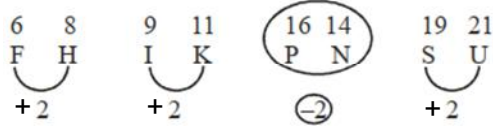


# NATIONAL TALENT SEARCH EXAMINATION-2019-20, ASSAM MENTAL APTITUDE TEST (MAT) PAPER & HINTS & SOLUTION

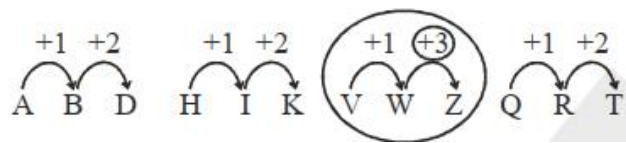
**Directions : Questions (1 to 10)**

1. Choose the odd letter group or odd numerical group.  
 (a) FH (b) IK (c) PN (d) SU  
 Ans. (c)



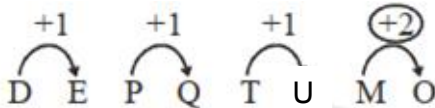
Sol.

2. (a) ABD (b) HIK (c) VWZ (d) QRT  
 Ans. (c)



Sol.

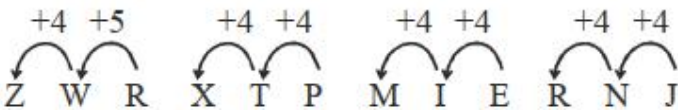
3. (a) DE (b) PQ (c) TU (d) MO  
 Ans. (d)



Sol.

4. (a) VT (b) MO (c) FG (d) PR  
 Ans. (c)  
 Sol. Difference between letters are 2 except option (C)

5. (a) ZWR (b) XTP (c) MIE (d) RNJ  
 Ans. (a)



Sol.

6. (a) 100 (b) 125 (c) 169 (d) 121  
 Ans. (b)  
 Sol. (b) 125. Not a perfect square

7. (a) 35 (b) 49 (c) 50 (d) 63  
 Ans. (c)  
 Sol. 50. Not a multiple of 7

8. (a) 7 (b) 15 (c) 31 (d) 57  
 Ans. (d)  
 Sol.  $7 = 2^3 - 1$   $15 = 2^4 - 1$   $31 = 2^5 - 1$   
 but 57 is not satisfy this rule

9. (a) 385 (b) 427 (c) 671 (d) 264  
 Ans. (b)  
 Sol. (b) 427

$$\begin{array}{ccc} 385 & 671 & 264 \\ \left( \begin{array}{c} 3+5=8 \\ 6+1=7 \\ 2+4=6 \end{array} \right) & & \end{array}$$

10. (a) 15 (b) 11 (c) 17 (d) 13  
 Ans. (a)  
 Sol. 15. Not a prime number

**Directions : Questions (11 to 20)**

Find the odd word out

11. (a) Ring (b) Ornament (c) Necklace (d) Bangle  
 Ans. (b)  
 Sol. Ornament All except ornament are different types of ornaments
12. (a) Apple (b) Orange (c) Carrot (d) Guava  
 Ans. (c)  
 Sol. Carrot (It is a vegetable not fruit)
13. (a) January (b) February (c) April (d) August  
 Ans. (c) Sol. except April all have 3 vowels.
14. (a) Carbon (b) Copper (c) Silver (d) Gold  
 Ans. (a) Sol. Carbon (All are metal but carbon is nonmetal)
15. (a) Rose (b) Lotus (c) Marigold (d) Lily  
 Ans. (b)  
 Sol. Lotus (It is one of two extant species of aquatic plant in the family nelumbonaceae)
16. (a) Zebra (b) Lion (c) Tiger (d) Horse  
 Ans. (d)  
 Sol. Horse here, except Horse, are wild animals, while Horse can be domesticated.
17. (a) Mother (b) Father (c) Sister (d) Sister in Law  
 Ans. (b, d)  
 Sol. Father (Male) & Rest are female but sister-in-law belongs to other family
18. (a) Valley (b) Sea (c) Tower (d) Mountain  
 Ans. (c)  
 Sol. Tower (All except Tower are natural geographical feature, while tower is man made)
19. (a) Again (b) Before (c) Now (d) After  
 Ans. (a)  
 Sol. Again
20. (a) Snake (b) Lizard (c) Crocodile (d) Whale  
 Ans. (d)  
 Sol. Whale All except whale are reptiles, while whale is a mammal.

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**Directions : Questions (21 to 25)**

Find the odd numeral pair in each of the following questions.

