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

STATE : WEST BENGAL PAPER : MAT

Date: 17/11/2019

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

Direction : Read the questions 1-15 carefully and given answer by filling the circle of the latter denoting your selected answer on the OMR Answer-Sheet.

1. $x^5 - 1$ is divided by $2x + 1$, then the absolute value of the remainder is

(a) 21 (b) 26 (c) $\frac{33}{12}$ (d) $\frac{33}{32}$

Ans. ***(d)***

Sol. $2x + 1 \Rightarrow x = -\frac{1}{2}$

$x^5 = 1$

Put $x = -\frac{1}{2}$

$$\left|\left(-\frac{1}{2}\right)^5 - 1\right| \Rightarrow \left|-\frac{1}{32} - 1\right|$$

$$\Rightarrow \left|-\frac{33}{32}\right| \Rightarrow \frac{33}{32}$$

2. A mother was 30 years old when her son was born. Now the sum of ages of mother and son is 40 years. What would be the age of the son after 10 years?

(a) 5 years (b) 15 years (c) 20 years (d) 10 years

Ans. ***(b)***

Sol. When s = 0 year then mother age = 30 years

Sum of son and mother = 40

S + M = 40

(after 5 years) 5 + 35 = 40

$\therefore$ Now son age is = 5 years

after 10 year son age will be = 15 year.

3. If the difference betweeen diameter and circumference of a circle is 60 cm, then the area of the circle is

(a) 661 square cm (b) 166 square cm (c) 616 square cm (d) 484 square cm

Ans. ***(c)***

Sol. Difference between circumference and diameter is 60

$2\pi r - 2r = 60$

$2r(\pi - 1) = 60$

$$2r\left(\frac{22}{7} - 1\right) = 60$$

$$2r\left(\frac{15}{7}\right) = 60$$

$$r = \frac{16 \times 7}{15 \times 2} \Rightarrow r = 14$$

$\therefore$ Area of circle $= \pi r^2$

$$= \frac{22}{7} \times 14^2 \times 14$$

$= 616$ sq. cm

4. A metalic spherical shell of internal and external diameters 4 cm and 8 cm respectively is melted and recast into the form of a cone of base diameter 8 cm. The height of the cone is

(a) 12 cm (b) 14 cm (c) 15 cm (d) 18 cm

Ans. ***(b)***

Sol. Given : internal radii of sphere $(r_1) = 2$ cm

external radii of sphere $(r_2) = 4$ cm and Radius of cone (R) = 4 cm

Volume of metallic sphere = Volume of cone

$$\frac{4}{3}\pi(r_2)^3 - \frac{4}{3}\pi(r_1)^3 = \frac{1}{3}\pi R^2 H$$

$$\frac{4}{3}\pi(4)^3 - \frac{4}{3}\pi(2)^3 = \frac{1}{3}\pi \times 4^2 \times H$$

$$\frac{4}{3}\pi(64 - 8) = \frac{1}{3}\pi \times 16 \times H$$

$$\frac{56}{4} = H$$

$\therefore$ H (Height of cone) = 14 cm

5. If median of a distribution is 28 and mean is 27.5, then mode is

(a) 29.5 (b) 28.5 (c) 29.0 (d) 27.0

Ans. ***(c)***

Sol. Mode = 3 (Median) – 2 (Mean)

$= 3 \times 28 - 2 \times 27.5$

$= 84 - 55$

$= 29$

6. The value of $a^3 + b^3 + c^3 - 3abc$ when $a + b + c = 9$ and $a^2 + b^2 + c^2 = 29$ is

(a) 9 (b) 3 (c) 27 (d) 81

Ans. ***(c)***

Sol. $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

So, $(9)^2 = 29 + 2(ab + bc + ca)$

$81 - 29 = 2(ab + bc + ca)$

$$\frac{52}{2} = ab + bc + ca$$

$26 = ab + bc + ca$

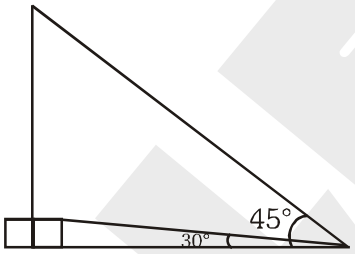
then $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - (ab + bc + ca))$

$= (9)(29 - (26)]$

$= 9 \times 3$

$= 27$

7. The angles of elevation of top and bottom of a flag kept on a flagpost at 30 metre distance are 45° and 30° respectively. What is the height of the flag?



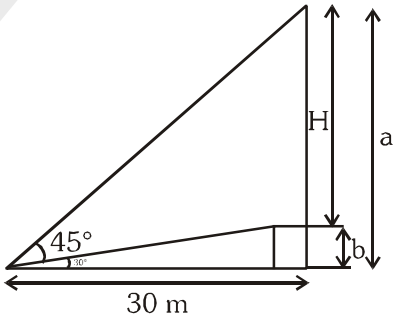
(a) 17.32 metre (b) 14.32 metre (c) 12.68 metre (d) 20.78 metre

Ans. ***(c)***

Sol. $\tan 45° = \frac{a}{30} \Rightarrow a = 30$

$$\tan 30° = \frac{b}{30} \Rightarrow \frac{1}{\sqrt{3}} = \frac{b}{30}$$

$$\Rightarrow b = \frac{30}{\sqrt{3} \times \sqrt{3}} \times \sqrt{3} \Rightarrow 17.32$$



$\therefore$ Height of flag $= a - b$

$= 30 - 17.32$

$= 12.68$

8. The answer of 11 results is 50. If the average of first six results is 49 and that of last six numbers is 52. Find the sixth result.

