



**NATIONAL TALENT SEARCH EXAMINATION
(NTSE-2020) STAGE -1
STATE : JHARKHAND PAPER : MAT**

Date: 17/11/2019

Max. Marks: 100

SOLUTIONS

Time allowed: 60 mins

Read the following instructions carefully before you answer the questions. Answers are to be SHADED on a SEPARATE OMR Answer sheet given, with a HB pencil. Read the Instructions printed on the OMR sheet carefully before answering the questions. Please write you Centre Code No. and Roll no. very clearly (only one digit in one block) on the

Directions : Questions (1 to 10)

In the Number series given below, one Number is missing. Each series is followed by five alternatives (1), (2), (3) and (4). One of them is the right answer. Identify and indicate it as per the "Instructions".

1. Qutub Minar : Delhi : : Rock Garden : ?

- (1) Kolkata (2) Chennai (3) Chandigarh (4) Bengaluru

1. Ans.(3), Chandigarh

2. If in a code CLOUD is written as DMPVE, then in the same code how SIGHT will be written?

- (1) SGHV (2) UGHHT (3) UHJFW (4) TJHIU

Ans. (4)

Sol. $+1 \left\{ \begin{array}{c} C L O U D \\ | | | | | \\ D M P V E \end{array} \right. +1 \left\{ \begin{array}{c} S I G H T \\ | | | | | \\ T J H I U \end{array} \right. +1$

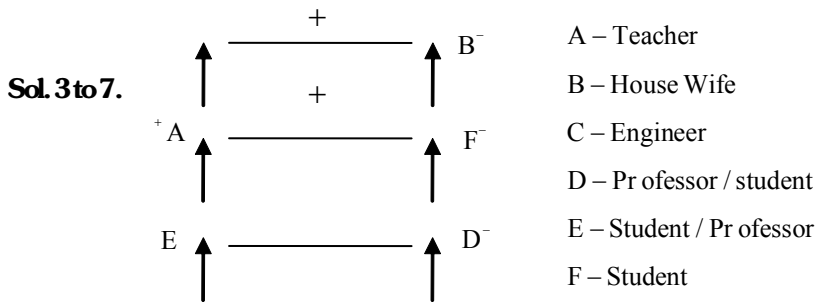
Q.3-7 Read the following information and answer the question based on it :

- (i) A, B, C, D, E and F are six family members.
- (ii) There is one Teacher, one Professor, one Engineer, two Students and one Housewife.
- (iii) There are two married couples in the family.
- (iv) A who is a Teacher is father of E.
- (v) F is a Student and mother of D.
- (vi) B is grandmother of D and is a Housewife.
- (vii) C is father of A and is an Engineer.
- (viii) D is brother of E.

3. Which of the following statements is definitely true?

- (1) C is father of the Student (2) B is grandmother of the Professor
(3) F is the father of Professor (4) D is the brother of the Professor

Ans. (2)



4 Which of the following is one of the pairs of married couples?
 (1) FB (2) FA (3) CF (4) FD

Ans. (2)

5 Who is the Professor ?
 (1) D (2) E (3) Either D or E (4) A's son

Ans. (3)

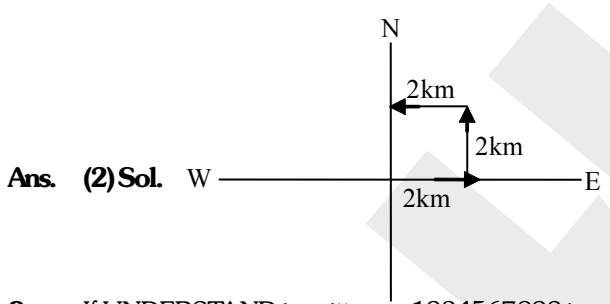
6 How many female members are there in the family ?
 (1) Three only (2) Two only (3) Three or four (4) Two or three

Ans. (4)

7 How is D related to B?
 (1) Granddaughter (2) Grandson (3) Son (4) None of these

Ans. (2)

8 A man walks 2 km to the east, turns left, walks 2 km and turns left and walks 2 km. Which direction is he facing now ?
 (1) East (2) West (3) North (4) South

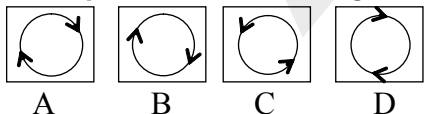


9 If UNDERSTAND is written as 1234567823 in a code language then in that language START will be written as
 (1) 56781 (2) 83243 (3) 73652 (4) 67857

Ans. (4)

