NATIONAL TALENT SEARCH EXAMINATION (NTSE-2020) STAGE -1

STATE : ODISHA PAPER : MAT

Date: 03/11/2019 *SET - B*

Max. Marks: 100 **SOLUTIONS** **Time allowed: 120 mins**

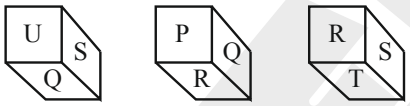
Read the following instructions carefully before you answer the questions. Answers are to be SHADED on a SEPARATE OMR Answer sheet given, with a HB pencil. Read the Instructions printed on the OMR sheet carefully before answering the questions.

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), (4) and (5). One of them is the right answer. Identify and indicate it as per the "Instructions".

1. Which letter will be opposite to 'T"?



(I) (II) (III)

(A) Q (B) U (C) S (D) P

Ans. (A)

Sol. As Q has letter U, S, P, R adjacent to it, letter opposite to it will be letter T.

2. Two forms of dice are given below. If number '4' is placed on the top surface of this dice, then which number will come on the bottom surface?

(I) (II)

(A) 1 (B) 2 (C) 5 (D) 6

Ans. (A)

Sol. The number 1 has adjacent letters are 2, 3, 5 and 6. So, number opposite to it will be 4.

3. What day was on 1 January, 2000?

(A) Monday (B) Tuesday (C) Sunday (D) None of these

Ans. (D)

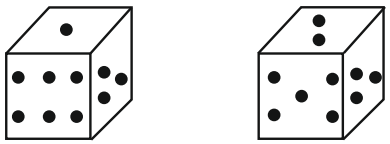
Sol. No. of odd days till 1 Jan, 2000

$= 400 \times 4 \times 0 + 5$ odd days + 1 odd day

= 6 odd days

$\therefore$ Required day will be Saturday

4. Two positions of a dice are given below:



(I) (II)

What is number of dots in the surface opposite the surface having two dots?

(A) 3 (B) 5 (C) 1 (D) 6

Ans. (C)

Sol. One dot will be opposite the surface having 2 dots.

5. 10 November, 1981 was Tuesday. What was the day on 11 November, 1581?

(A) Tuesday (B) Wednesday (C) Friday (D) Saturday

Ans. (B)

Sol. 10^{th} Nov. 1981 Tuesday so 11^{th} Nov. 1981 - Wednesday, 11^{th} Nov. 1581 comes exactly 400 years ago so the answer will be 'Wednesday'.

Direction for questions number (6 to 9).

A cube of edge 6 cm is divided into small cubes of edge 1 cm. Before the division, the cube was painted red in colour. Find the number of cubes whose:

6. Two surfaces are red.

(A) 12 (B) 24 (C) 48 (D) 64

Ans. (C)

Sol. Two red surfaces will be on every cube which are present at edge but not at the corners. 4 such cubes are there on each edge

$\therefore$ Required no. = $12 \times 4 = 48$

7. No surface is red.

(A) 48 (B) 64 (C) 96 (D) 216

Ans. (B)

Sol. Inside cubes unit have no surface red

Such cubes = $4^3 = 64$

8. More than three surfaces are red.

(A) 24 (B) 48 (C) 64 (D) 0

Ans. (D)

Sol. More than 3 surfaces are not exposed in any cube.

$\therefore$ No. of such cubes = 0

9. One surface is red.

(A) 216 (B) 64 (C) 96 (D) 48

Ans. (C)

Sol. Exactly are surface red will be there on 16 cubes on each face.

And no. of faces is 6.

$\therefore$ No. of such cubes = $16 \times 6 = 96$

10. Which of the following expressions will be true, if the expression, R > O = A > S < T is definitely true?

(A) O > T (B) S < R (C) T > A (D) S = O

Ans. (B)

Sol. As R > O = A > S < T

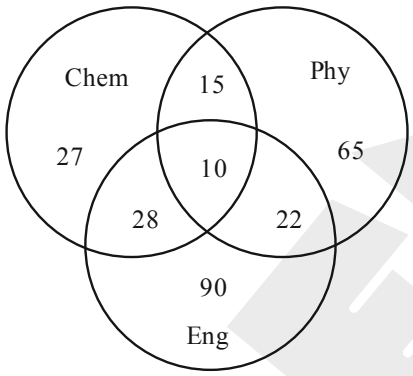
Here S < A

$\therefore$ S < O

And O > R

$\therefore$ S< R

11. In the diagram, the number of those candidates is given who passed in Chemistry, Physics and English. Total number of candidates who appeared for the examination was 600. Find the percentage of candidates who passed in at least two subjects



(A) 12.5 (B) 1.25 (C) 12.05 (D) 12

Ans. (A)

Sol. No. of such students

= 15 + 28 + 22 + 10 = 75

Required percentage

$$= \frac{75}{600} \times 100\% = 12.5\%$$

12. Replacement of which of the operations from the given options will balance the equation?

$12 - 2 + 3 \times 4 \div 4 = 14$

(A) $\times$ and $-$ (B) $-$ and $+$ (C) $-$ and $\div$ (D) $+$ and $\times$

Ans. (C)

Sol. $12 - 2 + 3 \times 4 \div 4$

$12 \div 2 + 3 \times 4 - 4$

$= 6 + 12 - 4 = 14$

13. If X + Y means 'X is mother of Y'; X – Y means 'X is brother of Y'; X $\div$ Y means 'X is father of Y'; X $\times$ Y means 'X is sister of Y'; then which of the following means "A is uncle of B"?

