NATIONAL TALENT SEARCH EXAMINATION (NTSE-2017) STAGE -1
BIHAR STATE : MAT

Date: 13/11/2016

Max. Marks: 50 **SOLUTIONS** **Time allowed: 45 mins**

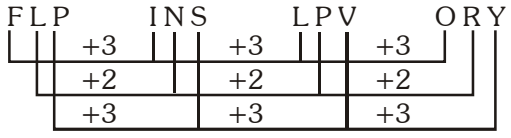
Questions 1-5 : Complete the Series

1. FLP, INS, LPV, ?

(1) UHG (2) ORY (3) RPO (4) PSX

Ans. ***(2)***

Sol.

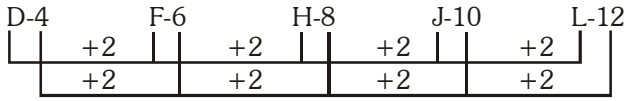


2. D-4, F-6, H-8, J-10, ?

(1) M-14 (2) K-13 (3) L-12 (4) S-21

Ans. ***(3)***

Sol.



3. AB, BA, ABD, DBA, PQRS, ?

(1) SRQP (2) OYRB (3) RPOS (4) SXRG

Ans. ***(1)***

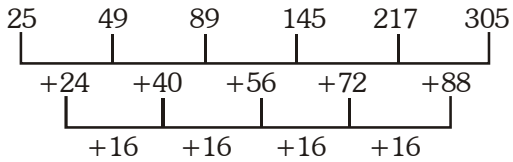
Sol.

4. 25, 49, 89, 145, 217, ?

(1) 305 (2) 327 (3) 309 (4) 303

Ans. ***(1)***

Sol.

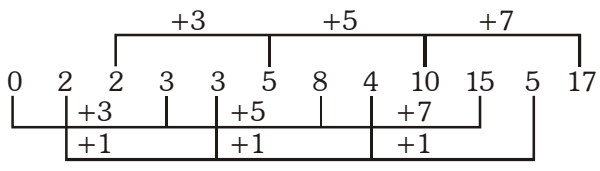


5. 0, 2, 2, 3, 3, 5, 8, 4, 10, (?), 5, 17

(1) 6 (2) 7 (3) 9 (4) 15

Ans. ***(4)***

Sol.



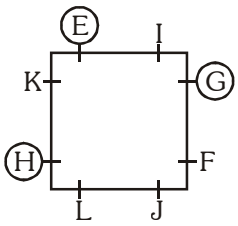
Questions 6-10 : There are Eight persons E, F, G, H, I, J, K and L are seated around a square table - two on each side. There are three lady members and they are not seated next to each other. J is between L and F. G is between I and F. H, a lady member is second to the left of J. L, a male number, is seated opposite of E, a lady member. There is lady member between F and I.

6. Who among the following is seated between E and H?

(1) F (2) I (3) J (4) None of these

Ans. (4)

Sol.



Clearly, K is seated between E and H.

7. How many persons are seated between K and F?

(1) One (2) Two (3) Three (4) Cannot to determined

Ans. (3)

Sol. Clearly, three persons are seated between K and F.

8. Who among the following are the three lady members?

(1) E, G and J (2) E, H and G (3) G, H and J (4) Cannot be determined

Ans. (2)

Sol. Clearly, E, H and G are the three lady members.

9. Who among the following is to the immediate left of F?

(1) G (2) I (3) J (4) Cannot be determined

Ans. (3)

Sol. Clearly, J is to the immediate left of F.

10. Which of the following is true about J?

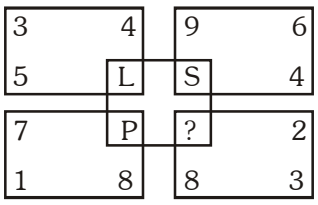
(1) J is a male member (2) J is a female member

(3) Sex of J cannot be determined (4) Position of J cannot be determined

Ans. (1)

Sol. Clearly, J is a male member.