21. (a) (43, 6) (b) (28, 4) (c) (50, 7) (d) (36, 5)  
Ans. (b)  
Sol. (28-4)  
In all other pairs,  $(1^{\text{st}} \text{ number} - 1)/7 = 2^{\text{nd}} \text{ number}$ .
22. (a) (3, 4) (b) (16, 26) (c) (26, 24) (d) (27, 22)  
Ans. (c)  
Sol. Sum of numbers are 7, 42, 50, 49  
except 50 all are divisible by 7
23. (a) (13, 21) (b) (19, 27) (c) (15, 23) (d) (16, 24)  
Ans. (d)  
Sol. (16-24)  
All other pairs are coprime numbers.
24. (a) (34, 43) (b) (55, 62) (c) (62, 71) (d) (83, 92)  
Ans. (b)  
Sol. (55, 62)  
In all other pairs, the second number is 9 more than the first.
25. (a) (62, 37) (b) (74, 40) (c) (85, 60) (d) (103, 78)  
Ans. (b)  
Sol. (74-40)  
In all other pairs, the difference is 25 but in this pair (74-40) not satisfied.

**Directions : Questions (26 to 35)**

Find out the alternatives that should replace the question mark.

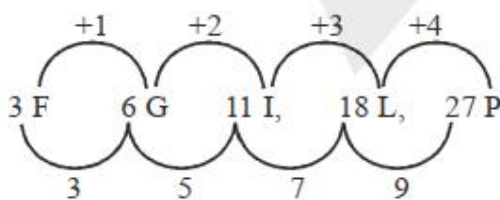
26. Ship : Sea :: Camel : ?  
(a) Forest (b) Land (c) Mountain (d) Desert  
Ans. (d)  
Sol. Desert Justification :- Ship is the Principal means of transport in sea. Similarly camel is the Principal means of transport in desert.
27. Oasis : Sand :: Island : ?  
(a) River (b) Sea (c) Water (d) Waves  
Ans. (c)  
Sol. (River, Sea or water) Justification :- Island may occur in oceans, seas, lakes, or rivers)
28. Tree : Forest :: Grass  
(a) Lawn (b) Field (c) Garden (d) Farm  
Ans. (a)  
Sol. Water
29. Good : Bad :: Roof : ?  
(a) Window (b) Floor (c) Walls (d) Pillars  
Ans. (b)  
Sol. Floor. Justification :- The words in each pair are antonyms of each other.
30. Clock : Time :: Thermometer : ?  
(a) Heat (b) Radiation (c) Energy (d) Temperature  
Ans. (d)  
Sol. Temperature. Justification :- First is an instrument to measure the 2nd.



38. 10, 15, 30, 45, 90, \_\_\_\_  
 (a) 135 (b) 110 (c) 125 (d) 180  
 Ans. (a)  
 Sol. 10, 15, 30, 45, 90, 135  
 Logic :  $10 \times 3 = 30$   
 $15 \times 3 = 45$   
 $30 \times 3 = 90$   
 $45 \times 3 = 135$

39. CE, GI, KM, OQ, \_\_\_\_  
 (a) TW (b) TV (c) SU (d) RT  
 Ans. (c)  
 Sol. CE, GI, KM, OQ, SU  
 Logic : The letters of each term are alternate and also the last letter of each term and the first letter of the next term are alternate.

40. 3F, 6G, 11I, 18L,  
 (a) 21O (b) 25N (c) 27P (d) 29Q  
 Ans. (c)  
 Sol.



#### Directions : Questions (41 to 45)

Arrange the items in the following questions in a meaningful order:

41. (A) College (B) Child (C) Salary (D) School (E) Employment

(a) A, B, D, C, E (b) B, D, A, E, C (c) D, A, C, E, B (d) E, C, A, B, D  
 Ans. (b)  
 Sol. B, D, A, E, C (Child, School, College, Employment, Salary)

42. (A) Milky Way (B) Sun (C) Moon (D) Earth (E) Stars

(a) D, C, B, E, A (b) C, D, B, A, E (c) B, C, D, E, A (d) A, D, C, B, E  
 Ans. (a)  
 Sol. According to distance from earth  
 D, C, B, E, A (Earth, Moon, Sun, Stars, Milky way)

43. (A) Elephant (B) Cat (C) Mosquito (D) Tiger (E) Whale  
 (a) A, C, E, D, B (b) B, C, A, D, C (c) C, B, D, A, E (d) E, C, A, B, D

Ans. (c)  
 Sol. C, B, D, A, E (Mosquito, Cat, Tiger, Elephant, Whale)

44. (A) Gold (B) Iron (C) Sand (D) Platinum (E) Diamond  
 (a) B, D, C, E, A (b) C, B, A, E, D (c) E, D, C, B, A (d) D, E, A, C, B

Ans. (b)  
 Sol. C, B, A, E, D (Sand, Iron, Gold, Diamond, Platinum)

45. (A) Banglow (B) Flat (C) Cottage (D) House (E) Palace  
 (a) C, B, A, D, E (b) C, B, D, A, E (c) E, D, A, B, C (d) B, C, D, A, E

Ans. (b)  
 Sol. C, B, D, A, E (Cottage, Flat, House, Banglow, Palace)

**Directions : Questions (46 to 48)**

Find which one word can not be made from the letters of the given word.