(a) 65 (b) 72 (c) 56 (d) 47

Ans. ***(c)***

Sol. $\frac{x_1 + x_2 + x_3 \ldots\ldots\ldots x_{11}}{11} = 50$

$x_1 + x_2 \ldots\ldots\ldots x_{11} = 550$ .....(1)

then, $\frac{x_1 + x_2 + \ldots\ldots\ldots x_6}{6} = 49$

$x_1 + x_2 + \ldots\ldots\ldots x_6 = 49 \times 6$ .....(2)

then, $\frac{x_6 + x_7 + \ldots\ldots\ldots x_{11}}{6} = 52$

$x_6 + x_7 + \ldots\ldots\ldots x_{11} = 52 \times 6$ .....(3)

Add (2) and (3)

$x_1 + x_2 + \ldots\ldots\ldots x_6 + x_6 + x_7 + \ldots\ldots\ldots x_{11} = 49 \times 6 + 52 \times 6$

$550 + x_6 = 6 \times 101$

$x_6 = 606 - 550$

$x_6 = 56$

9. The roots of $2kx^2 + 5kx + 2 = 0$ are equal if k is equal to

(a) $\frac{16}{25}$ (b) $\frac{13}{16}$ (c) 2 (d) $1\frac{2}{15}$

Ans. ***(a)***

Sol. $2kx^2 + 5kx + 2 = 0$

$\therefore b^2 - 4ac = 0$ (roots are equal)

$(5k)^2 - 4 \times 2k \times 2 = 0$

$25k^2 - 16k = 0$ $\Rightarrow 25k^2 = 16k$

$\Rightarrow k = \frac{16}{25}$

10. A fair unbaised die in thrown twice and in both cases the difference of numbers appeard on the upper face was observed. The probability of getting the difference to be 3 is

(a) $\frac{1}{3}$ (b) $\frac{1}{6}$ (c) $\frac{1}{12}$ (d) $\frac{1}{36}$

Ans. ***(b)***

Sol. Total cases of dices = 36

favarable cases = (6, 3), (3, 6), (5, 2), (2, 5), (4, 1), (1, 4) $\Rightarrow 6$

$\therefore$ Probability $\Rightarrow \frac{6}{36} \Rightarrow \frac{1}{6}$

11. If $(p + q) : \sqrt{pq} = 2 : 1$, then p : q will be

(a) 2 : 1 (b) 1 : 2 (c) 1 : 1 (d) 1 : 5

Ans. ***(c)***

Sol. $\frac{p+q}{\sqrt{pq}} = \frac{2}{1}$

$p + q = 2\sqrt{pq}$

squaring both sides

$\therefore (p + q)^2 = (2\sqrt{pq})^2$

$p^2 + q^2 + 2pq = 4pq$

$p^2 + q^2 - 2pq = 0$

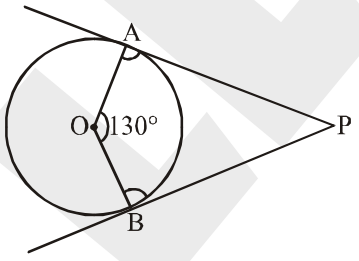
$(p - q)^2 = 0$

$p - q = 0$

$\therefore p = q$

So, $\frac{p}{q} = 1 : 1$

12. In a given figure, PA and PB are tangents from P to a circle with centre O. If $\angle AOB = 130°$, then find $\angle APB$.



(a) 40° (b) 55° (c) 50° (d) 60°

Ans. ***(c)***

Sol. In quadrilateral AOBP

$\angle A + \angle D + \angle B + \angle P = 360°$

$90° + 180° + 90° + \angle P = 360°$

$310 + \angle P = 360°$

$\angle P = 360° - 310 = 50°$

13. If $\cos^4\theta - \sin^4\theta = \frac{1}{3}$, then the value of $\tan^2\theta$ will be

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{2}{3}$ (d) $\frac{1}{4}$

Ans. ***(a)***

Sol. $\cos^4\theta - \sin^4\theta = \frac{1}{3}$

$(\cos^2\theta + \sin^2\theta)(\cos^2\theta - \sin^2\theta) = \frac{1}{3}$

$(1)\ (\cos^2\theta - \sin^2\theta) = \frac{1}{3}$

$\cos^2\theta - \sin^2\theta = \frac{1}{3}$

$1 - 2\sin^2\theta = \frac{1}{3}$

$\therefore \sin^2\theta = \left(1 - \frac{1}{3}\right) \times \frac{1}{2}$

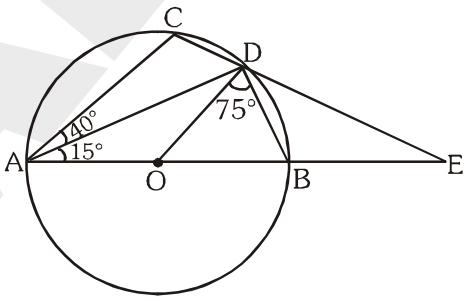
$\Rightarrow \frac{2}{3} \times \frac{1}{2} \Rightarrow \frac{1}{3}$ .....(1)

$\therefore \cos^2\theta - \sin^2\theta = \frac{1}{3}$

$\cos^2\theta = \frac{2}{3}$ .....(2)

$\therefore \tan^2\theta = \frac{\sin^2\theta}{\cos^2\theta} = \frac{\frac{1}{3}}{\frac{2}{3}} \Rightarrow \frac{1}{2}$

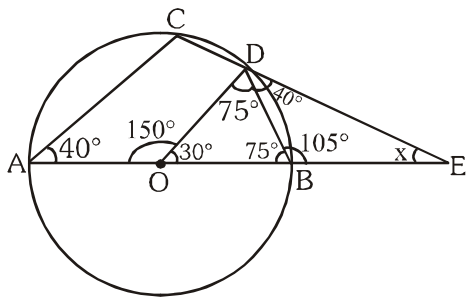
14. In the figure the value of $\angle BED$ is



(a) 25° (b) 40° (c) 35° (d) 30°

Ans. ***(c)***

Sol.