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



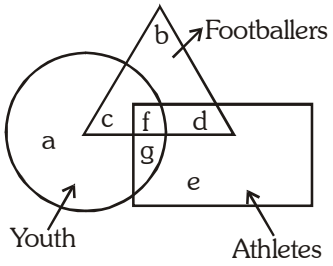
(1) Q (2) N (3) M (4) R

Ans. (3)

Sol. 3 + 4 + 5 = 12 – L

$9 + 6 + 4 = 19 - S$

12. 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?

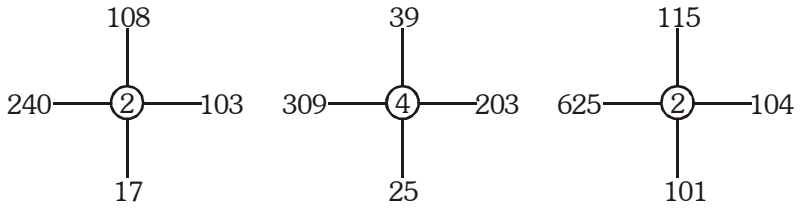


(1) g (2) g and c (3) f (4) f and d

Ans. ***(1)***

Sol. Clearly, from the diagram letter g represents athletes among youths who are not footballers.

13. Identify the number corresponding to the '?'



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

Ans. ***(4)***

Sol. $\sqrt[3]{240+103} - \sqrt[3]{108+17}$

$\sqrt[3]{343} - \sqrt[3]{125}$

$= 7 - 5 = 2$

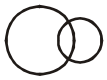
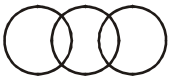
14. Amongst five friends. Lata, Alka, Rani, Asha and Sadhana, Lata is older than only three of her friends. Alka is younger to Asha and Lata. Rani is older than only Sadhana. Who amongst them is the eldest ?

(1) Alka (2) Lata (3) Asha (4) Sadhana

Ans. ***(3)***

Sol. Asha > Lata > Alka > Rani > Sadhana.

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

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

Ans. ***(1)***

Sol. Clearly option (1) indicate the relation between women, mothers and parents.

16. 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. Cars + Books = 6

Dolls + Books = 6

Dolls + Cars = 6

---

2 Dolls + 2 Cars + 2 Books = 18

Dolls + Cars + Books = 9

17. In a certain code, MONKEY is writlen as XDJMNL. How is TIGER written in that code ?

(1) QDFHS (2) SDFHS (3) SHFDQ (4) UJHFS

Ans. ***(1)***

Sol.

M O N K E Y
−1 −1 −1 −1 −1 −1
L N M J D X
Reverse
X D J M N L

T I G E R
−1 −1 −1 −1 −1
S H F D Q
Reverse
Q D F H S

18. If × means ÷, – means ×, ÷ means + and + means –, then

(3 – 15 ÷ 19) × 8 + 6 = ?

(1) 8 (2) 4 (3) 2 (4) –1

Ans. ***(3)***

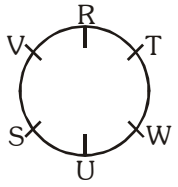
Sol. (3 × 15 + 19) ÷ 8 – 6

$\Rightarrow$ 64 ÷ 8

$\Rightarrow$ 2

Question 19-20 : Answer the questions based on the following information.

Six men R, S, T, U, V and W sat around circular table playing cards. It was noticed that no two men, the initial letters of whose names are adjacent in the alphabetical order, sat next to each other. U was opposite of R, V was not to the immediate right of R.



19. Who sat to the immediate left of R ?

(1) S (2) T (3) V (4) W

Ans. ***(3)***

Sol. Clearly, V is to the immediate left of R.

20. Who sat to the immediate right of R?

(1) S (2) T (3) V (4) W

Ans. ***(2)***

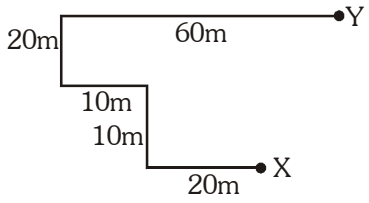
Sol. Clearly, T is to the immediate right of R.