46. TEACHERS  
 (a) REACH (b) CHAIR (c) CHEER (d) SEARCH  
 Ans. (b)  
 Sol. CHAIR (By observation)
47. CONTEMPORARY  
 (a) PARROT (b) COMPANY (c) CARPENTER (d) PRAYER  
 Ans. (c)  
 Sol. CARPENTER (By observation)
48. INTERNATIONAL  
 (a) ORIENTAL (b) TERMINAL (c) LATTER (d) RATIONALE  
 Ans. (b)  
 Sol. TERMINAL (By observation)

**Direction (49-52) : Choose the best alternatives as the answer.**

49. A newspaper always has  
 (a) Advertisement (b) News (c) Editor (d) Date  
 Ans. (b)  
 Sol. A News Paper always has News
50. A train always has  
 (a) Engine (b) Rails (c) Driver (d) Passenger  
 Ans. (a)  
 Sol. A train always has Engine
51. A drama always has  
 (a) Story (b) Actors (c) Director (d) Spectators  
 Ans. (a)  
 Sol. A drama always has Story
52. A hill always has  
 (a) Trees (b) Animals (c) Water (d) Height  
 Ans. (d)  
 Sol. A hill always has Height
53. If  $9 + 7 = 58$ ,  $3 + 11 = 124$ . what is the value of  $13 + 5 = ?$   
 (a) 38 (b) 174 (c) 65 (d) 36  
 Ans. (a)  
 Sol. If  $9 + 7 = 58$   
 $3 + 11 = 124$   
 $13 + 5 = ?$   
 Logic:  $13 + 5 \times 5 = 13 + 25 = 38$
54. If  $7 * 1 = 64$ ;  $3 * 9 = 144$ , what is the value of  $5 * 6 = ?$   
 (a) 22 (b) 121 (c) 55 (d) 66  
 Ans. (b)  
 Sol. If  $7 * 1 = 64$   
 $3 * 9 = 144$   
 $5 * 6 = ?$   
 Logic:  $7 + 1 = 8 \times 8 = 64$   
 $3 + 9 = 12 \times 12 = 144$   
 Similarity  $5 + 6 = 11 \times 11 = 121$

55. If  $3 + 9 = 31$ ;  $15 + 12 = 45$ ;  $18 + 9 = 36$  then  $12 + 27 = ?$   
 (a) 49 (b) 14 (c) 94 (d) 72

Ans. (c)

Sol. Logic :  $\frac{3}{3} + \frac{9}{3} = 1 + 3 = 13 = 31$

$$\frac{15}{3} + \frac{12}{3} = 5 + 4 = 54 \Rightarrow 45$$

$$\text{Similarly } \frac{12}{3} + \frac{27}{3} = 4 + 9 = 49 \Rightarrow 94$$

56. If  $4 \times 8 = 42$ ;  $6 \times 4 = 23$ ;  $8 \times 6 = 34$  then  $2 \times 4 = ?$   
 (a) 25 (b) 21 (c) 26 (d) 12

Ans. (b)

Sol. Logic : The answer is 26

$$48 \div 2 = 24 \text{ (Reverse 42)}$$

$$64 \div 2 = 32 \text{ (Reverse 23)}$$

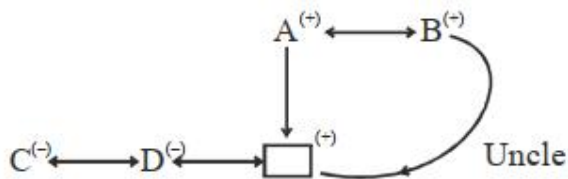
$$\text{Then } 86 \div 2 = 43 \text{ (Reverse 34)}$$

$$\text{So, } 24 \div 2 = 12 \text{ then (Reverse 21)}$$

57. A and B are brothers, C and D are sisters. A's son is D's brother. How is B related to C?  
 (a) Father (b) Brother (c) Uncle (d) Grand Father

Ans. (c)

Sol. Family Tree

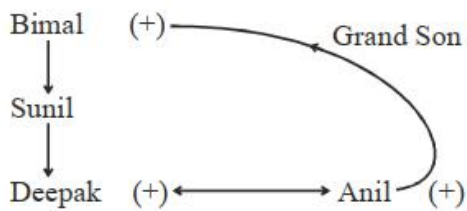


58. Deepak is the brother of Anil. Deepak is the son of Sunil. Bimal is Sunil's father. How is Anil related to Bimal?

- (a) Son (b) Grandson (c) Brother (d) Grand Father

Ans. (b)

Family Tree



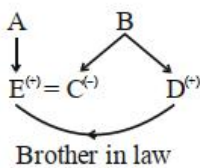
The answer is Grand Son.