(A) $A - M + N \div B$ (B) $B \div M + N \times A$ (C) $A + M - N \times B$ (D) $A - M \times N \div B$

Ans. (D)

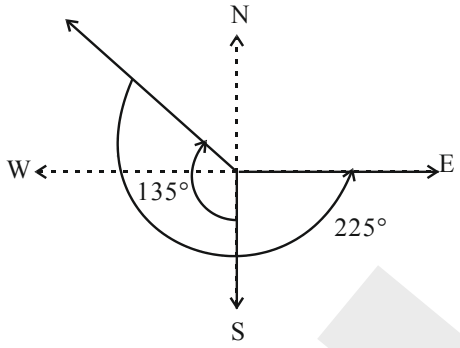
Sol. Applying all the statements in 'option D' we get A is the brother of M, M is sister of N, N is the father of B, which shows A is definitely uncle of B.

14. A man is standing facing South. He turns 135° clockwise and then turns 225° anticlockwise. Find out in which direction is he facing?

(A) East (B) West (C) North (D) South

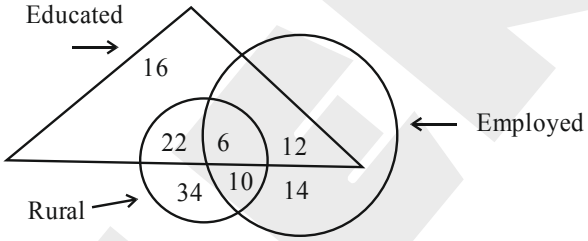
Ans. (A)

Sol.



He will be facing East now.

15. How many educated people are employed?



(A) 18 (B) 26 (C) 24 (D) 24

Ans. (A)

Sol. No. of people common to both triangle and the larger circle is 18.

16. A person covers a distance of first 120 metres at a speed of 4 m/sec, next 120 metres at 5 m/sec and final distance of 120 metres at 6 m/sec, then during the complete journey, find his average speed in km/hour.

(A) $\frac{240}{37}$ (B) $\frac{648}{37}$ (C) $\frac{25}{3}$ (D) $\frac{100}{9}$

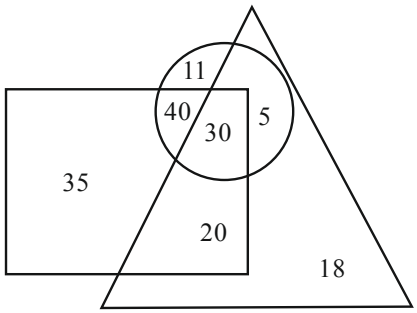
Ans. (B)

Sol. Average speed $= \frac{\text{Total distance covered}}{\text{Total time taken}}$

$$= \frac{360}{\frac{120}{4}+\frac{120}{5}+\frac{120}{6}} = \frac{360}{74} = \frac{180}{37}\ \text{m/s}$$

$$= \frac{180}{37} \times \frac{18}{5}\ \text{km/hr} = \frac{648}{37}\ \text{Km/hr.}$$

17. If 'Singers' are denoted by 'Circle', 'Clerk' by 'Rectangle' and 'Males' by 'Triangle' and their proportionate number are depicted by the numbers given within the diagram in the area they are present. Find out how many persons are only 'Singers'.



(A) 35 (B) 20 (C) 11 (D) 18

Ans. (C)

Sol. Only singer will be 11

18. If January 1 is a Friday, then what is the first day of the month of March in a leap year?

(A) Tuesday (B) Wednesday (C) Thursday (D) Friday

Ans. (A)

Sol. Jan 1 - Friday

Odd days : Jan 30 = 2

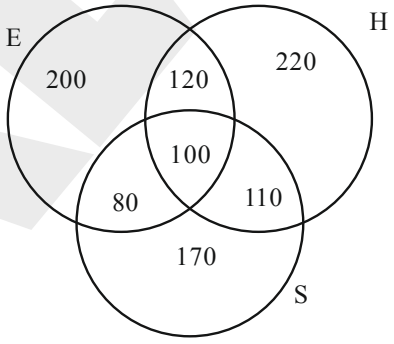
Feb. 29 = 1

March 1 = 1

Total = 4

$\therefore$ March 1 will be Friday + 4 i.e. Tuesday

19. A result of a survey of 1000 persons with respect to their knowledge of Hindi (H), English (E) and Sanskrit (S) is given below:



What is the ratio of those who know all the three languages to those who do not know Sanskrit?

(A) $\frac{5}{27}$ (B) $\frac{10}{17}$ (C) $\frac{1}{10}$ (D) $\frac{1}{9}$

Ans. (A)

Sol. $\text{Reqd. ratio} = \frac{100}{200+120+220} = \frac{100}{540} = \frac{5}{27}$

20. If the letters of English are numbered sequentially, then a meaningless word is hidden in the below given answers. Find that word.

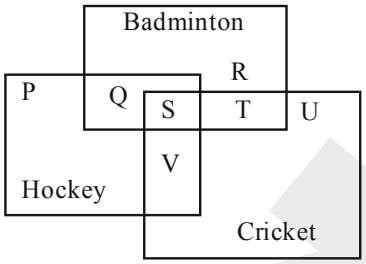
(A) 5, 1, 3, 5, 20, 8, 18 (B) 18, 5, 8, 1, 3, 5, 20 (C) 20, 5, 8, 1, 3, 5, 18 (D) 5, 18, 5, 1, 3, 5, 20

Ans. (D)

Sol. 5, 18, 5, 1, 3, 5, 20

As no. meaningful word can be formed by using all letters.

21. The given diagram represents those people who play hockey, cricket and badminton. See the diagram and find out those people who play all the three games.



(A) T + U (B) Q + R (C) P + Q + R (D) S

Ans. (D)

Sol. S is the common region

22. Which year will have the same calendar as that of 2012?

(A) 2020 (B) 2040 (C) 2025 (D) 2031

Ans. (B)

Sol. It comes after a gap of 28 years.

23. Two clocks are set correctly at 10 am on Sunday. One clock loses 3 minutes in an hour while the other gains 2 minutes in an hour. By how many minutes do the two clocks differ at 4 pm on the same day?