In $\Delta ODB \rightarrow OD = OB =$ radius of circle

$\therefore \angle ODB = \angle OBD = 75°$

and $\angle DBE = 105°$ (Ext. angle property of triangle)

Now in quadrilateral ABCD

$\Rightarrow \angle BDE = \angle BAC = 40°$ (Ext. angle property of cyclic quadrilateral)

$\therefore$ In ΔBDE

$x = 35°$

15. If $(1 + 4x^2)\cos\theta = 4x$, then $\frac{1+2x}{1-2x} =$

(a) $\text{cosec}\theta + \cot\theta$ (b) $\text{cosec}\theta - \cot\theta$ (c) $\sec\theta + \tan\theta$ (d) $\sec\theta - \tan\theta$

Ans. ***(a)***

Sol. $\cos\theta = \frac{4x}{1+4x^2}$

$$\Rightarrow \frac{1}{\cos\theta} = \frac{1+4x^2}{4x}$$

Applying componendo and dividend

$$\Rightarrow \frac{1+\cos\theta}{1-\cos\theta} = \frac{1+4x^2+4x}{1+4x^2-4x}$$

$$\Rightarrow \frac{(1+\cos\theta)^2}{1-\cos^2\theta} = \left(\frac{1+2x}{1-2x}\right)^2$$

$$\Rightarrow \left(\frac{1+\cos\theta}{\sin\theta}\right)^2 = \frac{1+2x}{1-2x}$$

$$\Rightarrow \frac{1+2x}{1-2x} = \text{cosec}\theta + \cot\theta$$

option (a) is correct

Direction : In each question 16 to 25 there are two words separated by and other two separated from the first two by the symbol. Find the relation between two sets of words and select one word from the right side of which have the same relation as left set of word of. Fill the circle of the letter denoting your selected answer on the OMR Answer-Sheet.

16. Lamp : Oil :: Bulb : ?

(a) Electricity (b) Bright (c) Holder (d) Switch

Ans. ***(a)***

Sol. Oil is the source of Lamp in the same way Electricity is the source of Bulb.

17. Whale : Mammal :: Frog : ?

(a) Amphibian (b) Reptile (c) Fish (d) Molluse

Ans. ***(a)***

Sol. Whale related to mammal is the same way Frofg related to Amphibian.

18. King : Place :: Eskimo : ?

(a) Cavarn (b) Asylum (c) Monastery (d) fgloo

Ans. ***(d)***

Sol. King lives in palace in the same way Eskimoo lives in igloo.

19. Cobbler : Leather :: Carpenter : ?

(a) Paper (b) Wood (c) Hammer (d) Cloth

Ans. ***(b)***

Sol. Cobbler used to mond Leather shoes is the same way. Carpenter used to make wood furniture.

20. Stethocope : Hearbeat :: ? Temperature

(a) Heat (b) Mercury (c) Scale (d) Thermometer

Ans. ***(d)***

Sol. Heart beat measure by stethoscope in the same way temperature measure by Thermometer.

21. Light : Darkness :: Knowledge : ?

(a) Ignorane (b) Intelligence (c) Brightness (d) Creativity

Ans. ***(a)***

Sol. Durkness remove by light in the same of way igonrance removed by Knowledge.

22. 841 : 29 :: 289 : ?

(a) 23 (b) 33 (c) 17 (d) 13

Ans. ***(c)***

Sol. $(29)^2 \rightarrow 841$

So, $(17)^2 \rightarrow 289$

23. C : I :: D : ?

(a) L (b) P (c) M (d) N

Ans. ***(b)***

Sol. $C(3) \rightarrow I(9)\ [3^2]$

$D(4) \rightarrow 4^2(16)$ P

24. Heart : Cardiologist :: Kidney : ?

(a) Endocrinologist (b) Onthodontist (c) Nephrologist (d) Urologist

Ans. ***(d)***

Sol. By obsevation

25. Poet : Poem :: Dramatist : ?

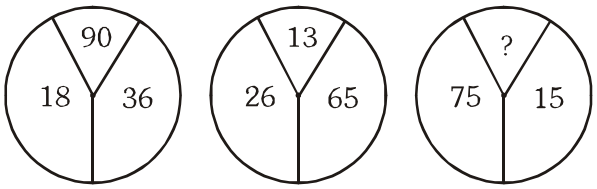
(a) Dialogne (b) Stage (c) Play (d) Direction

Ans. ***(c)***

Sol. By observation

Direction : In questions 26 - 55, numbers are placed in figures on the basis of some rules. One place in the figure is indicated by the interrogation sign(?). Find out the correct alternative to replace the question mark and indicate your answer by filling the circle of the correspondig letter of alternative in the OMR Answer-Sheet.

26.



(a) 105 (b) 60 (c) 30 (d) 45

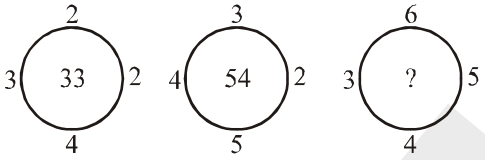
Ans. ***(c)***

Sol. $18 \times 2 = 36$; $18 \times 5 = 90$

$13 \times 2 = 26$; $13 \times 5 = 65$

$15 \times 2 = 30$; $15 \times 5 = 75$

27.

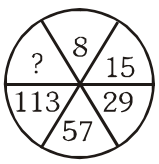


(a) 94 (b) 86 (c) 82 (d) 78

Ans. ***(b)***

Sol. All outer number's squares sum.