21. I am facing South. I turn right and walk 20 m. Then I turn right again and walk 10 m. Then I turn left and walk 10 m and then turning right walk 20 m. Then 1 turn right again and walk 60 m. In which direction am I from the starting point ?

(1) North (2) Northwest (3) East (4) Northeast

Ans. ***(4)***

Sol.

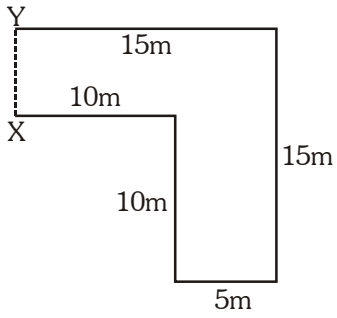


22. A walks 10 metres towards East and then 10 metres to his right. Then every time turning to his left, he walks 5, 15 and 15 metres respectively. How far is he now from his starting point?

(1) 5 metres (2) 10 metres (3) 15 metres (4) 20 metres

Ans. ***(1)***

Sol.



Dis. XY = 15 – 10 = 5m

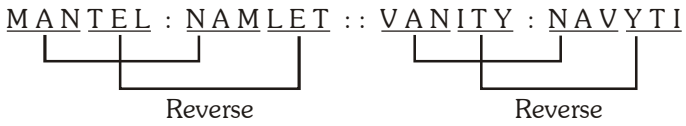
Questions 23-27 : In these questions pair of words/letters/numbers to the left/right of :: have certain relationship with each other. You are required to select the correct alternative so that similar relationship is established to the right/left of ::

23. MANTEL : NAMLET :: VANITY : ?

(1) NAVYIT (2) NAVYTI (3) NAVIYI (4) AVNTIY

Ans. ***(2)***

Sol.

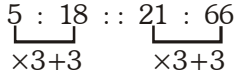


24. 5 : 18 :: ?

(1) 30 : 96 (2) 21 : 66 (3) 19 : 61 (4) 11 : 35

Ans. ***(2)***

Sol.



25. Heart : Blood :: Lung : ?

(1) Oxygen (2) Chest (3) Purification (4) Air

Ans. ***(4)***

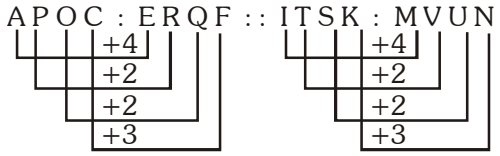
Sol. According to relation it's Air.

26. APOC : ? :: ITSK : MVUN

(1) DRQH (2) ERQF (3) EQRG (4) DQRH

Ans. ***(2)***

Sol.



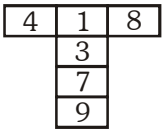
27. Engineer : Machine :: ?

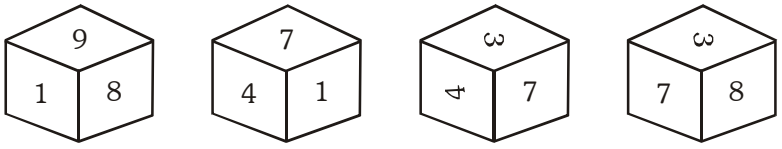
(1) Doctor : Disease (2) Doctor : Medicine (3) Doctor : Hospital (4) Doctor : Body

Ans. ***(2)***

Sol. According to relation it's doctor : Medicine.

28. Choose the cube from the options that will unfold to give the figure given below



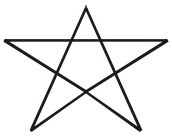


(1) (2) (3) (4)

Ans. ***(1)***

Sol. By observation.

29. How many triangles are there in the figure below?



(1) 5 (2) 6 (3) 8 (4) 10

Ans. ***(4)***

Sol. By observation.