Sol. UNDERSTAND— 1234567823
 START— 67857 (Direct Coding)

10. In this question, select the one figure which is different from the other three.

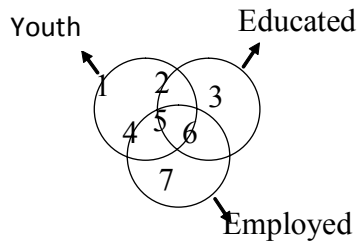


(1) A (2) B (3) C (4) D

Ans. (3)

Sol. All are moving clock wise excluding C

Q. 11-13 Study the following diagram :



11. Identify the region representing the youths who are employed, but not educated.

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

Ans. (2)

Sol. By visualizing

12. Identify the region representing youths who are educated but not employed.

- (1) 2, 5, 4 (2) 2, 5, 6 (3) 4, 5, 6 (4) 2 only

Ans. (4)

Sol. By visualizing

13. Identify the region representing youths who are educated and employed also

- (1) 6 only (2) 7 only (3) 5 only (4) none of these

Ans. (3)

Sol. By visualizing

14. If '×' means 'sum', '-' means 'division', '÷' means 'subtract' and '+' means 'multiplication', then which of the following equations is true?

- (1) $16 + 5 - 10 \times 4 \div 3 = 9$ (2) $16 - 5 \times 10 \div 4 + 3 = 12$
(3) $16 + 5 \div 10 \times 4 - 3 = 9$ (4) $16 + 5 \div 10 \times 4 - 3 = 9$

Ans. (1)

Sol. By checking option

$$16 + 5 - 10 \times 4 \div 3 = 9$$

$$16 - 5 \div 10 + 4 - 3 = 9$$

Q.15-16 Identify the missing number in the following sequence :

15. 31, 37, ?, 43, 47, 53

- (1) 39 (2) 40 (3) 41 (4) 42

Ans. (3)

Sol. Prime number series (41)

16. 2, 3, 6, 15, 42, ?

- (1) 84 (2) 123 (3) 94 (4) 60

Ans. (2)

2, 3, 6, 15, 42, ?

Sol. $+1 \quad +3 \quad +9 \quad +27 \quad +81$
 $\quad \times 3 \quad \times 3 \quad \times 3 \quad \times 3$

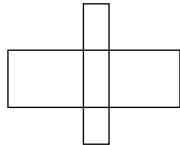
17. If BAT is coded as 283, CAT is coded as 383 and ARE is coded as 801, the code for BETTER is

- (1) 123301 (2) 213310 (3) 213301 (4) 012334

Ans. (2)

Sol. BAT ——— 283
CAT ——— 383
ARE ——— 801, then
BETTER ——— 213310 (Direct Coding)

18. How many rectangles are there in the following diagram



- (1) 5 (2) 15 (3) 11 (4) 12

Ans. (3)

Sol. By counting

19. In any code language DEVIL is written as ABSFI, then how OTHER will be written in that language ?

- (1) LRECO (2) LQEBO (3) LWEBO (4) RWKHV

Ans. (2)

Sol. $\left. \begin{array}{c} D E V I L \\ | | | | | \\ A B S F I \end{array} \right\} -3$ $\left. \begin{array}{c} O T H E R \\ | | | | | \\ L Q E B O \end{array} \right\} -3$

20. What will be in place of (?)? A, G, M, R, X, ?

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

Ans. (4)

A, G, M, R, X,
1, 7, 13, 18, 24,
 $13+18=31$

Sol. $7+24=31$

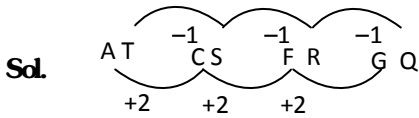
$1+?=31$

$?=30=26+4=D$

21. What will be in place of (?) ? AT, CS, ER, GQ, ?

- (1) JP (2) IQ (3) IP (4) JO

Ans. (3)



22. Crime : Punishment :: Good work : ?

- (1) Sin (2) Reward (3) Good (4) Entertainment

Ans. (2)

23. Import : Export :: Expenditure : ?

- (1) Revenue (2) Deficit (3) Tax (4) Exchange

Ans. (1)

24. If in English alphabets first and twenty-sixth letters are a pair, second and twenty-fifth are a pair and so on, then which of the following is a like pair ?