59. E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E?  
 (a) Brother (b) Uncle (c) Brother-in-law (d) Father-in-law

Ans. (c)

Sol. Family Tree

The answer is Brother in law.

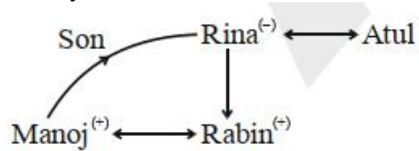


60. Manoj is the brother of Rabin, Rina is the sister of Atul. Rabin is the son of Rina. How is Manoj related to Rina?

- (a) Son (b) Brother (c) Nephew (d) Father

Ans. (a)

Sol. Family tree

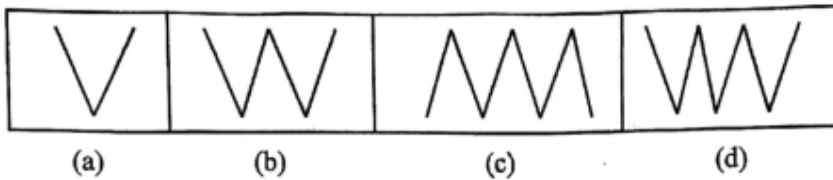


The answer is son.

The answer is son.

**Directions : Questions (61 to 65)**

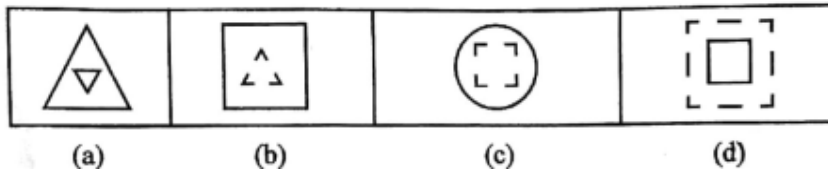
Out of the four figures (a), (b), (c) and (d) given in each problem, three are similar in a certain way. However, one figure is not like the other three. Choose the figure which is different from the rest.



61.

Ans. (c)

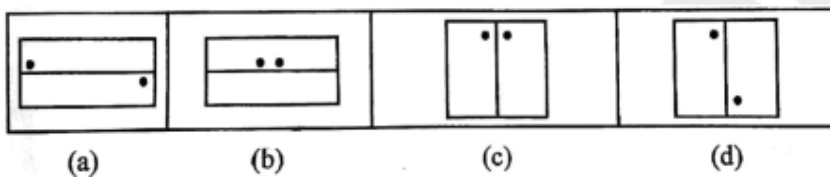
Sol. The answer is 'c' (by observation).



62.

Ans. (a)

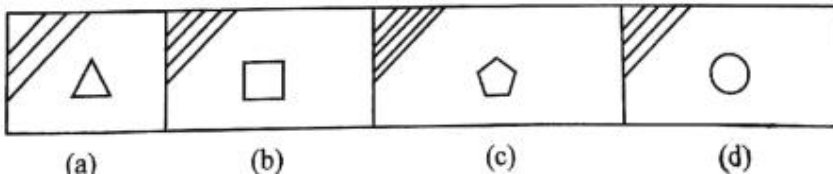
Sol. The answer is 'a'.



63.

Ans. (b)

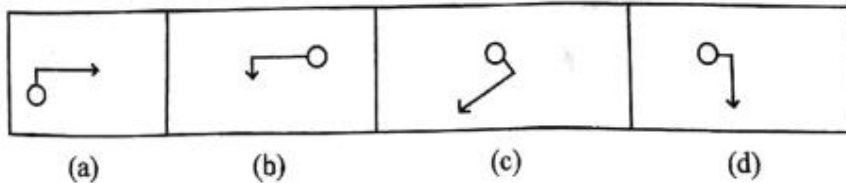
Sol. The answer is 'b'.



64.

Ans. (d)

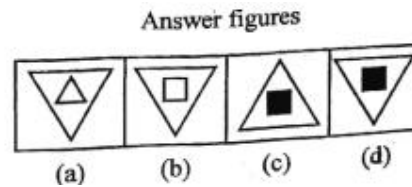
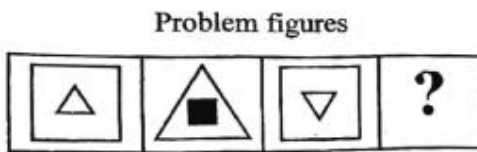
Sol. The answer is 'd'.