30. In the given question choose the correct mirror image from amongst the four alternatives.

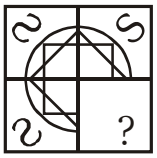
5 0 J A 3 2 D E 0 6

(1) Ƨ 0 ٦ ∀ Ɛ Ƨ DE 0 9 (2) Ƨ 0 ٦ ∀ 3 Ƨ DE 0 ϱ (3) Ƨ 0 ٦ ∀ 3 Ƨ DE 0 ∂ (4) Ƨ 0 ſ ∀ 3 Ƨ DE 0 ϱ

Ans. ***(2)***

Sol. By observation.

31. Find out the correct image in place of question mark (?) from the given alternatives.



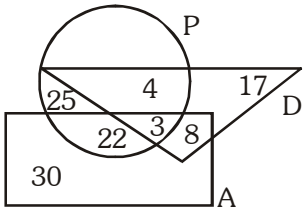
(1)  (2)  (3)  (4) 

Ans. ***(4)***

Sol. By observation.

Questions 32-35 : Study the following figure carefully and answer the questions :

The triangle represents doctors. The circle represents players and the rectangle represents artists.



32. How many doctors are both players and artists ?

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

Ans. ***(4)***

Sol. Clearly, 3 doctors are both players and artists.

33. How many artists are players?

(1) 30 (2) 29 (3) 25 (4) 17

Ans. ***(3)***

Sol. Clearly, 25 artists are players.

34. How many artists are neither players nor doctors?

(1) 29 (2) 30 (3) 22 (4) 8

Ans. ***(2)***

Sol. Clearly, 30 artists are neither players not doctor.

35. How many doctors are neither players nor doctors?

(1) 17 (2) 30 (3) 8 (4) 19

Ans. (1)

Sol. Clearly, 17 doctors are neither players nor artists.

36. If HOME = 2541, SHOP = 8256, WORK = 9573, then code for SMOKE will be

(1) 85431 (2) 84531 (3) 83451 (4) 84351

Ans. (2)

Sol. By direct coding.

37. Six students are sitting in a row. K, is sitting between V and R. V is sitting next to M. M is sitting next to B, who is sitting on the extreme left and Q is sitting next to R. Who are sitting adjacent to V?

(1) R and Q (2) B and M (3) K and R (4) M and K

Ans. (4)

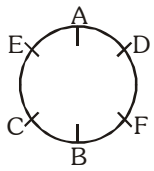
Sol. B M V K R Q

38. Six person A, B, C. D, E and F are standing in a circle. B is between F and C, A is between E and D, F is to the left of D. Who is between A and F?

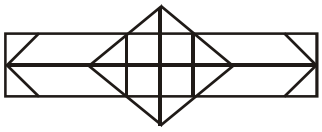
(1) B (2) C (3) D (4) E

Ans. (3)

Sol.



39. What will be the number of hexagonals in the given figure?



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

Ans. (3)

Sol. By observation.

40. abb__ __ ab __ b __ bba __ a

(1) bbbab (2) babba (3) abaab (4) Bbabb

Ans. (1)

Sol. a b b $\underline{b\ b}$ | a b $\underline{b}$ b | $\underline{a}$ b b | a $\underline{b}$ | a

41. A person took a loan of Rs 1500 from his employer for 3 months at 12% per annum simple interest. The amount he has to return is

(1) Rs 45 (2) Rs 1500 (3) Rs 1545 (4) Rs 1455

Ans. (3)

Sol. Principl = 1500 Rs.

Rate = 12%

time = $\frac{3}{12}$ yrs.

SI = $\frac{p \times r \times t}{100}$

= $\frac{1500 \times 3 \times 12}{12 \times 100}$ = 45 Rs.

Amount = Principle + interest

= 1500 + 45 = 1545 Rs.

42. A wholesaler allows a discount of 20% on the list price to a retailer. The retailer sells at 8% discount on the list price, the profit percent of the retailer is

(1) 20% (2) 15% (3) 12% (4) 8%

Ans. (2)

Sol. Let list price = x Rs.

