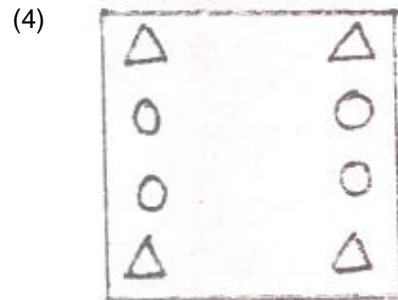
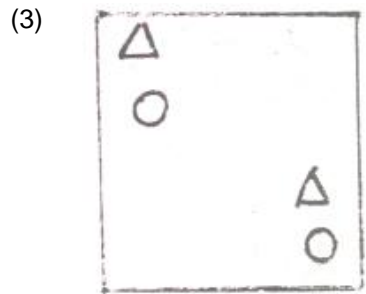
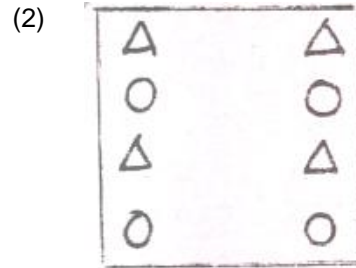
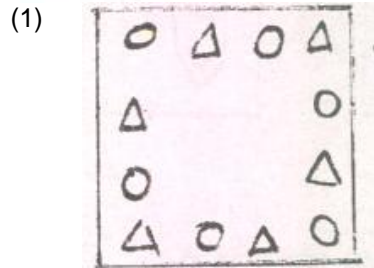
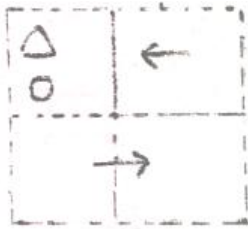
If the total number of dots on opposite faces of a cubical block is always 7, find the figure which is correct?



82. (2)

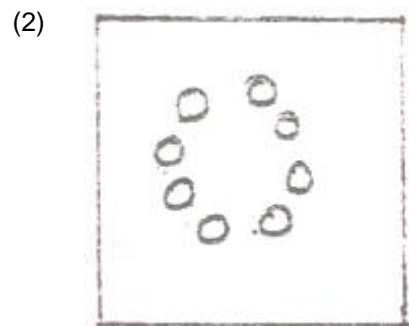
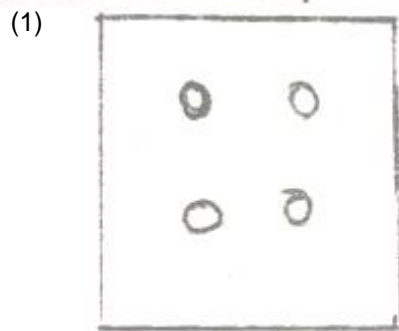
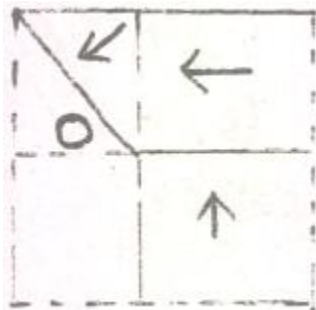
Directions: (Q. 83 to 84): A paper is folded and a cut is made. Select the alternative which correctly depicts how the paper will appear when it is opened?

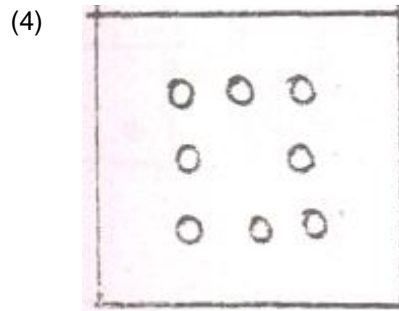
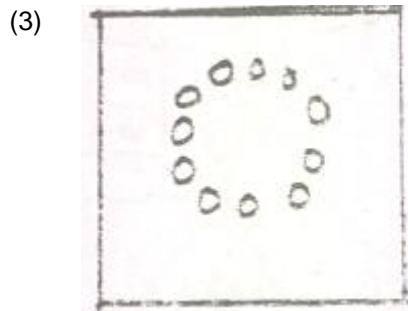
83.



83. (4)

84.

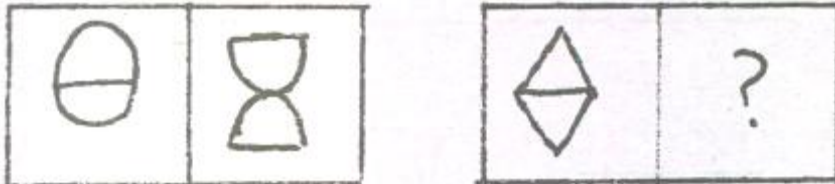




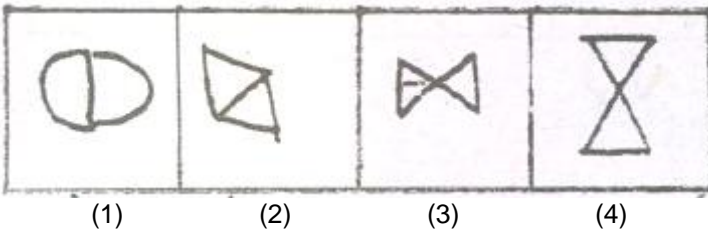
84. (2)

Directions: (Q. 85 to 90): Complete the given series by choosing the appropriate answer (1, 2, 3 or 4).