(A) 25 min. (B) 20 min. (C) 35 min. (D) 30 min.

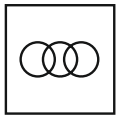
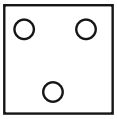
Ans. (D)

Sol. In 6 hrs, one clock will lose 18 min.

and second clock will gain 12 min

So, difference = 30 min

24. Which one of the following diagrams best depicts the relationship among Earth, Sea and Sun?

(A)  (B)  (C)  (D) 

Ans. (B)

Sol. Sea is within earth. Sun must be outside

25. How many faces are hidden in a cube?

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

Ans. (GRACE)

Sol. At one viewing, one can see maximum 3 faces only

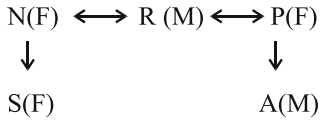
But the question has not specified any viewing angle.

26. Preeti is mother of Arun. Rahul is brother of Preeti. Neeta is mother of Seema. Neeta is sister of Rahul. What is the relation of Arun with Seema?

(A) brother (B) nephew (C) cousin (brother) (D) cousin (sister)

Ans. (C)

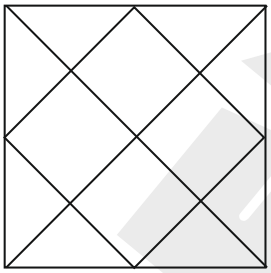
Sol.



Clearly Arun and Seema are cousins.

So Arun is cousins (brother) of Seema.

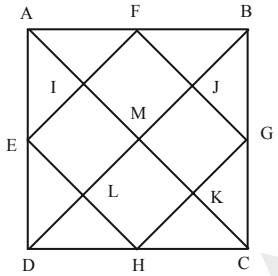
27. How many triangles are there in the figure given below?



(A) 20 (B) 27 (C) 18 (D) 29

Ans. (A)

Sol.



Triangle are AMB, BMC, CMD, DMA = 4

ABC, BCD, CDA, DAB = 4

(AIE, AIF, AEF) (FJB, BJG, FBG)

(GKC, CKH, GCH) (HLD, DLE, ELH) = 12

28. Average of 15 numbers is 68. Average of first 8 numbers is 63 and average of last 8 numbers is 70. Find out the eighth number.

(A) 44 (B) 49 (C) 56 (D) 10

Ans. (A)

Sol. Let eight number = x

$\therefore \quad (8\times63)+(8\times70)-x=15\times68$

$\Rightarrow \quad x=8\times133-15\times68$

$=1064-1020=44$

29. In a class, number of boys is three times the number of girls. Which of the numbers given below can not denote the total number of students in the class?

(A) 48 (B) 44 (C) 46 (D) 40

Ans. (C)

Sol. Boys = 3x

Girls = x

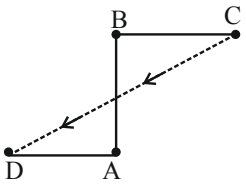
Total = 4x, Must be divisible by 4.

30. Village B is situated to the north of Village A, Village C is situated to the east of Village B, Village D is situated to the left of Village A. In which direction is Village D situated with respect to Village C?

(A) West (B) South-east (C) South (D) None of these

Ans. (D)

Sol.



Clear D is located South-West of C. So answer will be none of these.

31. If 'dust' is 'air', 'air' is 'white', 'white' is 'yellow', 'yellow' is 'water' and 'water' is 'red', then where will the fish live?

(A) water (B) white (C) yellow (D) red

Ans. (D)

Sol. Fish live in water.

And water is red.

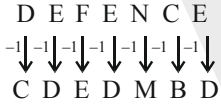
So fish live in red.

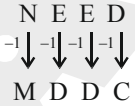
32. In a code language, DEFENCE is written as CDEDMBD, then in the same language, NEED will be written as:

(A) MDDC (B) ULDG (C) MCCD (D) MCDC

Ans. (A)

Sol.





33. In the following question, what will come in place of question mark (?)

RAMO : SCPS : VXMJ : ?

(A) WPZN (B) WQZN (C) WQPN (D) WZPN

Ans. (D)

Sol. R + 1 = S, A + 2 = C, M + 3 = P, O + 4 = S

$\therefore$ V + 1 = W, X + 2 = Z, X + 3 = P, J + 4 = N

$\therefore$ WZPN will be answer.

34. Choose the set from the given options which is similar to the given set.

Given set : (4, 9, 18)

(A) (8, 14, 22) (B) (10, 15, 25) (C) (6, 12, 23) (D) (12, 17, 26)

Ans. (D)

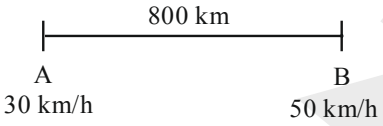
Sol. Difference between 1st & 2nd number is 5 and 2nd & 3rd number is 9.

35. The distance between two towns is 800 km. A car starts from the first town with a speed of 30 km/hr. At the same time, another car starts from the second two with a speed of 50 km/hr. The distance in kilometre of the point where they meet from the first town is:

(A) 200 (B) 300 (C) 400 (D) 500

Ans. (B)

Sol.



Time to meet $= \frac{800}{30+50} = 10$ hrs.

Distance covered by car from town A in 10 hr. = 300 km.

$\therefore$ Reqd. distance = 300 km.

36. If in a code language, word LATE is written as 38, then in the same language the word MAKE would be written as :

(A) 25 (B) 26 (C) 27 (D) 30

Ans. (D)

Sol. L = 12

A = 1

T = 20

E = 5

$\therefore$ LATE = (12 + 1 + 20 + 5) = 38

Likewise MAKE = 13 + 1 + 11 + 5 = 30

Direction for question number (37 to 39) :

Find the odd one out from the given word/character / number.