C.P. for retailer = 0.80 x Rs.

S.P. for retailer = 0.92 x Rs.

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100 = \frac{0.92x - 0.80}{0.80x} \times 100$$

$$\frac{0.12x}{0.80x} \times 100 = 15\%$$

43. A man purchased a bundle of cloth, with a list price of Rs. 20000, and a sales tax of 10% on it. He paid Rs. 25000 to the shopkeeper. The money he got back was

(1) Rs. 22000 (2) Rs. 15000 (3) Rs. 3000 (4) Rs. 2000

Ans. (3)

Sol. List price = Rs. 20000

$$\text{10\% sales tax on list price} = \frac{10}{100} \times 20000 = 2000 \text{ Rs.}$$

$\therefore$ Total price = 20000 + 2000 = 22000 Rs.

The paid = 25000 Rs.

The money he got back = 25000 – 22000 = 3000 Rs.

44. A can complete a piece of work in 12 days and B is 60% more efficient than A. In how many days B will complete the same work?

(1) 5 Days (2) 7.5 Days (3) 6 Days (4) 8 Days

Ans. (2)

Sol. Amount of work done by A in 1 day = $\frac{1}{12}$ unit

given B is 60% more efficient than A

$\therefore$ Amount of work done by B in 1 day = 60% A + A

$$= \frac{60}{100} \times \frac{1}{12} + \frac{1}{12} = \frac{8}{60} \text{ unit}$$

$$\therefore \frac{8}{60} \text{ unit} \rightarrow 1 \text{ day}$$

$$1 \text{ unit} \rightarrow \frac{1 \times 60}{8} \text{ days} = 7.5 \text{ days}$$

45. A, B & C can complete a piece of work in 6, 12 and 24 days, respectively, Working together, they will complete the same work in -

(1) 1 / 24 Days (2) 7 / 24 Days (3) 3 3/7 Days (4) 4 Days

Ans. ***(3)***

Sol. They will together

$$\frac{1}{A}+\frac{1}{B}+\frac{1}{C}=\frac{1}{6}+\frac{1}{12}+\frac{1}{24}=\frac{4+2+1}{24}=\frac{7}{24}$$

$\frac{7}{24}$ unit of complete work is done in 1 day.

$\therefore \frac{7}{24}$ unit $\rightarrow$ 1 day

1 unit of work complete $\rightarrow \frac{24\times1}{7}=\frac{24}{7}=3\frac{3}{7}$ days.

46. Find the next number in the sequence

0, 2, 24, 252, _____

(1) 620 (2) 1040 (3) 3120 (4) 430

Ans. ***(3)***

Sol. $1^1 - 1, 2^2 - 2, 3^3 - 3$ ..... $(n^3 - n)$ pattern

47. 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 F. 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) 6

Ans. ***(NA)***

Sol. ***Bonus (Question is wrong)***

48. The average age of three persons is 27 years. Their ages are in the proportion of 1 : 3 : 5. What is the age in years of the youngest one among them

(1) 10 (2) 12 (3) 9 (4) 8

Ans. ***(3)***

Sol. $\frac{x_1+x_2+x_3}{3}=27$ $\quad x_1 : x_2 : x_3 = 1 : 3 : 5$

$x + 3x + 5x = 27 \times 3$ $\quad x_1 = x \mid x_2 = 3x \mid x_3 = 5x$

$9x = 81$

$x = 9$

49. 13 sheeps and 9 pigs were bought for Rs. 1291.85. If the average price of a sheep be Rs. 74. What is the average price of a pig.

(1) 34.65 (2) 48.40 (3) 52.85 (4) 36.65

Ans. ***(4)***

Sol. $\frac{1291.85-74\times13}{9}=36.65$ Rs.

50. What is the sum of the first 25 natural odd numbers?

(1) 225 (2) 425 (3) 625 (4) 525

Ans. ***(3)***

Sol. We know sum of first 'n' odd natural numbers is n^2.

$\therefore$ ---------- '25' ---------- $(25)^2 = 625$