- (1) IP (2) GR (3) CW (4) EV

Ans. (4)

Sol. E V
5 + 22 = 27

25. Select the word which can be made by using the letters of the given word : MULTIPLICATOIN

- (1) MUTUALY (2) LIMITATION (3) APPLICABLE (4) NOTIFICATION

Ans. (2)

Sol. By observation

26. How many meaningful English words can be made by using each letter of the group of letters ACER only once ?

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

Ans. (3)

Sol. RACE, ACRE, CARE

27. Select the word from the alternatives which cannot be made by using the letters of the given word. SUPERIORITY

- (1) PURSE (2) PURSUIT (3) PRIORITY (4) PURITY

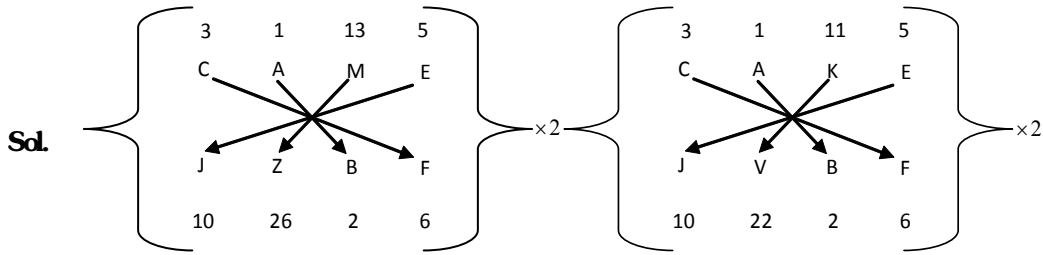
Ans. (2)

Sol. By observation

28. If in any code language CAME is written as JZBF then, what will be written for CAKE in that language ?

- (1) JBFV (2) FJVB (3) JVBF (4) FBVJ

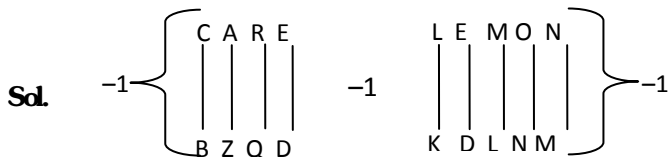
Ans. (3)



29. In any code language CARE is written as BZQD then how LEMON will be written in that language ?

- (1) GDEDQ (2) GDDMO (3) OVNLM (4) KDLNM

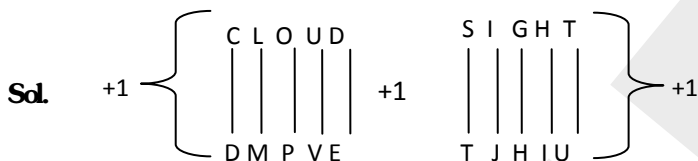
Ans. (4)



30. In certain code CLOUD is written as DMPVE then how SIGHT will be written that code ?

- (1) SGHJV (2) UGHHT (3) UHJFW (4) TJHIU

Ans. (4)



Q. 31-35 Below are given some numbers with some letters. Study them and answer the questions :

5 2 6 3 0 1 8 7 4 9
P D N L G K H J B A

31. 384029

- (1) LHBGDA (2) ADGBLH (3) PDNLHG (4) DCBANL

Ans. (1)

Sol. Direct coding

32. 422605

- (1) CLNDOPB (2) BDDNGP (3) LDNPBGK (4) CBADLC

Ans. (2)

Sol. Direct coding

33. 3265401

- (1) OPNCBA (2) LCDBDNO (3) LDNPBGK (4) KGBCDNC

Ans. (3)

Sol. Direct coding

34. 1003241

- (1) KGGDLBDK (2) LCDBDNO (3) BCDBAAC (4) KGGLDBK

Ans. (4)

Sol. Direct coding

35. 321567

- (1) LDKPNJ (2) JNPKDL (3) LKDNJP (4) PJKLDN

Ans. (1)

Sol. Direct coding

36. The way in which 'Whale' is related to 'Mammal' in the same way to which the 'Crocodile' will be related ?

- (1) Amphibian (2) Aquatic (3) Mammal (4) Bird

Ans. (1)

37. The relation that exists between China and Beijing, the same relation exists between Japan and which of the following ?

- (1) Moscow (2) Rome (3) Berlin (4) Tokyo

Ans. (4)

38. The relation which exists between pasteurization and Louis Pasteur the relation exists between Aeroplane and which of the following ?