85. Problem Figure

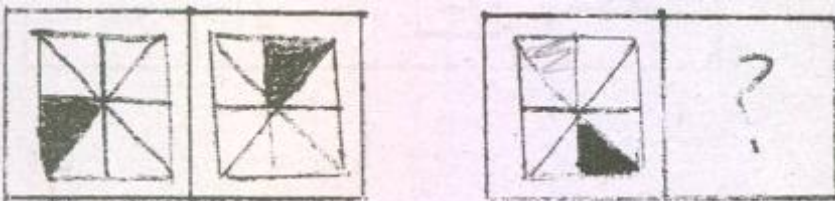


Answer Figure

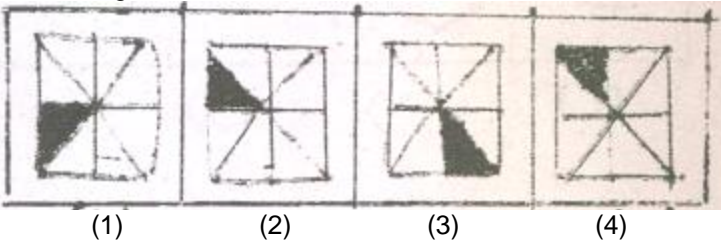


85. (4)
Figure broken in two part and folded opposite

86. Problem Figure



Answer Figure

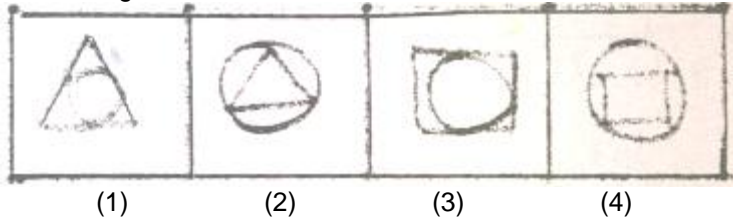


86. (2)
has been moved three next parts clockwise.

87. Problem Figure

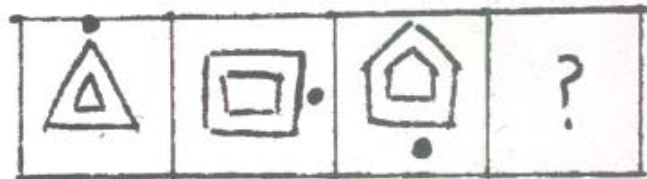


Answer Figure

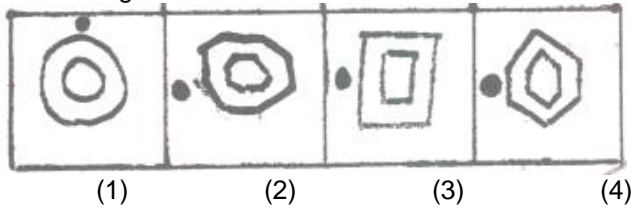


87. (3)
Inner figure and outer figure position interchanged .

88. Problem Figure

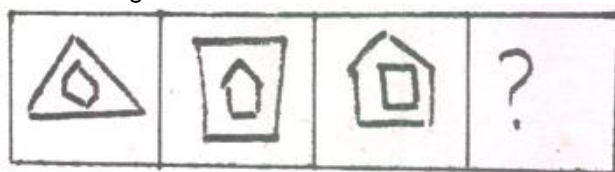


Answer Figure

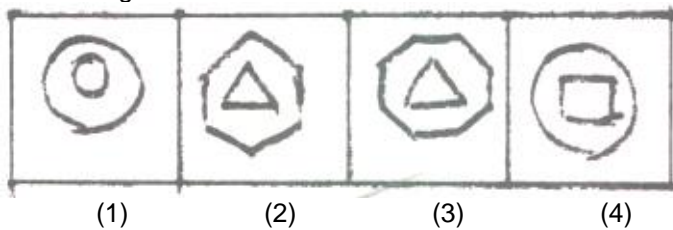


88. (4)
Inner and outer figure both have got increase of one line.

89. Problem Figure



Answer Figure

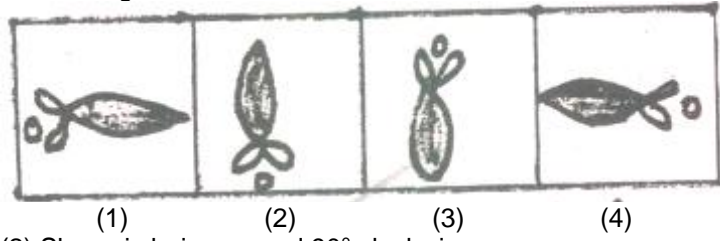


89. (2)
outer figure – 1 line increase
inner figure – 1 line decrease

90. Problem Figure



Answer Figure



90. (2) Shape is being moved 90° clockwise.