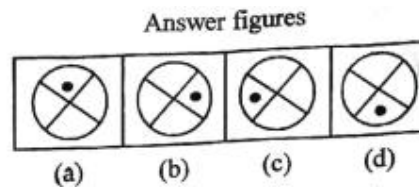
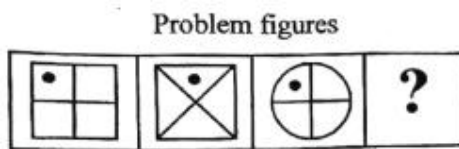
65.  
Ans. (b)  
Sol. The answer is 'b'.

**Directions : Questions (66 to 70)**

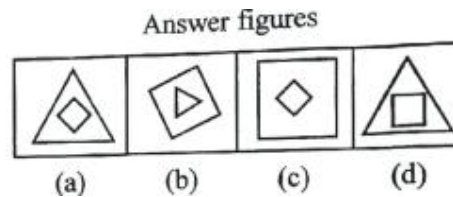
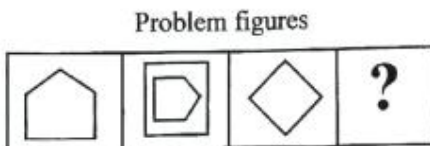
In each of the following question, there are three problem figures followed by a question mark(?) for the fourth one. There exists relationship between the first two problems figures. A similar relationship should exist between the third and fourth figure. Find the one from the answer figures that correctly replaces the questions mark.



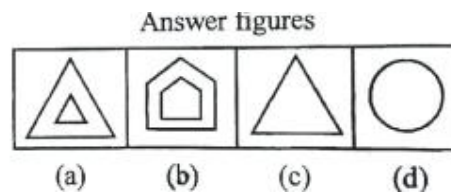
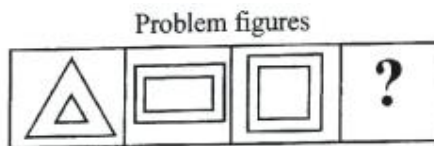
66.  
Ans. (d)  
Sol. The answer is d'. (By observation)



67.  
Ans. (a)  
Sol. The answer is a' (by observation)



68.  
Ans. (a)  
Sol. The answer is `a' (by observation)



69.  
Ans. (b)  
Sol. The answer is b' (by observation)

Problem figures



Answer figures

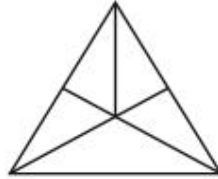


70.

Ans. (c)

Sol. The answer is c' (by observation)

71. The number of triangles in the following figure is:

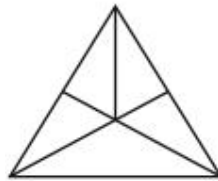


Ans. (a) 9  
(d)

(b) 10

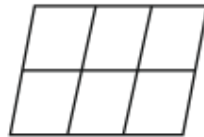
(c) 11

(d) 12



Here the number of triangles is 12. (by observation).

72. The number of parallelograms in the following figure is



(a) 18

(b) 16

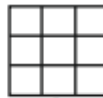
(c) 15

(d) 9

Ans. (a)

Sol.  $\frac{3 \times 4}{2} \times \frac{2 \times 3}{2} = 18$

73. The number of squares in the following figure is:



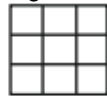
Ans. (a) 10  
(c)

(b) 9

(c) 14

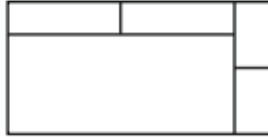
(d) 11

Sol. Logic:

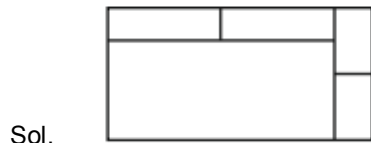


$$\begin{aligned}
 &= 1^2 + 2^2 + 3^2 \\
 &= 1 + 4 + 9 \\
 &= 14 \text{ (square)}
 \end{aligned}$$

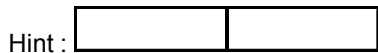
74. The number of rectangles in the following figure is:



- Ans. (a) 6 (b) 7 (c) 8 (d) 9

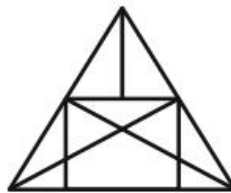


Sol. The no. of Rectangles is '9' (by observation)

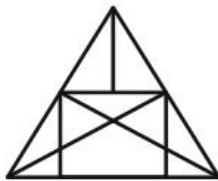


Hint : This figure contains no. of rectangle = '3'.