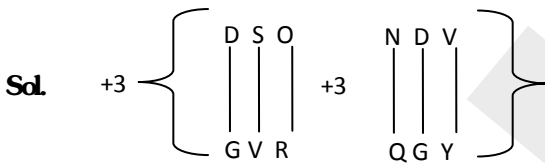
- (1) G. Marcony (2) J.L. Baird (3) Wright brothers (4) Brecket

Ans. (3)

39. The relation exists between DSO and GVR the same relation exists between NDV and which of the following ?

- (1) YGQ (2) QYG (3) YQG (4) QGY

Ans. (4)



40. The relation that exists between 'Canada' and 'Maple leaves' the same relation exists between 'Sri Lanka' and which of the following ?

- (1) Lion and Sword (2) Olive leaves (3) Eagle (4) Rose flower

Ans. (1)

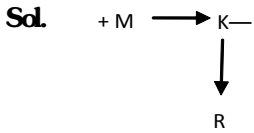
Q.41-43 Answer the following questions on the basis of the information given :

- (A) The meaning of $P + Q$ is $-P$ is the brother of Q
 (B) The meaning of $P - Q$ is $-P$ is the mother of Q
 (C) The meaning of $P \times Q$ is $-P$ is the sister of Q

41. Which of the following means that M is the maternal uncle of R ?

- (1) $M + K - R$ (2) $M - R + K$ (3) $M + K \times Q$ (4) $M - K + R$

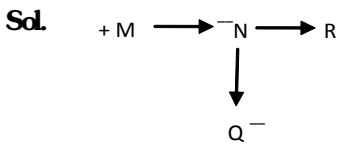
Ans. (1)



42. What conclusion do you extract from $M - K + R$?

- (1) R is the sister of N (2) M is the maternal uncle of Q
 (3) R is the husband of N (4) R is the brother of Q

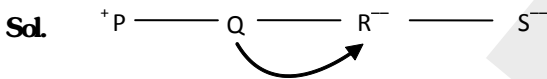
Ans. (2)



43. P is the brother of Q, R is the sister of Q and S is the sister of R, then how is Q related to R?

- (1) Sister (2) Brother or sister (3) Brother (4) Father

Ans. (2)



44. Indicating to a picture Aparna said "He is the only son of the father of the brother of my sister". How is Aparna related to that person ?

- (1) Maternal uncle (2) Father (3) Grandfather (4) Brother

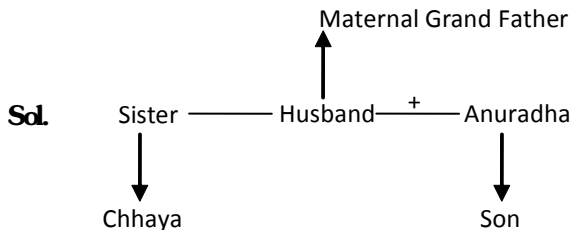
Ans. (4)



45. Chhaya is telling to Anuradha "The father of your daughter is the son of my maternal grandfather". How is Chhaya related to the husband of Anuradha ?

- (1) Sister (2) Mother (3) Aunt (4) Niece

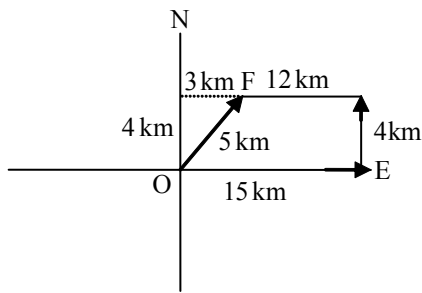
Ans. (4)



- 46.** A lady walked 15 km in the eastern direction, then walked 4 km towards north and again walked 12 km towards west. How far is he from her starting place ?
 (1) 31 km (2) 5 km (3) 19 km (4) 27 km

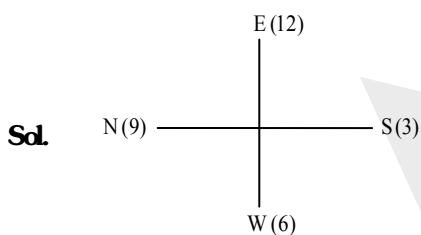
Ans. (2)

Sol. By using Pythagoras theorem



- 47.** If a clock is kept in such a way that its figure of 12 comes towards east, then in which direction will be the figure of 9 ?
 (1) South (2) West (3) North (4) East

Ans. (3)



- 48.** In the morning I went for a walk in the garden. I was standing in a place and wanted to see the sun. For this purpose I turned 90° anticlockwise. But I could not see the sun. So I turned 270° clockwise. This time I could see the sun. In which direction I was facing at the first ?
 (1) North - west (2) North (3) South - east (4) West

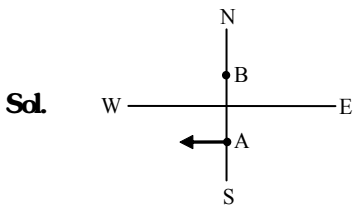
Ans. (4)

Sol. $-90^\circ + 270^\circ = +180^\circ$

49. In a morning just after the sunrise A and B was talking between each other face to face. If the shadow of B fell just on the left of A, then just opposite of which direction was the face of A?