28.



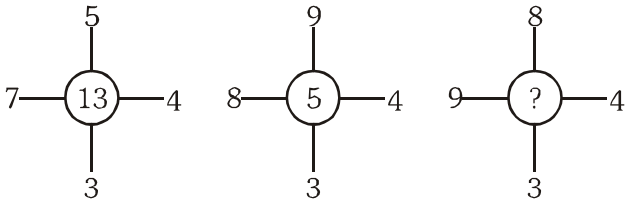
(a) 220 (b) 224 (c) 221 (d) 225

Ans. ***(d)***

Sol. $8 \times 2 - 1 = 15 \times 2 - 1 = 29 \times 2 - 1 = 57$

$57 \times 2 - 1 = 113 \times 2 - 1 = 225$

29.



(a) 12 (b) 15 (c) 18 (d) 14

Ans. ***(a)***

Sol. $(7 \times 4) - (5 \times 3) = 13$

$(8 \times 4) - (9 \times 3) = 5$

$(9 \times 4) - (8 \times 3) = 12$

30.

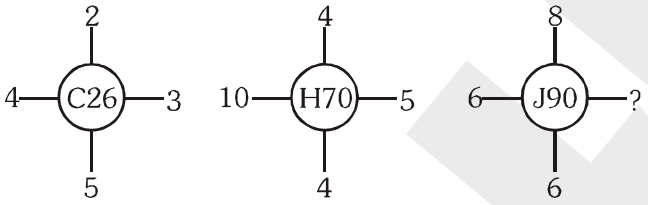
31	17	58	87
68	19	61	56
91	22	70	50
10	142	11	?

(a) 3 (b) 6 (c) 7 (d) 9

Ans. ***(c)***

Sol. Column sum is equal to 200.

31.



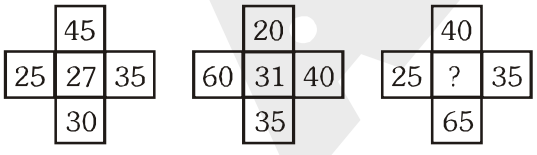
(a) 2 (b) 3 (c) 4 (d) 5

Ans. ***(c)***

Sol. $[2 + c(3) + 5] \times 3 - 4 = 26$

$[8 + J(10) + 6] \times 4 - 6 = 90$

32.

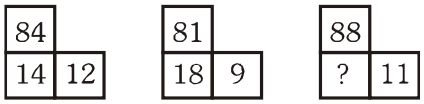


(a) 33 (b) 36 (c) 45 (d) 60

Ans. ***(a)***

Sol. All outer number sum ÷ 5

33.



(a) 16 (b) 61 (c) 21 (d) 81

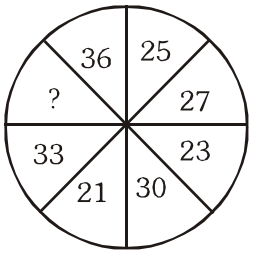
Ans. ***(a)***

Sol. $(84 \div 12) \times 2 = 14$

$(81 \div 9) \times 2 = 18$

$(88 \div 11) \times 2 = 16$

34.



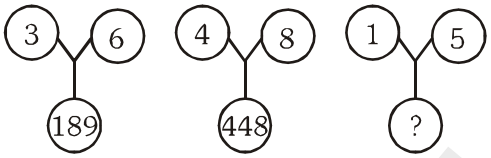
(a) 35 (b) 32 (c) 22 (d) 19

Ans. ***(d)***

Sol. $27 + 3 = 30 + 3 = 33 + 3 = 36$

$25 - 2 = 23 - 2 = 21 - 2 = 19$

35.

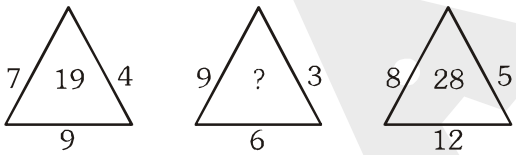


(a) 124 (b) 125 (c) 126 (d) 224

Ans. ***(a)***

Sol. Cubes difference

36.



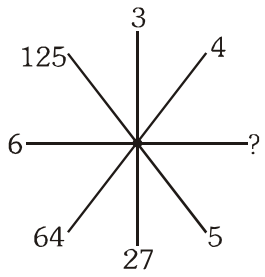
(a) 27 (b) 21 (c) 28 (d) 33

Ans. ***(b)***

Sol. $(7 \times 4) - 9 = 19$

$(9 \times 3) - 6 = 21$

37.

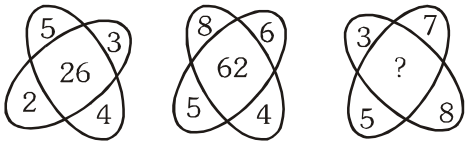


(a) 164 (b) 181 (c) 216 (d) 200

Ans. **(c)**

Sol. Opposite number is the cube.

38.



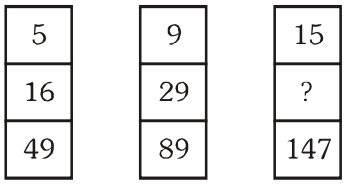
(a) 71 (b) 59 (c) 62 (d) 55

Ans. **(b)**

Sol. $(5 \times 4) + (3 \times 2) = 26$

$(7 \times 5) + (8 \times 3) = 59$

39.