75. The number of straight lines in the following figure is :

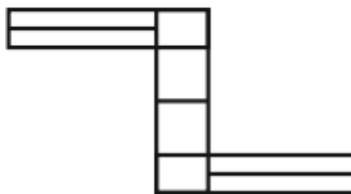


- Ans. (a) 9 (b) 10 (c) 11 (d) 15



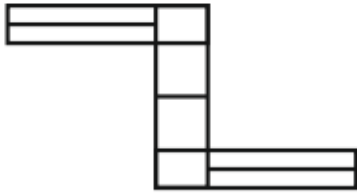
Horizontal lines = 2  
Vertical lines = 3  
Slanting lines = 4  
total = 9

76. The number of rectangles in the following figure is:



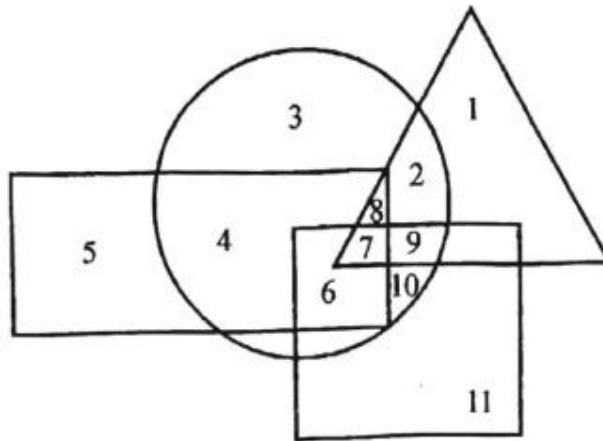
- Ans. (a) 17 (b) 18 (c) 19 (d) 20

Sol. The no. of rectangles = 18 (by observation).



**Directions : Questions (77 to 80)**

In the following figure, rectangle, square, circle and triangle represent the regions of wheat, gram, maize and rice cultivation respectively. On the basis of the figure, answer the following questions.



77. Which area produces all the commodities?

- (a) 7 (b) 8 (c) 9 (d) 2

Ans. (a)

Sol. Answer is 'a' 7

78. Which area is cultivated by wheat and maize only?

- (a) 8 (b) 5 (c) 6 (d) 4

Ans. (d)

Sol. Answer is 'd' 4

79. Which area is cultivated by Rice only?

- (a) 5 (b) 1 (c) 2 (d) 11

Ans. (b)

Sol. Answer 'b' 1

80. Which area is cultivated by rice and maize only?

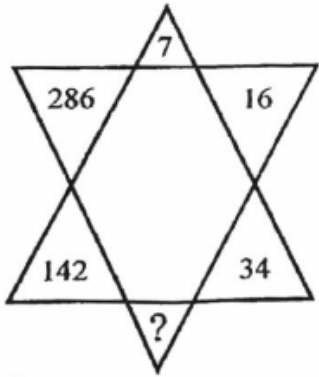
- (a) 9 (b) 8 (c) 2 (d) 7

Ans. (c)

Sol. Answer is 'c' 2

**Directions : Questions (81 to 86)**

Find the missing number in each of the following questions :



81.

(a) 72

(b) 70

(c) 68

(d) 66

Ans.

(b)

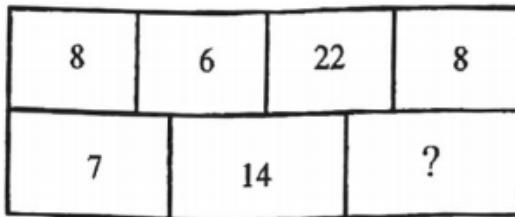
Sol.

Logic :

$$7 \times 2 + 2 = 16$$

$$16 \times 2 + 2 = 34$$

$$\text{Similarly : } 34 \times 2 + 2 = 70.$$



82.

(a) 14

(b) 13

(c) 15

(d) 16

Ans.

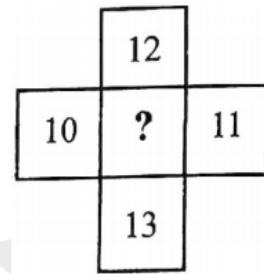
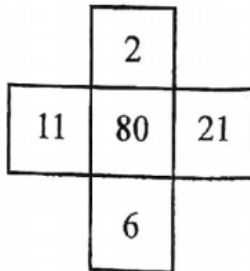
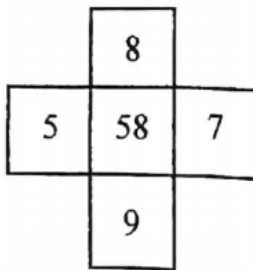
(c)

Sol.

The answer is 15.

$$\text{Logic } (8 + 6)/2 = 7, (6 + 22)/2 = 14$$

$$\text{So, } \frac{22 + 8}{2} = \frac{30}{2} = 15$$



83.

(a) 64

(b) 86

(c) 78

(d) 92

Ans.