37. (A) 6 3 8 5 2 (B) 5 2 6 3 8 (C) 2 8 7 5 1 (D) 8 5 3 6 2

Ans. (C)

Sol. All the numbers except option 'C' contents same digits 2, 3, 5, 6, & 8.

38. (A) ROEHMT (B) FRTAEH (C) LROBUA (D) THOREBR

Ans. (C)

Sol. By unassmbling the letters we will get, MOTHER, FATHER, LABOUR & BROTHER

So LABOUR will be the odd word out.

39. (A) Number (B) Design (C) Weight (D) Shape

Ans. (A)

Sol. Except number others are physical aspects of any perticular object.

40. If 2 is deducted from all the odd digits and 3 is added to all the even digits in the number 3 6 7 5 2 4 9, then how many digits will appear twice in the new number formed?

(A) None (B) 1 (C) 2 (D) 3

Ans. (C)

Sol. Given number

3 6 7 5 2 4 9

1 9 5 3 5 7 7

We can see than 5 & 7 appeared 2 times after applying the given conditions.

41. If a clock rings one stroke at 1 O'clock, two strokes at 2 O'clock, three strokes at 3 O'clock and so on, then how many strokes in all the clock will ring in one day?

(A) 144 strokes (B) 136 strokes (C) 156 strokes (D) 147 strokes

Ans. (C)

Sol. 1 at 1 O'clock, 2 at 2 O'clock ..... 12 at 12 O'clock.

So total = 1 + 2 + 3 + 4 + 5 + 6 + ... 12 = 78

In one day = $78 \times 2 = 156$

42. How many times the hands of the clock meet in a day?

(A) 22 (B) 21 (C) 2 (D) 24

Ans. (A)

Sol. 22 times (because 11 times in 12 hours)

43. A, B, C, D and E are five rivers. A is smaller then B but longer than E, C is the longest and D is a little smaller than B and a little longer than A. Find the smallest river.

(A) A (B) B (C) C (D) E

Ans. (D)

Sol. After applying the statements we will get the arrangement below

$E < A < D < B < C$

44. Study the given series carefully and find the option which is suitable in place of the omitted letters.

_bc_ca_aba_c_ca

(A) abcba (B) abbca (C) ababb (D) abcbb

Ans. (D)

Sol. a b c | b c a | c a b | a b c | b c a

45. What will come in place of question mark (?) in the following series?

56, 42, 30, 20, ?, 6

(A) 15 (B) 12 (C) 18 (D) 14

Ans. (B)

Sol. 56 – 14 = 42

42 – 12 = 30

30 – 10 = 20

20 – 8 = 12

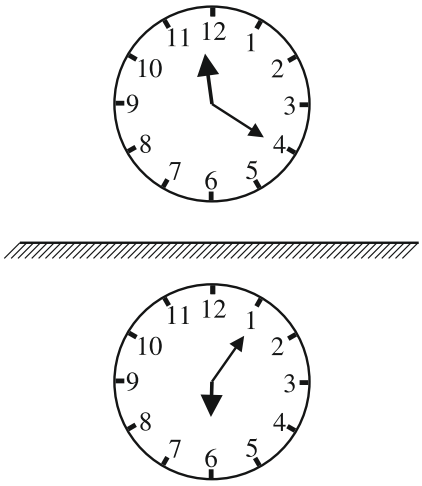
12 – 6 = 6

46. If the water reflection shows time as 6 hours 10 minutes, then the actual time will be :

(A) 6 : 50 (B) 12 : 40 (C) 12 : 20 (D) 6 : 10

Ans. (C*)

Sol. (But the best possible answer should be 11:20 which is not available in any of the options.)



47. In the following number series, only one term is wrong. Find the wrong term.

3 4 7 11 20 29 47 76

(A) 7 (B) 11 (C) 20 (D) 47

Ans. (C)

Sol. 3 + 4 = 7

4 + 7 = 11

7 + 11 = $\boxed{18}$ 20

11 + 18 = 29

18 + 29 = 47

29 + 47 = 76

48. At 9 hours 30 minutes, find the angle between the hour hand and the minute hand.

(A) 105° (B) 255° (C) 125° (D) 105° and 250°

Ans. (D)

Sol. $|30H - 5.5M| = \theta$

$= |30 \times 9 - 5.5 \times 30| =$

$|270 - 165|$

$= |105^0| = \theta$ or $360^0 - 105^0 = 255^0$

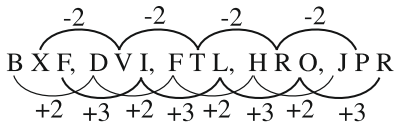
49. In the following series of letters, which of the following options will come in place of question mark (?) ?

BXF, DVI, FTL, HRO, ?

(A) JOL (B) KPM (C) KPL (D) JPR

Ans. (D)

Sol.

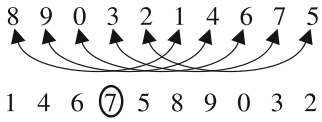


50. If in 8 9 0 3 2 1 4 6 7 5, first digit is interchanged with sixth digit, second with the seventh and so on, then which digit will come seventh from right?

(A) 2 (B) 6 (C) 7 (D) 8

Ans. (C)

Sol. Given number



51. With the help of the options given below, find the suitable number which will come in place of the question mark (?).

FED $\times 3$ = 1629, BCD $\times 4$ = 492, BEF $\times 1$ = ?

(A) 451 (B) 145 (C) 514 (D) 415

Ans. (B)

Sol. FED $\times$ 3

$(6-1)(5-1)(4-1) = 543 \times 3 = 1629$

$BCD \times 4 = 123 \times 4 = 492$

Simlarly

$BEF \times 1 = 145 \times 1 = 145$

52. Six friends, A, B, C, D, E and F are sitting in a row facing east. C is between E and A. B is next right to E, but left of D. F is not on the right end. Who is on the left of A?