(a) 48 (b) 45 (c) 51 (d) 54

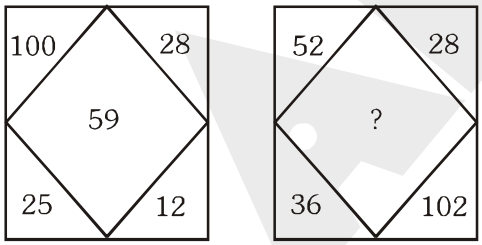
Ans. **(a)**

Sol. $5 \times 3 + 1 = 16 \times 3 + 1 = 49$

$9 \times 3 + 2 = 29 \times 3 + 1 = 89$

$15 \times 3 + 3 = 48 \times 3 + 3 = 147$

40.



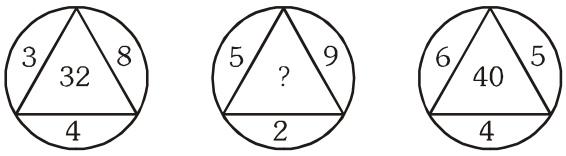
(a) 50 (b) 90 (c) 218 (d) 64

Ans. **(b)**

Sol. $(100 + 12) - (25 + 28) = 59$

$(52 + 102) - (36 + 28) = 90$

41.



(a) 27 (b) 35 (c) 54 (d) 30

Ans. ***(d)***

Sol. Multiple all outer number ÷ 3.

42.

5	8	12
7	1	4
9	3	?
108	27	96

(a) 4 (b) 5 (c) 3 (d) 6

Ans. ***(d)***

Sol. $(5 + 7) \times 9 = 108$

$(8 + 1) \times 3 = 27$

$(12 + 4) \times 6 = 96$

43.

B	F	K
E	I	N
?	N	S

(a) K (b) O (c) F (d) J

Ans. ***(d)***

Sol. In row difference between the letters is +4, +5.

44.

Z	A	Y	B
T	E	S	F
Q	L	P	?

(a) M (b) N (c) P (d) O

Ans. ***(a)***

Sol. Alternate –1 & +1 in row.

45.

7	3	8
4	9	6
5	1	2
90	91	?

(a) 92 (b) 94 (c) 104 (d) 93

Ans. ***(c)***

Sol. In column square sum is bottom number.

46.

2	7	14
3	4	?
75	165	285

(a) 7 (b) 5 (c) 1 (d) 4

Ans. ***(b)***

Sol. $(2 + 3) \times 15 = 75$

$(7 + 4) \times 15 = 165$

$(14 + 5) \times 15 = 285$

47.

2	1	4	6	?	3
6	0	60	210	120	24

(a) 2 (b) 8 (c) 5 (d) 7

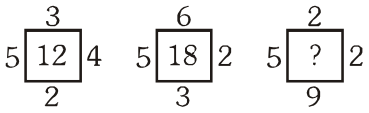
Ans. ***(c)***

Sol. $2^3 - 2 = 6$; $1^3 - 1 = 0$

$4^3 - 4 = 60$; $6^3 - 6 = 210$

$5^3 - 5 = 120$

48.

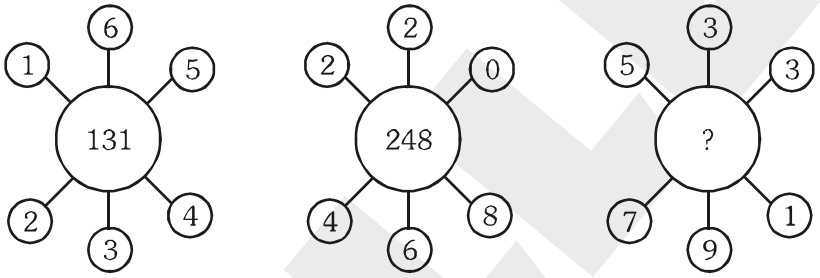


(a) 15 (b) 18 (c) 17 (d) 16

Ans. ***(b)***

Sol. Multiple all outer number ÷ 10

49.

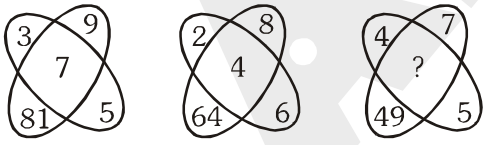


(a) 132 (b) 320 (c) 274 (d) 262

Ans. ***(d)***

Sol. Difference between up & down numbers.

50.



(a) 1 (b) 8 (c) 6 (d) 1

Ans. ***(c)***

Sol. $(81 \div 9) - (5 - 3) = 7$

$(64 \div 8) - (6 - 2) = 4$

$(49 \div 7) - (5 - 4) = 6$

51.

3C	27D	9E
71	21K	3M
4D	?	7J

(a) 11E (b) 28G (c) 35I (d) 48F

Ans. ***(b)***

Sol. $3 \times 9 \Rightarrow 27$

$7 \times 3 \Rightarrow 21$

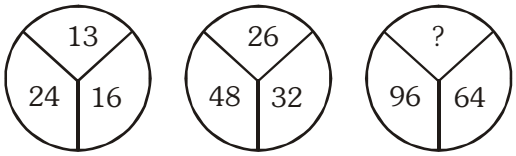
$4 \times 7 \Rightarrow 28$

$C + 1 \Rightarrow D$; $D + 1 \Rightarrow E$

$I + 2 \Rightarrow K$; $K + 2 \Rightarrow M$

$D + 3 \Rightarrow G$; $K + 2 \Rightarrow J$

52.



(a) 60 (b) 39 (c) 32 (d) 52

Ans. ***(d)***

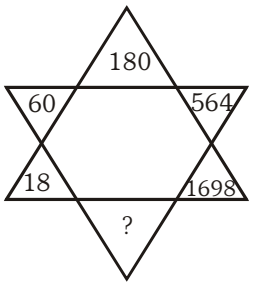
Sol. $(16 - 13) \times 8 = 24$

$(32 - 26) \times 8 = 48$

$(64 - x) \times 8 = 96$

So, $x = 52$

53.