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

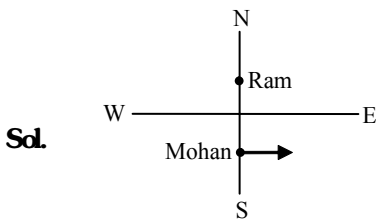
Ans. (4)



50. In the evening just before sunset, Ram and Mohan were standing in a courtyard and talking between each other. If the shadow of Mohan falls is just on the left of Ram, then in which direction is the face of Ram ?

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

Ans. (3)



51. Kiran, Suman, Vidya, Naina and Kamalu are five friends. Naina is younger than Kamala, Suman is younger than Vidya and Vidya is younger than Kiran. If Suman is elder than Kamala then who will be in the middle in the order of their ages ?

- (1) Kamala (2) Suman (3) Vidya (4) Kiran

Ans. (2)

Sol. Name \longrightarrow Kamla \longrightarrow Suman \longrightarrow Vidya \longrightarrow Kiran

52. Garima, Rupa, Anjali and Khushbu are made to stand in ascending order of their ages. If Rupa is elder than Khushbu, Garima is younger than Anjali and elder than Rupa, then who is the youngest ?

- (1) Anjali (2) Khushbu (3) Rupa (4) Garima

Ans. (2)

Sol. Khushbu < Rupa < Garima < Anjali

53. In an examination Suman has got equal marks as Kavita. Meena got more marks than Geeta, but her marks were less than Suman. Who got the least marks ?

- (1) Suman (2) Meena (3) Geeta (4) Kavita

Ans. (3)

Sol. Geeta < Meena < Suman = Kavita

54. Gopal is elder than Mohan but younger than Ram. Mohan is elder than Sohan but younger than Ram. Who is the eldest ?

- (1) Mohan (2) Sohan (3) Ram (4) Gopal

Ans. (3)

Sol. Sohan → Mohan → Gopal → Ram

55. Sourav is elder than Neeraj, but younger than Vinod. Manu is elder than Vinod, but younger than Shivam. Who is the eldest ?

- (1) Sourav (2) Neeraj (3) Shivam (4) Manu

Ans. (3)

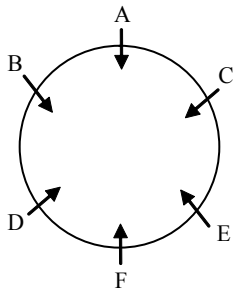
Sol. Neeraj → Sourav → Vinod → Manu → Shivam

Q.56-60 Six persons A, B, C, D, E and F are sitting in a circle facing the centre. A is in the middle of B and C, but E and C are face to face to F. D is second in the left of E.

56. Who is second person sitting in the right of A?

- (1) D (2) E (3) B (4) F

Ans. (1)



Sol. from 56 to 60

(By using hindi information)

57. Who is sitting just on the left of D ?

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

Ans. (1)

58. Who is sitting just in front of F?

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

Ans. (3)

59. Who is sitting just in front of B ?

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

Ans. (3)

60. Who is sitting just in front of D?

- (1) C (2) A (3) F (4) E

Ans. (1)

Q.61-64 Six books are kept one above another. Biology book is just under the Physics book. Chemistry book is in between Hindi and Geography books. Anthropology book is not on the top. Biology book is at the bottom and Hindi book is on the top.

61. Which book is in second place from the top ?

- (1) Chemistry (2) Anthropology (3) Geography (4) Biology

Ans. (1)

62. Which book is fourth from the bottom ?

- (1) Hindi (2) Geography (3) Anthropology (4) Chemistry

Ans. (2)

63. Which book is third from the top ?

- (1) Geography (2) Anthropology (3) Physics (4) Biology

Ans. (1)

64. Which book is in between Chemistry and Anthropology ?

- (1) Physics (2) Geography (3) Biology (4) Hindi

Ans. (2)

65. Which of the following words will come third in the English dictionary ?

- (1) Reconcile (2) Reconstruct (3) Reconsider (4) Reconnoitre

Ans. (3)

Sol. From 61 to 65 Hindi

Chemistry

Geography

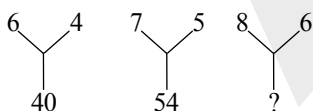
Anthropology

Physics

Biology

Q.66-70 What will be in the place of (?) ?