(d)

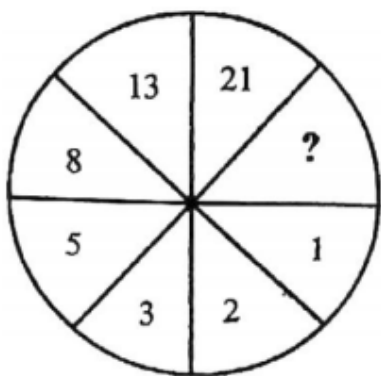
Sol.

Logic

$$(8 + 9) + (5 + 7) = 17 + 12 = 29 \times 2 = 58$$

$$(2 + 6) + (11 + 21) = 8 + 32 = 40 \times 2 = 80$$

$$\text{So, } (12 + 13) + (10 + 11) = 25 + 21 = 46 \times 2 = 92$$



84.

- (a) 31 (b) 32 (c) 33 (d) 34

Ans.

Sol.

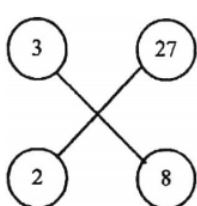
(d)

Logic

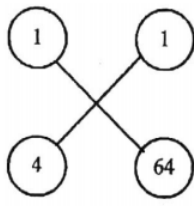
Fibonacci series  $1 + 2 = 3$

Similarly  $2 + 3 = 5$

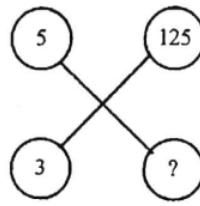
So,  $13 + 21 = 34$



40



70



160

85.

- (a) 27 (b) 15 (c) 64 (d) 120

Ans.

Sol.

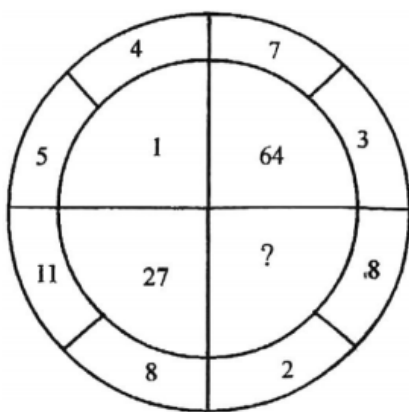
(a)

Logic :

$$(8 + 3) + (27 + 2) = 11 + 29 = 40$$

$$\text{So, } (5 + x) + (3 + 125) = 160$$

$$x = 160 - 133 = 27.$$



86.

- (a) 8 (b) 125 (c) 216 (d) 256

Ans.

Sol.

(c)

Logic:

$$5 - 4 = (1)^3 = 1$$

$$(7 - 3) = (4)^3 = 64$$

$$\text{Similarly : } (8 - 2) = (6)^3 = 216.$$

**Directions : Questions (87 to 89)**

In a certain language, ENTRY is coded as 12345 and STEADY is coded as 931785, then state the correct code for the given word in each question :

87. NEATNESS  
 (a) 25196577 (b) 21732199 (c) 21362199 (d) 21823698

Ans. (b)

Sol. Direct No. Coding :

ENTRY = 12345

STEADY = 931785

NEATNESS = 21732199

88. ARREST  
 (a) 744589 (b) 744193 (c) 166479 (d) 745194

Ans. (b)

Sol. ARREST = 744193.

89. TENANT  
 (a) 312723 (b) 352123 (c) 351232 (d) 196247

Ans. (a)

Sol. TENANT = 312723

**Directions : Questions (90 to 94)**

Study the following information carefully and answer the questions.

(i) B and E are good in Chemistry and Computer Science.

(ii) A and B are good in Computer Science and Physics.

(iii) A, D and C are good in Physics and History.

(iv) C and A are good in Physics and Mathematics.

(v) D and E are good in History and Chemistry.

	Chem.	Com.Sci.	Phy.	History	Maths
A	×	✓	✓	✓	✓
B	✓	✓	✓	×	×
C	×	×	✓	✓	✓
D	✓	×	✓	✓	×
E	✓	✓	×	✓	×

Sol.

90. Who is good in Physics, History and Chemistry ?

(a) A

(b) B

(c) D

(d) E

Ans. (c)

Sol. 'D' is good in physics, history and chemistry.