(a) 5052 (b) 5100 (c) 5094 (d) 4860

Ans. ***(b)***

Sol. $18 \times 3 + 6 \Rightarrow 60$

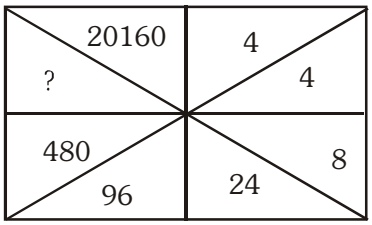
$60 \times 3 + 6 \Rightarrow 186$

$186 \times 3 + 6 \Rightarrow 564$

$564 \times 3 + 6 \Rightarrow 1698$

$1698 \times 3 + 6 \Rightarrow 5100$

54.



(a) 860 (b) 1140 (c) 2880 (d) 3240

Ans. ***(c)***

Sol. $4 \times 1 \Rightarrow 4$

$4 \times 2 \Rightarrow 8$

$8 \times 3 \Rightarrow 24$

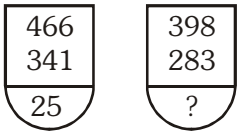
$24 \times 4 \Rightarrow 96$

$96 \times 5 \Rightarrow 480$

$480 \times 6 \Rightarrow 2880$

$2880 \times 7 \Rightarrow 20160$

55.



(a) 29 (b) 23 (c) 35 (d) 26

Ans. ***(b)***

Sol. $466 - 341 \Rightarrow 125 \div 5 \Rightarrow 25$

$398 - 283 \Rightarrow 115 \div 5 \Rightarrow 23$

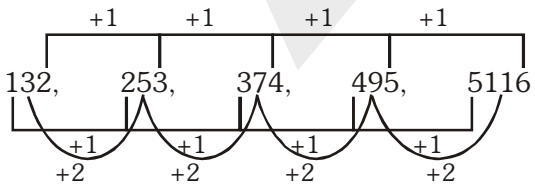
Direction (Question (56-70) : In each of the following questions 56 to 70, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern and replace the question mark in the given series.

56. 132, 253, 374, 495, ?

(a) 5165 (b) 5123 (c) 5116 (d) 5102

Ans. ***(c)***

Sol.

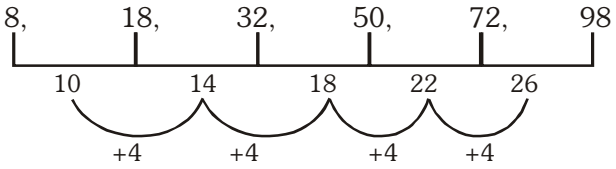


57. 8, 18, 32, 50, 72, ?

(a) 76 (b) 98 (c) 80 (d) 70

Ans. ***(b)***

Sol.

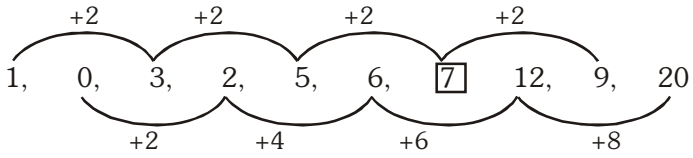


58. 1, 0, 3, 2, 5, 6, ?, 12, 9, 20

(a) 9 (b) 10 (c) 7 (d) 8

Ans. ***(c)***

Sol.

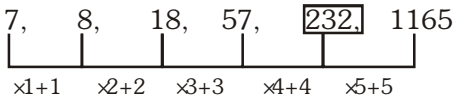


59. 7, 8, 18, 57, ?, 1165

(a) 174 (b) 232 (c) 224 (d) 228

Ans. ***(b)***

Sol.

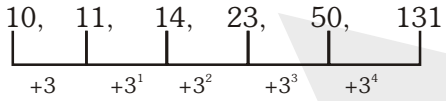


60. 10, 11, 14, 23, 50, ?

(a) 10 (b) 104 (c) 70 (d) 131

Ans. ***(d)***

Sol.

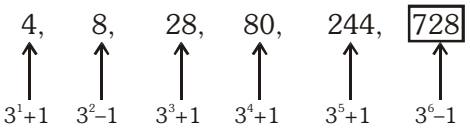


61. 4, 8, 28, 80, 244, ?

(a) 278 (b) 428 (c) 628 (d) 728

Ans. ***(d)***

Sol.

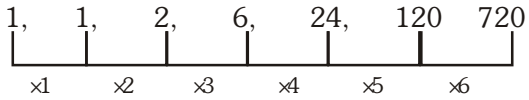


62. 1, 1, 2, 6, 24, ?, 720

(a) 100 (b) 104 (c) 108 (d) 120

Ans. ***(d)***

Sol.

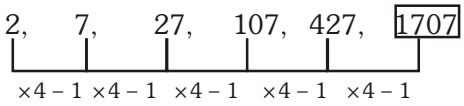


63. 2, 7, 27, 107, 427, ?

(a) 1262 (b) 1707 (c) 4027 (d) 4207

Ans. ***(b)***

Sol.

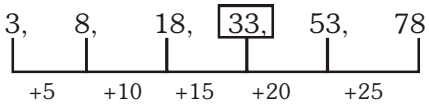


64. 3, 8, 18, ?, 53, 78

(a) 30 (b) 35 (c) 33 (d) 32

Ans. ***(c)***

Sol.

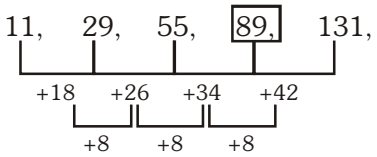


65. 11, 29, 55, ?, 131

(a) 110 (b) 81 (c) 89 (d) 78

Ans. ***(c)***

Sol.