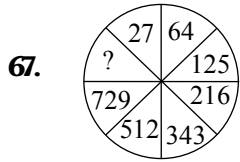
66.



- (1) 70 (2) 75 (3) 80 (4) 85

Ans. (1)

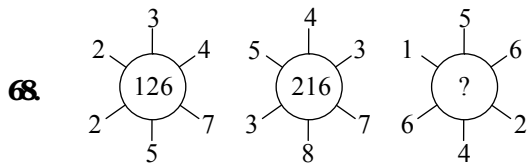
Sol. $6^2 + 4 = 40, 7^2 + 5 = 54, 8^2 + 6 = 70$



- (1) 1000 (2) 2000 (3) 3000 (4) 4000

Ans. (1)

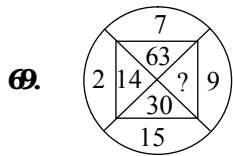
Sol. Cubic series 10^3



- (1) 142 (2) 242 (3) 144 (4) 216

Ans. (3)

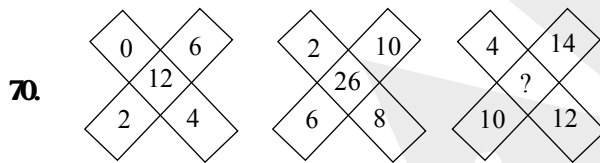
Sol. $(2+3+4) \times (2+7+5) = 126, (5+4+3) \times (3+8+7) = 216, (1+5+6) \times (6+4+2) = 144$



- (1) 33 (2) 145 (3) 135 (4) 18

Ans. (3)

Sol. $15 \times 2 = 30, 7 \times 2 = 14, 9 \times 7 = 63, 15 \times 9 = 135$



- (1) 36 (2) 38 (3) 40 (4) 48

Ans. (3)

Sol. $(0+4) + (6+2) = 12, (2+8) + (6+10) = 26, (12+4) + (14+10) = 40$

Q. 71-75 In the following questions two statements and four conclusions I, II, III and IV have been given. According to the logic you have to decide on the basis of the given two statements that which conclusion is correct :

71. Statements : A. Some students are children.

B. All children are girls.

Conclusions : I. All students are girls.

II. Some girls are students.

III. Some girls are children.

IV. All children are students.

(1) Only conclusion II is correct

(2) Conclusions I, II and III are correct

(3) All conclusions are correct

(4) Conclusions II and III are correct.

Ans. (4)

Sol. Statements : A. Some students are _{some} children

: B. All children are girl_{some}

72. Statements : A. All papers are pens.

B. All pens are wet.

Conclusions : I. Some pens are papers.

II. No pen is paper.

III. Some wet are pens.

IV. All wets are papers.

(1) Only conclusion I is correct

(2) Conclusions I or II is correct

(3) Conclusion I and III are correct

(4) Conclusions III and IV is correct.

Ans. (3)

Sol. Statement A: All papers are pen_{some}

B : All pens are wet_{some}

73. Statements : A. Some windows are doors.

B. All doors are handles.

Conclusions : I. Some windows are handles.

II. All windows are handles.

III. Some cats are handles.

IV. All cats are handles.

(1) Only conclusions are correct

(2) Conclusions II or IV are correct

(3) No conclusion is correct

(4) Conclusions I and III are correct.

Ans. (NA)

Sol. NA

74. Statements : A. Some black are yellow.
 B. No yellow is not white.
 Conclusions : I. Some yellow are black.
 II. Some white are black.
 III. Some white are not black.
 IV. All white are black.

- (1) Only conclusion I is correct (2) Conclusions II or III is correct
 (3) Conclusion I and III are correct (4) Conclusions III is correct.

Ans. (3)

Sol. Statement A: Some black are yellow_{some}
 B : No yellow is not white_{some}

75. Statement : A . Some pens are pencils.
 B. Some pencils are papers.
 Conclusions : I. All papers are pens.
 II. Some papers are pens.

- (1) Only conclusion I is correct (2) Conclusions II is correct
 (3) Both conclusions I & II are correct (4) Neither conclusions I nor conclusion II is correct.