(A) E (B) C (C) D (D) F

Ans. (D)

Sol. Final arrangement will look like below :

$\boxed{F} \rightarrow$ facing east

A

C

E

B

D

53. What will come in place of question mark (?) in the series?

150, 152, 149, 153, 148, 154, ?

(A) 155 (B) 152 (C) 147 (D) 149

Ans. (C)

Sol. 150 + 2 = 152

152 – 3 = 149

149 + 4 = 153

153 – 5 = 148

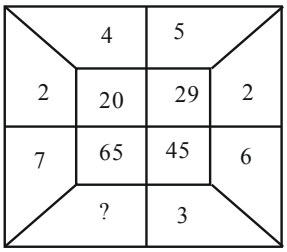
148 + 6 = 154

154 – 7 = $\boxed{147}$

Direction for question number (54 to 56).

In each of the following questions, one character is missing. Find the same on the basis of common given options.

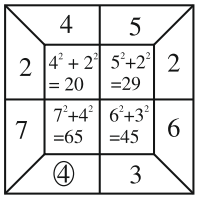
54.



(A) 2 (B) 3 (C) 4 (D) 5

Ans. (C)

Sol.



55.

3A	5B	4C
45B	?	28A
15B	4A	7C

(A) 10C (B) 15B (C) 20C (D) 30A

Ans. (C)

Sol. Every row should have all A, B & C

So answer is 20 C

3A	5B	4C
45B (3 x 15)	20C (4 x 5)	28C (7 x 4)
15B	4A	7C

56. If 12 + 10 = 1205, 11 + 8 = 885, then 16 + 15 = ?

(A) 1025 (B) 130 (C) 2405 (D) 105

Ans. (C)

Sol. $12 + 10 = 12 \times 10 = 120$, $120 \times 10 + 5 = 1205$

$11 + 8 = 11 \times 8 = 88$, $88 \times 10 + 5 = 885$

Simlarly

$16 + 15 = 16 \times 15 = 240$, $240 \times 10 + 5 = 2405$

57. An 8-digit number 4252746B leaves remainder 0 when divided by 3. How many values of B are possible?

(A) 2 (B) 3 (C) 4 (D) 6

Ans. (C)

Sol. 4 2 5 2 7 4 6 B

We know B is one digit number between (0 – 9), and to be divisible by 3 it the sum should also be divisible by 3.

4 + 2 + 5 + 2 + 7 + 4 + 6 + B

= (30 + B) should be divisible by 3

'0, 3, 6, 9'

So Answer is 4

58. The number of times the digit 5 will appear while writing the integers from 1 to 1000 is:

(A) 269 (B) 271 (C) 300 (D) 302

Ans. (C)

Sol. 5 will appear in unit places 100 times tenth places 100 times & hundredth places 100 times so total apperance will be 300.

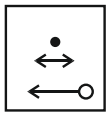
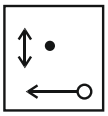
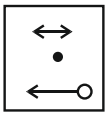
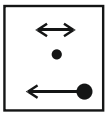
Direction for question number (59 to 61) :

In each of the following questions three of the given four figures are similar on the basis of one characteristic and one is different. Find this different figure.

59. (A)  (B)  (C)  (D) 

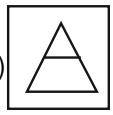
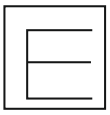
Ans. (B)

Sol. By observation there is no dot (•) mark in the figure in option B.

60. (A)  (B)  (C)  (D) 

Ans. (D)

Sol. By observing we will see, there are similar figures in all diagram except option D.

61. (A)  (B)  (C)  (D) 

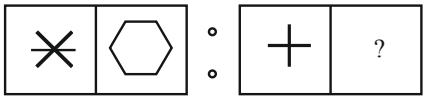
Ans. (C)

Sol. Except option 'C' all figures require 4 lines to construct.

Direction for question number (62 to 64):

In each of the questions given below, there is a particular relationship between the first figure and the second figure of the question figure. This relation also exists between the third figure and one of the option figures (A), (B), (C), (D). Find this option figure.

62. Question figures :



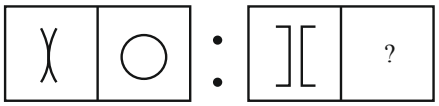
Answer figures :

(A)  (B)  (C)  (D) 

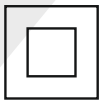
Ans. (D)

Sol. The figure is being generated by connecting the end points of the line sequencially.

63. Question figures :



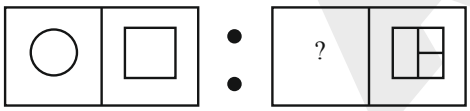
Answer figures :

(A)  (B)  (C)  (D) 

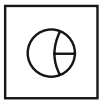
Ans. (C)

Sol. By reversing the two halves vertically we get the next figure.

64. Question figures :



Answer figures :

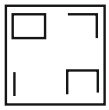
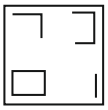
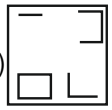
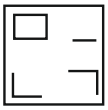
(A)  (B)  (C)  (D) 

Ans. (D)

Sol. By observation simlary shapes are obtaines in both the sides.

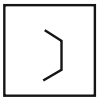
Direction for question number (65 to 67) :

In each of the following question figures except one, all the figures have similar characteristics. The examinee has to find the figure which is different from the other figures.

65. (A)  (B)  (C)  (D) 

Ans. (D)

Sol. Option 'D' contains 2 smilar figures.

66. (A)  (B)  (C)  (D) 

Ans. (D)

Sol. Option 'D' contains two inclinds lines.

67. (A)  (B)  (C)  (D) 

Ans. Only option 'D' figure requires 4 lines to construct.

Direction for question number (68 to 70) :

From the given options find which is the correct water image of the word given in the question.