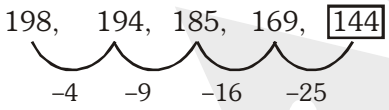


66. 198, 194, 185, 169, ?

(a) 92 (b) 136 (c) 144 (d) 112

Ans. ***(c)***

Sol.

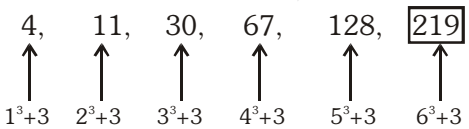


67. 4, 11, 30, 67, 128, ?

(a) 219 (b) 228 (c) 231 (d) 237

Ans. ***(a)***

Sol.



68. 17, 43, 81, 131, ?

(a) 375 (b) 468 (c) 300 (d) 193

Ans. ***(d)***

Sol. 17, 43, 81, 131, 193

+26 +38 +50 +62

+12 +12 +12

69. How many terms are there in the series.

4, 7, 10, 13,.....148, ?

(a) 25 (b) 49 (c) 37 (d) 51

Ans. ***(b)***

Sol. Using AP A = 4, d = 3

$A + (n - 1)\, d = N^{th}$ term

$4 + (n - 1) \times 3 \Rightarrow 148 \Rightarrow N = 49$

70. In the series 4, 10, 16, ...what will be the 23rd term?

(a) 136 (b) 150 (c) 161 (d) 125

Ans. ***(a)***

Sol. A = 4, d = 6

$A + (23 - 1) \times d \Rightarrow$

$4 + 22 \times 6 \Rightarrow 136$

Direction (Question (71-80) : In each of the questions 71 to 80 there are four items, three of which are alike by some means or other while one is out of the class. Find out the odd item and indicate your answer by filling the circle of the corresponding letter on the OMR answer sheet.

71. (a) Iron (b) Steel (c) Gold (d) Tin

Ans. ***(b)***

Sol. Except steel all are metal

72. (a) RKD (b) UNG (c) MTF (d) SLE

Ans. ***(c)***

Sol. Except MTF all has comman difference

(a) R K D (+7, +7) (b) U N G (+7, +7) (c) S L E (+7, +7)

73. (a) Botany (b) English (c) Physics (d) Chemistry

Ans. ***(b)***

Sol. Except English all are science oriented subject.

74. (a) Mumbai (b) Chennai (c) Kolkata (d) Bengaluru

Ans. (d)

Sol. Except Bengaluru all are capital of state in India.

75. (a) Carrom (b) Golf (c) Cricket (d) Hockey

Ans. (a)

Sol. Except carron all are outdoor games

76. (a) Eye (b) Ears (c) Throat (d) Nose

Ans. (c)

Sol. Except throat, all are sense organs.

77. (a) Cumin (b) Groundnut (c) Clove (d) Pepper

Ans. (b)

Sol. Except Groundnut all are spices.

78. (a) Temple (b) Worship (c) Church (d) Mosque

Ans. (b)

Sol. Except worship all are religious places.

79. (a) 70, 80 (b) 54, 62 (c) 28, 32 (d) 42, 24

Ans. (NA)

80. (a) Square (b) Circle (c) Parallogram (d) Rectangle

Ans. (b)

Sol. Except circle all are formed by lines.

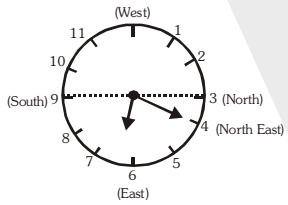
Direction (Question 81 – 83) Choose the correct one.

81. If the clock reads 6 : 20 and if the minute hand points North East, in which direction will the hour hand point ?

(a) West (b) South East (c) East (d) North East

Ans. (b)

Sol.



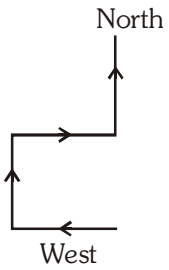
If Minute Hand paints towards north-East according to condition, then hour hard points towards south-East

82. A boy starts walking toward West, he turns right and again he turns right and then truns left at last. Towards which direction is he walking now ?

(a) West (b) North (c) South (d) East

Ans. ***(b)***

Sol.



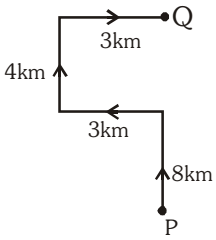
Finally he move towards north direction.

83. Arun travels 8 km towards the North, turns left and travels 3 km and then again turns left and covers another 4 km. He then turns right and travels another 3 km. How far is he from the starting point ?

(a) 18 km (b) 11 km (c) 12 km (d) 15 km

Ans. ***(c)***

Sol.



Distance = 8 + 4 = 12 km

DIRECTION (84 & 85) : Choose the correct one.

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

(1) Leaf (2) Learned (3) Leave (4) Leak

(5) Leader

(a) (5), (1), (4), (2), (3) (b) (5), (1), (4), (3), (2) (c) (3), (5), (1), (4), (2) (d) (1), (4), (2), (3), (5)

Ans. ***(a)***

Sol. According to dictionary,

Leader	Leaf	Leak	Learned	Leave
5	1	4	2	3

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

1. Select 2. Seldom 3. Send 4. Selfish

5. Selter

(a) 1, 2, 4, 5, 3 (b) 2, 1, 5, 4, 3 (c) 3, 5, 4, 1, 2 (d) 5, 3, 2, 1, 4

Ans. ***(NA)***

Sol. Acc to dictionary

Seldom	Select	Selfish	Selter	Send
2	1	4	5	3

Direction (Q.86-90) : If P means –, Q, means +, R means ÷ and S means X, then what is the value of 18P6Q4S6R2?