Ans. (4)

Sol. Statement A: Some pens are pencils_{some}
 B : Some pencils are papers_{some}

76. Which diagram represents the relation be Ruble, Dollar and Rupee?



Ans. (3)

Sol. By using observation

77. Which diagram represents angle, side and triangle ?



Ans. (4)

Sol. By using observation

78. Which diagram represents TV, Freeze and Cooler ?



Ans. (1)

Sol. By using observation

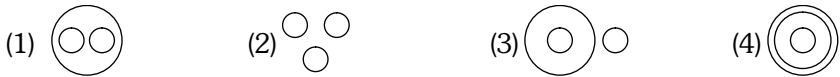
79. Which diagram represents Boy, Girl and Man ?



Ans. (3)

Sol. By using observation

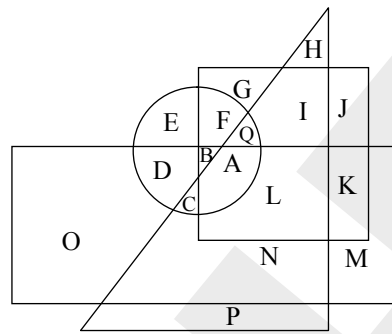
80. Which diagram represents India, China and Russia ?



Ans. (2)

Sol. By using observation

Q. 81 - 85 Question Nos, 81 to 85 are based on the following diagram in which four figures (one circle, one square, one triangle; and one rectangle) are overlapping each other. Different regions of the diagram are marked with letters A to Q. Read each question carefully and choose the correct alternatives.



81. In the given diagram which letter is inside the square and triangle, but outside the rectangle and circle ?

- (1) G (2) I (3) L (4) F

Ans. (2)

Sol. By using observation

82. Which letter is outside the square and triangle, but inside the rectangle and circle ?

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

Ans. (1)

Sol. By using observation

83. Which letter will come inside the square, circle and rectangle, but not inside the triangle ?

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

Ans. (4)

Sol. By using observation

- 84.** Which letter is inside of all the figures ?
(1) C (2) B (3) A (4) Q

Ans. (3)

Sol. By using observation

- 85.** Which letter is inside the rectangle, square and triangle, but outside the circle ?
(1) B (2) C (3) A (4) L

Ans. (4)

Sol. By using observation

- 86.** The director reached the conference hall for the meeting at 10 minutes earlier than 11:40 and found that his joint director who was 30 minutes late had reached 20 minutes earlier. What is the scheduled time of the meeting ?
(1) 11:40 (2) 11:30 (3) 11:20 (4) 11:50

Ans. (3)

Sol. From option (3)

Taking meeting time as 11:20

Director reached at 11:30

Joint director reached at 11:40

- 87.** A candidate joined an examination in which he answered 108 questions. In the examination every wrong answer will get negative $\frac{1}{3}$ rd mark and every correct answer will get 1 mark. If the candidate has got zero then how many wrong answers he has given ?

- (1) 27 (2) 62 (3) 54 (4) 81

Ans. (4)

Sol. Let number of wrong answers = x

$$-\frac{1}{3}x + 108 - x = 0 \Rightarrow x = 81$$

- 88.** On my birthday my father distributed Rs. 280 in such a way that each girl gets Rs. 20 and each boy gets Rs. 10. If the number of girls is 2 more than the boys then how many boys were there ?

- (1) 27 (2) 62 (3) 54 (4) 81

Ans. (4)

Sol. Let number of boys = x then $10x + 20x + 40 = 280 \Rightarrow x = 8$

- 89.** My mother's age is double of my sister. My father is 20 years elder than me. When my sister was born I was 5 years old. If my sister is at present 17 years old, then what is the difference of ages of my father and mother ?

- (1) 5 (2) 9 (3) 10 (4) 8

Ans. (4)

Sol. $M = 2S, F = 20 + x, x = S + 5$

$$S = 17 \Rightarrow x = 17 + 5 = 22, M = 34, F = 42$$

$$F - M = 8$$

90. B's age is 4 years less than A. D's age is 4 years less than C, but $\frac{1}{4}$ th of A. If C's age is 8 years then B's age is how much time(s) of D?