91. Who is good in Physics, History and Mathematics but not in Computer Science?

(a) A

(b) B

(c) C

(d) D

Ans. (c)

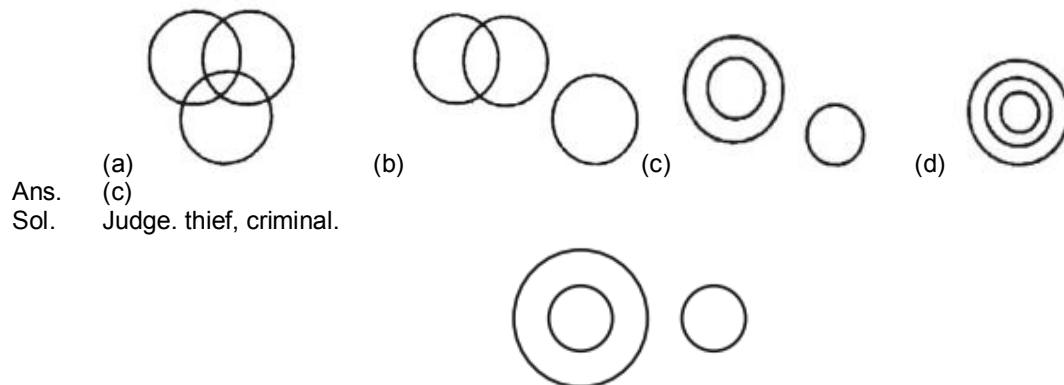
Sol. 'C' is good in physics, history & mathematics but not in computer science.

92. Who is good in Computer Science, History and Chemistry?  
 (a) A (b) B (c) C (d) E  
 Ans. (d)  
 Sol. 'E' is good in computer science, history and chemistry.

93. Who is good in History, Physics, Computer Science and Mathematics?  
 (a) A (b) B (c) C (d) D  
 Ans. (a)  
 Sol. 'A' is good in history, physics, computer science and mathematics.

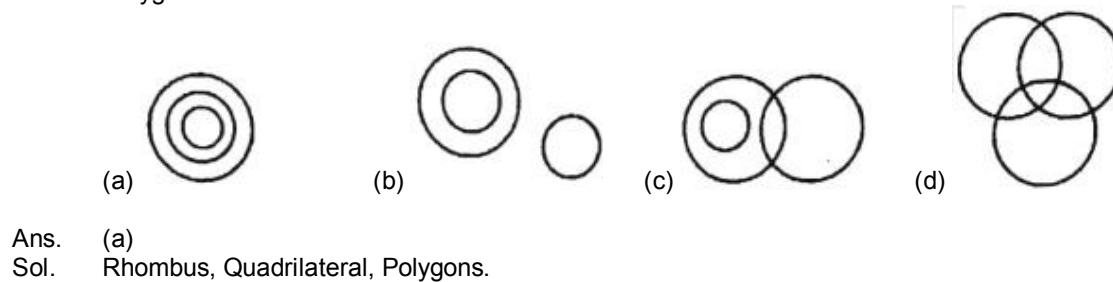
94. Who is good in Physics, Chemistry and Computer Science ?  
 (a) A (b) B (c) D (d) E  
 Ans. (b)  
 Sol. 'B' is good in physics, chemistry and computer science.

95. Select from the given diagrams, the one that illustrates the relationship among the given three classes: Judge, Thief, Criminal




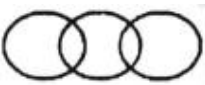
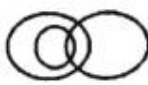
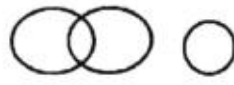
Justification :- All the thieves are criminal & judge is the other one.

96. Which one of the following Venn diagrams best illustrates the three classes Rhombus, Quadrilateral, Polygons?



Justification :- All the Rhombus are quadrilateral  
 All the quadrilateral are polygons.

97. Which of the following diagrams correctly represents Elephants, Wolves, Animals?

- (a)  (b)  (c)  (d) 
- Ans. (a)  
Sol. Elephants, Wolves, Animal



Justification :- Elephants and wolves bear no relationship to each other.  
But, both of them are animals.

**Directions : Questions (98 to 100)**

Arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence.

98. (1) Page (2) Pagan (3) Palisade (4) Pageant (5) Palate  
(a) 1, 4, 2, 3, 5 (b) 2, 4, 1, 3, 5 (c) 2, 1, 4, 5, 3 (d) 1, 4, 2, 5, 3  
Ans. (c)  
Sol. (2, 1, 4, 5, 3) (Pagan, Page, Pageant Palate, Palisade)
99. (1) Select (2) Seldom (3) Send (4) Selfish (5) Seller  
(a) 1,2,4,5,3 (b) 2,1,5,4,3 (c) 2,1,4,5,3 (d) 2,5,4,1,3  
Ans. (c)  
Sol. (2, 1, 4, 5, 3) (Seldom, Select. Selfish, Seller, Send)
100. (1) Credential (2) Creed (3) Crease (4) Cremate (5) Credible  
(a) 1, 2, 3, 4, 5 (b) 1, 5, 3, 4, 2 (c) 5, 1, 2, 3, 4 (d) 3, 1, 5, 2, 4  
Ans. (d)  
Sol. (3, 1, 5, 2, 4) (Crease, Credential, Credible, Creed, Cremate)