86. (a) 24 (b) 12 (c) 26 (d) 128

Ans. ***(a)***

Sol. $18 - 6 + 4 \times 6 \div 2$

$\Rightarrow 18 - 6 + 4 \times 3$

$\Rightarrow 30 - 6 = 24$

87. If $5 * 6 = 35$, $8 * 4 = 28$, $6 * 8 = ?$

(a) 46 (b) 34 (c) 23 (d) 38

Ans. ***(a)***

Sol. $5 * 6 = 35$ $8 * 4 = 28$ $6 * 8 = 46$

$6 \div 2 = 3$ $4 \div 2 = 2$ $8 \div 2 = 4$

88. If '+' stands for 'multiplication', '<' stands for 'division', '÷' stands for 'subraction' '–' stands for 'addition' and '×' stands for 'greater than, identify which expression is correct.

(a) $20 - 4 \div 4 + 8 < 2 \times 26$ (b) $20 \times 8 + 15 < 5 \div 9 - 8$

(c) $20 < 2 + 10 \div 4 - 6 \times 100$ (d) $20 < 5 + 25 \div 10 - 2 \times 96$

Ans. ***(c)***

Sol. $10 \times 10 - 4 + 6 > 100$

$100 - 4 + 6 > 100$

$102 > 100$

89. If '÷' means '+' '–' means '÷', '×' means '–' and '+' means '×' then

$32 \div 8 - 4 \times 12 + 4 = ?$

(a) 12 (b) 21 (c) – 41 (d) – 14

Ans. ***(d)***

Sol. $32 + 8 \div 4 - 12 \times 4$

$32 + 2 - 12 \times 4$

$32 + 2 - 48$

$34 - 48 = -14$

90. Which one of the following will be possible when you interchange the numbers 4 and 5 and signs '+' and '×'?

(a) $5 \times 4 + 10 = 30$ (b) $10 \times 4 + 5 = 50$ (c) $20 + 5 \times 4 = 85$ (d) $5 + 15 \times 4 = 90$

Ans. ***(c)***

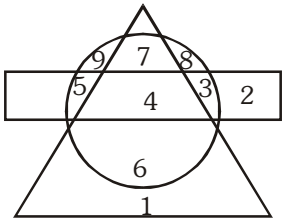
Sol. $20 + 5 \times 4 = 85$

$\Rightarrow 20 \times 4 + 5$

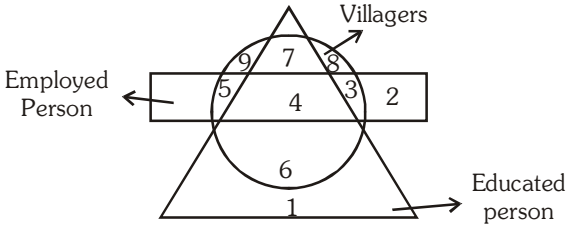
$\Rightarrow 80 + 5 = 85$

So, option (c) follow the condition.

Direction (91-95) : Study the following figure carefully and answer the questions given below it. The rectangle represents employed persons and the triangle represents educated persons and the circle represents villages.



Sol. ***(91-95) :***



91. Which region indicate village are neither employed nor educated?

(a) 6, 1 (b) 8, 9 (c) 3, 2 (d) 7, 8

Ans. ***(b)***

Sol. Represent villagers are neither employed nor educated.

92. Which regions represent educated person are villagers?

(a) 7, 4 (b) 4, 6 (c) 6, 1 (d) 7, 4, 6

Ans. ***(d)***

Sol. (7, 4, 6) represent educated persons are villages.

93. Which region represents educated persons are both villagers and employed?

(a) 2 (b) 8 (c) 4 (d) 9

Ans. ***(c)***

Sol. 4 represent educated person, both villagers and employed.

94. Which region represents educated persons are neither villager nor employed?

(a) 9 (b) 1 (c) 3 (d) 6

Ans. ***(b)***

Sol. 1 Represent educated person are neither villagers not employed.

95. Which region indicates employed persons are neither villagers nor educated?

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

Ans. ***(d)***

Sol. 2, represent employed person neither villagers not educated.

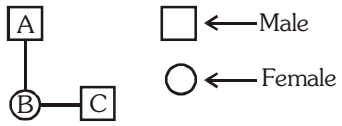
Direction (96 & 97) : Choose the correct one.

96. If A + B means A is the brother of B, A – B means A is the sister of B and A × B means A is the father of B, which of the following means that C is the son of A?

(a) A – B × C + B (b) B – C ÷ A × B (c) A + B – B × C (d) A × B – C + B

Ans. ***(d)***

Sol.



97. Looking at a photograph a person said 'I have no brother or sister but that man's father is my father's son". At whose photograph was the person looking at?

(a) His son's (b) His nephew's (c) His father's (d) His own

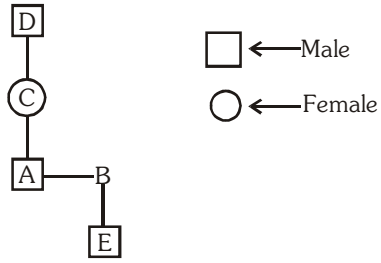
Ans. ***(a)***

Sol. Since person who is telling has no brother or sister. So his father son is be himself.

So, man in photograph is his son.

Diirection (98-100) : A is B's brother, C is A's mother, D is C's father and E is B's son.

Sol.



98. How is E related to A ?

(a) Cousin (b) Nephew (c) Uncle (d) Grandson

Ans. ***(b)***

Sol. Nephew

99. How is D related to B?

(a) Father (b) Uncle (c) Brother (d) Grandfather

Ans. ***(d)***

Sol. Grandfather

100. How is E related to C?

(a) Uncle (b) Nephew (c) Cousin (d) Grandson

Ans. ***(d)***

Sol. Grandson