68. D O C I L E

(A) DOCIΓE (B) DOCIꓶE (C) DOↃIΓƎ (D) DOↃIΓE

Ans. (A)

Sol. By observation

69. W E A K

(A) MƎ∀K (B) MƎAK (C) W Ǝ ∀K (D) M E ∀K

Ans. (D)

Sol. By observation

70. E L U D E

(A) EΓ∩DE (B) ƎΓ∩DE (C) Ǝ L ∪ DƎ (D) ƎΓUDE

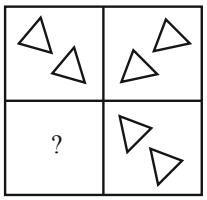
Ans. (A)

Sol. By observation

Direction for question number (71 to 73) :

In each of the questions given below, a figure is given whose some part is missing. From the given answer figures, whcih option will complete the pattern?

71. Question figure :



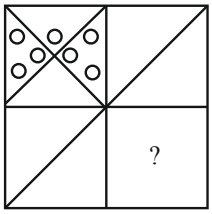
Answer figures :

(A)  (B)  (C)  (D) 

Ans. (D)

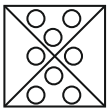
Sol. By observation

72. Question figure :



Answer figures :

(A) 

(B) 

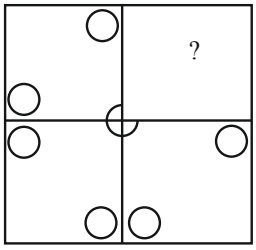
(C) 

(D) 

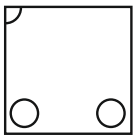
Ans. (C*)

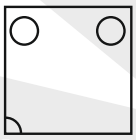
Sol. Best possible answer. Question image has missing circle.

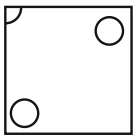
73. Question figure :

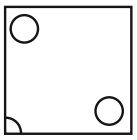


Answer figures :

(A) 

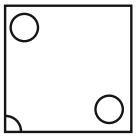
(B) 

(C) 

(D) 

Ans. (D)

Sol. By observation



74. How many prime factors does 30030 have?

(A) Four (B) Five (C) Six (D) None of the above

Ans. (C)

Sol. $30030 = 2 \times 3 \times 5 \times 7 \times 11 \times 13$

So, Six prime factors.

75. Radha remembers that her father's birthday is after 16^{th} but before 21^{st} of March, while her brother Mahesh remembers that his father's birthday is before 22^{nd} but after 19^{th} of March. On which date is the birthday of their father?

(A) 19^{th} (B) 20^{th} (C) 21^{st} (D) Cannot be determined

Ans. (B)

Sol. $16^{th} < R < 21^{st}$

$19^{th} < M < 22^{nd}$

So, common number is 20^{th}. Hence birthday of their father is on 20^{th}.

76. Select the missing, letters in the following questions.

m n o n o p q o p q r s _ _ _ _ _ _

(A) m n o p q r (B) o q r s t u (C) p q r s t u (D) q r s t u p

Ans. (C)

Sol. mno | nopq | opqrs | pqrstu

remove initial letter and add two letters at the end.

77. The sum of first five prime number is :

(A) 11 (B) 18 (C) 26 (D) 28

Ans. (D)

Sol. 2 + 3 + 5 + 7 + 11 = 28

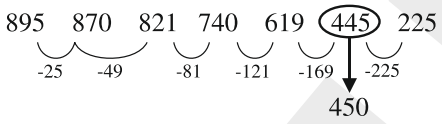
78. In the following question, only one number is wrong. Find out the wrong number.

895, 870, 821, 740, 619, 445, 225

(A) 870 (B) 821 (C) 740 (D) 445

Ans. (D)

Sol.



79. Find the missing term in place of question mark (?) in the following series.

CB _ _ D _ B A B C C B

_ _ 1 2 4 3 _ _ ? ? ? ?

a _ a b _ c _ b _ _ _ _

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

Ans. (C)

Sol. C B C A D B B A B C C B

1 3 1 2 4 3 3 2 **3 1 1 3**

a c a b d c c b c a a c

So, A = b = 2

B = c = 3

C = a = 1

D = d = 4

Hence B, C, C, B = 3, 1, 1, 3

Direction for quesion number (80 to 82) :

Read the following information carefully and then answer the questions based on that

From amongst 5 doctors A, B, C, D and E, 4 Engineers G, H, K and L and 6 teachers M, N, O, P, Q and R, some teams are to be selected. Of these, A, B, G, H, O, P and Q are females and the rest are males. The formation of teams is subject to the following conditions.

(I) Whenever there is a male doctor, there will be no female teacher.

(II) Whenever there is a male engineer, there will be no female doctor.

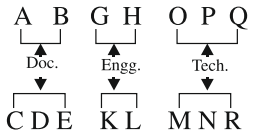
(III) There shall not be more than two male teachers in any team.

80. If the team consists of 2 doctors, 2 female teachers and 2 engineers, all the following teams are possible except :

(A) OPGHAB (B) ABGHPQ (C) ABGHOQ (D) ABKLPQ

Ans. (D)

Sol.



No male doctor or male enginner can be part of a team as per conditions (i) & (ii)

So, possible teams are ABGHOP | ABGHOQ | ABGHPQ.

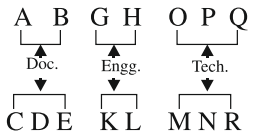
Hence, [D] is not possible.

81. If the team consists of 3 doctors, 2 male engineers and 2 teachers, the members of the team could be:

(A) CDEKLMN (B) ABCKLMR (C) CDEKLPR (D) BCDKLNR

Ans. (A)

Sol.



No female teacher or doctor can be part of the team as per conditions (1) & (2). So, possible teams are CDEKLMN | CDEKLMR | CDEKLNR.