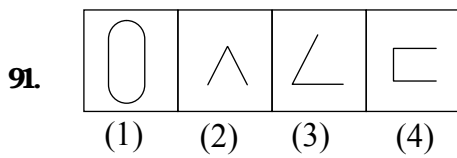
- (1) 1 (2) 2 (3) 3 (4) $\frac{1}{2}$

Ans. (3)

Sol. $B = A - 4, D = C - 4, D = \frac{1}{4}A, C = 8$

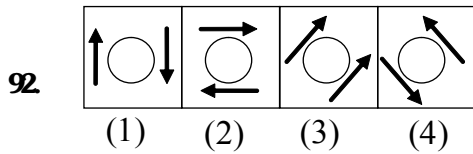
Hence $D = 4, A = 16, B = 12$

Hence $B = 3D$



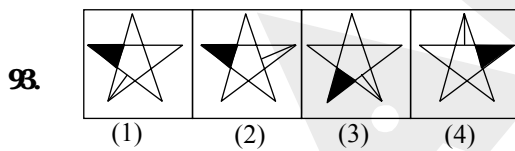
Ans. (1)

Sol. By using visualization



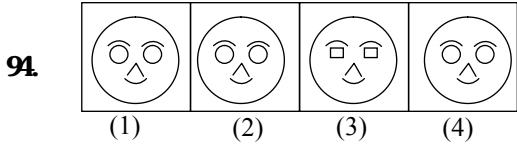
Ans. (3)

Sol. By using visualization



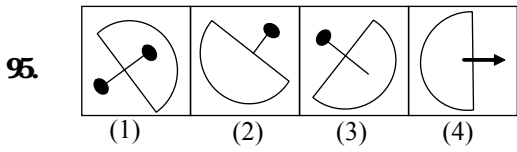
Ans. (2)

Sol. By using visualization



Ans. (3)

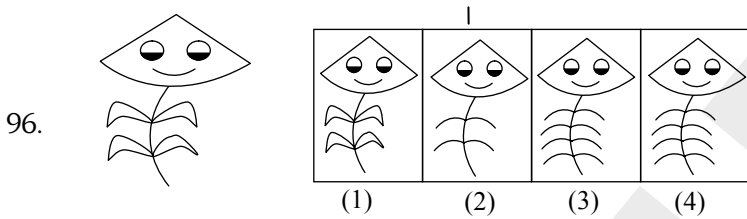
Sol. By using visualization



Ans. (2)

Sol. By using visualization

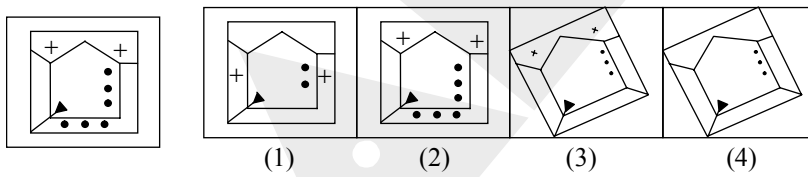
96 to 100. In the left of each question there is one question figure and to the right there are four answer figures 1,2,3 and 4. You have to select the similar figure to the question figure among the four answer figures.



Ans. (1)

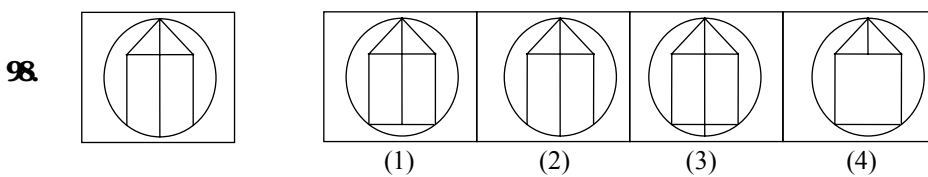
Sol. By using visualization

97.



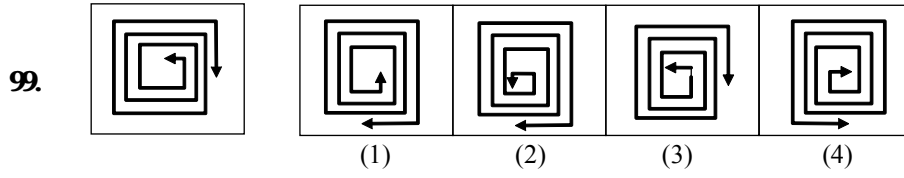
Ans. (2)

Sol. By using visualization



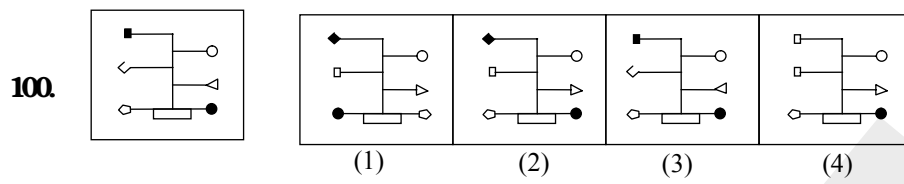
Ans. (2)

Sol. By using visualization



Ans. (3)

Sol. By using visualization



Ans. (3)

Sol. By using visualization