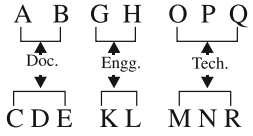
Hence [A]

82. If the team consists of 2 doctors, 3 female teachers and 2 engineers, the members of the team are :

(A) CDOPQGH (B) ABOPQGH (C) CDKLOPQ (D) DEGHOPQ

Ans. (B)

Sol.



As per conditions (1) & (2) no male doctor or engineer can be part of the team.

So, only possible team is ABGHOPQ.

83. Which of the following statement is true?

(A) LCM of two natural numbers is divisible by there HCF.

(B) HCF + LCM of two numbers is equal to the product of two numbers.

(C) Two prime numbers are co-prime numbers if their LCM is 1.

(D) HCF of two numbers is the smallest common divisor of both numbers.

Ans. (A)

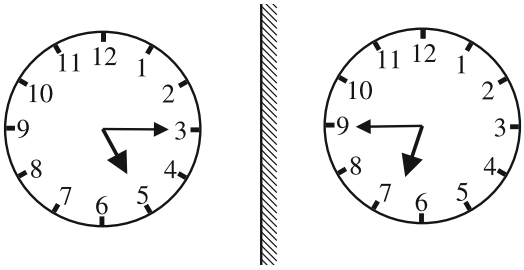
Sol. LCM of two numbers is a factor of both individual numbers. So, it will always be divisible by HCF as it is a factor of both the numbers.

84. When seen through a mirror, a watch shows 5 : 15. The correct time is :

(A) 6 : 15 (B) 7 : 15 (C) 6 : 45 (D) 7 : 45

Ans. (C)

Sol.



Trick : Sum of time on both the clocks should be 12 : 00.

85. If a cube of 12 cm side is divided into smaller cubes of 3 cm side, then find the total number of smaller cubes.

(A) 16 (B) 64 (C) 12 (D) 32

Ans. (B)

Sol. Each axis observes 4 pcs (3 cuts).

So, total number of simaller cubes

$= 4 \times 4 \times 4 = 64$

86. A printer numbers the pages of a book starting with 1 and uses 3089 digits in all. How many pages does the book have?

(A) 1040 (B) 1048 (C) 1049 (D) 1050

Ans. (C)

Sol. 1 – 9 = 9 (1-digit numbers)

10 – 99 = 90 (2-digit numbers)

100 – 999 = 900 (3 - digit numbers)

Total digits till 999 = $(1 \times 9) + (2 \times 90) + (3 \times 900)$

= 9 + 180 + 2700 = 2889

Remaining digits = 3089 – 2889 = 200

No. of 4-digit numbers = $\frac{200}{4} = 50$

50^{th} 4-digit number is = 999 + 50 = 1049

Hence, total number of pages = 1049

87. In a school every student is assigned a unique identification number. A student is a football player if and only if the identification number is divisible by 4, whereas a student is a cricketer if and only if the identification number is divisible by 6. If every number from 1 to 100 is assigned to a student, then how many of them play cricket as well as football?

(A) 4 (B) 8 (C) 10 (D) 12

Ans. (B)

Sol. LCM of 4 & 6 = 12

There will be 8 numbers till 100 which are divisible by 12. So, there are total 12 stuidents who play both football & cricket.

88. Suppose you have sufficient amount of rupee currency in 3 denominations : Rs. 1, Rs. 10 and Rs. 50. In how many different ways can you pay a bill of Rs. 107?

(A) 16 (B) 17 (C) 18 (D) 19

Ans. (C)

Sol. $1^{st} \rightarrow (50\times 2) + (0\times 10) + (7\times 1) \rightarrow$ 1 way

$2^{nd} \rightarrow$

$(50\times 1) + (5\times 10) + (7\times 1)$
$(50\times 1) + (4\times 10) + (17\times 1)$
$(50\times 1) + (3\times 10) + (27\times 1)$
$(50\times 1) + (2\times 10) + (37\times 1)$
$(50\times 1) + (1\times 10) + (47\times 1)$
$(50\times 1) + (0\times 10) + (57\times 1)$
→ 6 ways

$3^{rd} \rightarrow$

$(50\times 0) + (0\times 10)+(107\times 1)$
$(50\times 0) + (1\times 10)+(97\times 1)$
$(50\times 0) + (2\times 10)+(87\times 1)$
$(50\times 0) + (3\times 10)+(77\times 1)$
$(50\times 0) + (4\times 10)+(67\times 1)$
$(50\times 0) + (5\times 10)+(57\times 1)$
$(50\times 0) + (6\times 10)+(47\times 1)$
$(50\times 0) + (7\times 10)+(37\times 1)$
$(50\times 0) + (8\times 10)+(27\times 1)$
$(50\times 0) + (9\times 10)+(17\times 1)$
$(50\times 0) + (10\times 10)+(7\times 1)$
→ 11 ways

Hence total 18 way

89. Number 136 is added to 5B7 and the sum obtained is 7A3, where A and B are integers. It is given that 7A3 is exactly divisible by 3. The only possible values of B is :

(A) 2 (B) 5 (C) 7 (D) 8

Ans. (D)

Sol. 7A3 is divisible by 3.

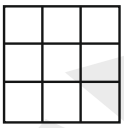
So, possible values of A = 2, 5, 8

Now

$$\begin{array}{r} 1\ 3\ 6 \\ +\ 5\ B\ 7 \\ \hline 7\ A\ 3 \end{array}$$

3 + B + 1 should give a carry over minimum possible value of B is 6. But A should also be either 2, 5 or 8. Only possible value of A after operation 4 + B is 2. Hence B = 8

90. How many squares are there in the following figure?



(A) 12 (B) 13 (C) 14 (D) 15

Ans. (C)

Sol. 1 × 1 squares = 1

2 × 2 squares = 4

3 × 3 squares = 9

So, thatl 1 + 4 + 9 = 14

91. If the numerator of a fraction is increased by 240% and the denominator of the fraction is decreased by 50%, the resultant fraction is $2\frac{5}{6}$. What is the original fraction?

(A) $\frac{1}{4}$ (B) $\frac{2}{3}$ (C) $\frac{5}{12}$ (D) $\frac{4}{11}$

Ans. (C)

Sol. Let fraction be $\frac{a}{b}$

Now, $\frac{3\cdot 4\ a}{0\cdot 5\ b}=2\frac{5}{6}$

$\frac{34a}{5b}=\frac{17}{6}$

$\frac{a}{b}=\frac{5}{12}$

92. Hari and Prakash go for a swim after a gap of every 2 days and every 3 days respectively. If on 1st January both of them went for a swim together, when will they go together next?

(A) 7^{th} Jan. (B) 8^{th} Jan. (C) 12^{th} Jan. (D) 13^{th} Jan.

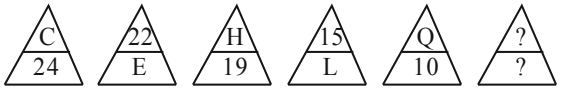
Ans. (D)

Sol. Gap of 2 days means exactely 3 days latter, similarly gap of 3 days means exactely 4 days latter. LCM of 4 & 4 is 12. So, after every 12 days, they will be going for swimming together. Hence, 13^{th} January.

Direction for question number (93 to 95) :

Which alternative will replace the question mark (?)?

93.

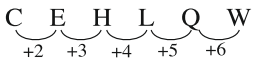


(A) $\frac{15}{R}$ (B) $\frac{4}{W}$ (C) $\frac{S}{11}$ (D) $\frac{4}{X}$

Ans. (B)

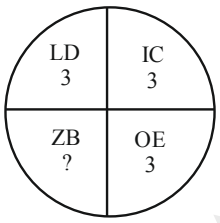
Sol. Letters position from back = Numeric in figure

Letters sequence



hence, $\frac{4}{W}$ (As numerator & denominator are digits & letters alternatively)

94.



(A) 3 (B) 16 (C) 5 (D) 13

Ans. (D)

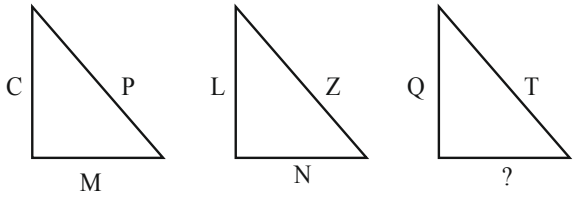
Sol. L = 12, D = 4 $\Rightarrow \frac{12}{4}=3$

I = 9, C = 3 $\Rightarrow \frac{9}{3}=3$

O = 15, E = 5 $\Rightarrow \frac{15}{5}=3$

Z = 26, B = 2 $\Rightarrow \frac{26}{2}=13$

95.



(A) O (B) C (C) S (D) J

Ans. (B)

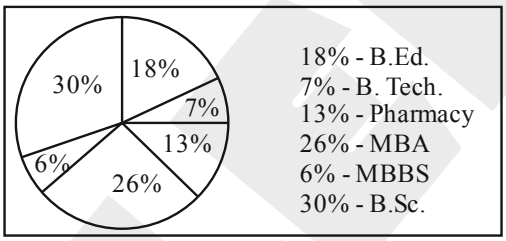
Sol. $\underset{3}{C} + \underset{13}{M} = \underset{16}{P} \quad \underset{12}{L} + \underset{14}{N} = \underset{26}{Z}$

So, $\underset{17}{Q} + \underset{3}{C} = \underset{20}{T}$

Direction for question number (96 to 100) :

Study the given Pie chart carefully and answer the questions.

Percentage distribution of students in different courses.



Total number of students = 6500

Sol. for Q. No. (96 to 100).

$$\text{B.Ed.} = \frac{18}{100} \times 6500 = 1170$$

$$\text{B.Tech} = \frac{7}{100} \times 6500 = 455$$

$$\text{Pharmacy} = \frac{13}{100} \times 6500 = 845$$

$$\text{MBA} = \frac{26}{100} \times 6500 = 1690$$

$$\text{MBBS} = \frac{6}{100} \times 6500 = 390$$

$$\text{B.Sc.} = \frac{30}{100} \times 6500 = 1950$$

96. What is the value of half of the difference between the number of students in MBA and MBBS?

(A) 800 (B) 1600 (C) 1300 (D) 650

Ans. (D)

Sol. $\frac{1}{2}(\text{MBA} - \text{MBBS}) = \frac{1}{2}(1300) = 650$

97. What is the respective ratio between the number of the students in Pharmacy and the number of the students in B. Tech.?

(A) 11 : 13 (B) 13 : 6 (C) 13 : 7 (D) 6 : 13

Ans. (C)

Sol. $\frac{\text{Pharmacy}}{\text{B.Tech}} = \frac{845}{455} = \frac{13}{7}$

98. How much more percentage of students are in MBA as compared to students in B.Ed.?

(A) 49% (B) 53% (C) 41% (D) 44%

Ans. (D)

Sol. $\frac{\text{MBA} - \text{B.Ed.}}{\text{B.Ed}} \times 100 = \frac{1690 - 1170}{1170} \times 100$

$= \frac{5200}{117} = 44.44\%$

99. Number of students in B.Sc. is approximately what percentage of the number of students in B.Ed.?

(A) 167% (B) 162% (C) 157% (D) 153%

Ans. (A)

Sol. $\frac{\text{B.Sc}}{\text{B.Ed.}} = \frac{1950}{1170} \times 100 = 166.66\%$

100. What is the total number of students in B.Ed., Pharmacy and MBBS together?

(A) 2465 (B) 2565 (C) 2405 (D) 2504

Ans. (C)

Sol. B.Ed + Pharmacy + MBBS = 1170 + 845+ 390 = 2405