AISSEE-2024 | SAINIK SCHOOL CLASS IX ENTRANCE EXAM | QUESTIONS & ANSWER KEY

SECTION - 'A': MATHEMATICS

1. If the area of a circle is 2464m^2, then the radius of the circle (in cm), is (use π = $\frac{22}{7}$):

1. 24
2. 26
3. **28**
4. 56

Ans. 3

Explanation:

Area of circle = 2464 cm^2

$\Rightarrow \pi r^2 = 2464$

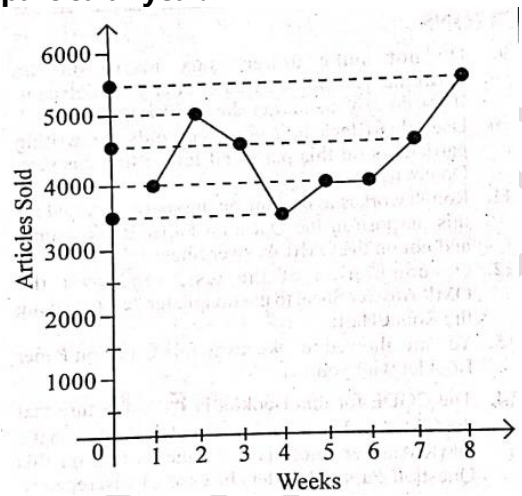
$\Rightarrow \frac{22}{7} r^2 = 2464$

$\Rightarrow r^2 = 784$

$\Rightarrow r = \sqrt{784}$

$\Rightarrow r = 28\ cm$

2. The given line graph shows the number of articles sold by a company in the first 8 weeks of a particular year.



What is the average number of articles sold in 8 weeks?

1. 5892
2. 4875
3. **4375**
4. 2945

Ans. 3

Explanation:

Average number of articles sold in 8 weeks

$= \frac{4000 + 5000 + 4500 + 4000 + 4000 + 4500 + 5500 + 3500}{8}$

$= \frac{35000}{8}$

$= 4375$

3. If $a = \sqrt{2} + 1$, $b = \sqrt{3} - \sqrt{2}$ and $c = \sqrt{6} + 2\sqrt{2}$ then the value of $a^2 + b^2 - c$, is:

1. 8
2. **$8 - 3\sqrt{6}$**
3. $8 + 4\sqrt{2}$
4. $11 - 3\sqrt{6}$

Ans. 2

Explanation:

$a^2 + b^2 - c$

$= (\sqrt{2}+1)^2 + (\sqrt{3}-\sqrt{2})^2 - (\sqrt{6} + 2\sqrt{2})$

$= (\sqrt{2})^2 + 1 + 2\sqrt{2} + (\sqrt{3})^2 + (\sqrt{2})^2 - 2\sqrt{3}\sqrt{2} - \sqrt{6} - 2\sqrt{2}$

$= 2 + 1 + 2\sqrt{2} + 3 + 2 - 2\sqrt{6} - \sqrt{6} - 2\sqrt{2}$

$= 3 + 5 - 2\sqrt{6} - \sqrt{6}$

$= 8 - 3\sqrt{6}$

4. $(2.5a - 3.5b)^2 - (3.5a - 2.5b)^2 =$

1. $-6a^2 - 6b^2$
2. **$6b^2 - 6a^2$**
3. $6a^2 + 6b^2$
4. $6a^2 - 6b^2$

Ans. 2

Explanation:

$(2.5a - 3.5b)^2 - (3.5a - 2.5b)^2$

$= (2.5a - 3.5b + 3.5a - 2.5b)(2.5a - 3.5b - 3.5a + 2.5b)$

$= (6a - 6b)(-a - b)$

$= -6(a - b)(a + b)$

$= -6(a^2 - b^2)$

$= 6b^2 - 6a^2$ Since $a^2 - b^2 = (a+b)(a-b)$

5. If 30% of (A + B) = 50% of (A - B), then A: B is:

1. 3: 5
2. 5: 3
3. **4: 1**
4. 1: 4

Ans. 3

Explanation:

$\frac{30}{100}(A+B) = \frac{50}{100}(A-B)$

$3(A+B) = 5(A-B)$

$3A+3B = 5A-5B$

$8B = 2A$

$\frac{8}{2} = \frac{A}{B}$

$\frac{A}{B} = \frac{4}{1}$

$A : B = 4:1$

6. If $(a^8 + \frac{1}{a8})(a^4 + \frac{1}{a4})(a^2 + \frac{1}{a2})(a + \frac{1}{a})(a - \frac{1}{a}) = a^b - \frac{1}{ab}$, then value of b, is:

1. 8
2. **16**
3. 32
4. 64

Ans. 2

Explanation:

b) Formula : $(a+b)(a-b) = a^2 - b^2$

$\left(a^8 + \frac{1}{a^8}\right)\left(a^4 + \frac{1}{a^4}\right)\left(a^2 + \frac{1}{a^2}\right)\left[\left(a + \frac{1}{a}\right)\left(a - \frac{1}{a}\right)\right] = a^b - \frac{1}{a^b}$

$\left(a^8 + \frac{1}{a^8}\right)\left(a^4 + \frac{1}{a^4}\right)\left[\left(a^2 + \frac{1}{a^2}\right)\left(a^2 - \frac{1}{a^2}\right)\right] = a^b - \frac{1}{a^b}$

$\Rightarrow \left(a^8 + \frac{1}{a^8}\right)\left(a^4 + \frac{1}{a^4}\right)\left(a^4 - \frac{1}{a^4}\right) = a^b - \frac{1}{a^b}$

$\Rightarrow \left(a^8 + \frac{1}{a^8}\right)\left(a^8 - \frac{1}{a^8}\right) = a^b - \frac{1}{a^b}$

$\Rightarrow a^{16} - \frac{1}{a^{16}} = a^b - \frac{1}{a^b}$

$\Rightarrow b = 16$

7. In a fruit store, there are $4(a^2 - \frac{2}{3}b^2)$ boxes and in each box there are $(\frac{3}{4}a^2 + 3b^2)$ apples. How many apples are there in the store?

1. **$3a^4 + 10a^2b^2 - 8b^4$**
2. $3a^4 + 12\,a^2b^2 + 8b^4$
3. $12a^4 + 10a^2b^2 + 6b^4$
4. $12a^4 + 12a^2b^2 - 6b^4$

Ans. 1

Explanation:

No. of apples in the store

$$= 4\left(a^2 - \frac{2}{3}b^2\right)\left(\frac{3}{4}a^2 + 3b^2\right)$$

$$= (4)(3)\left(a^2 - \frac{2}{3}b^2\right)\left(\frac{a^2}{4} + b^2\right)$$

$$= 12\left(\frac{a^4}{4} + a^2b^2 - \frac{a^2b^2}{6} - \frac{2}{3}b^4\right)$$

$$= \frac{12a^4}{4} + 12a^2b^2 - \frac{12a^2b^2}{6} - \frac{2}{3}b^4$$

$$= 3a^4 + 10a^2b^2 - 8b^4$$

8. If x = $\frac{4ab}{a+b}$, then the value of $\frac{x+2a}{x-2a} + \frac{x+2b}{x-2b}$, is:

1. $\frac{2ab}{(a+b)2}$
2. **2**
3. 4
4. $\frac{4ab}{(a+b)2}$

Ans. 2

Explanation:

8)

$$\frac{x+2a}{x-2a} + \frac{x+2b}{x-2b}$$

$$\Rightarrow \frac{(x+2a)(x-2b) + (x+2b)(x-2a)}{(x-2a)(x-2b)}$$

$$= \frac{x^2 - 2xb + 2xa - 4ab + x^2 - 2xa + 2xb - 4ab}{(x-2a)(x-2b)}$$

$$= \frac{2x^2 - 8ab}{x^2 - 2xb - 2xa + 4ab}$$

$$= \frac{2x^2 - 8ab}{x^2 - 2(xb+xa) + 4ab} \rightarrow (1)$$

Since given that $x = \frac{4ab}{a+b}$

$$\Rightarrow x(a+b) = 4ab$$

$$\Rightarrow xa + xb = 4ab$$

$\therefore$ (1) $\Rightarrow$

$$\frac{2(x^2 - 4ab)}{x^2 - 2(4ab) + 4ab}$$

$$= \frac{2(x^2 - 4ab)}{x^2 - 8ab + 4ab}$$

$$= \frac{2(x^2 - 4ab)}{(x^2 - 4ab)}$$

$$= 2$$

9. If 8 is multiplies with 7 more than a number, it becomes the same as 15 is added to 3 times the same number. This can be represented by which of the following equations?

1. 7(8 + x) = 3x + 15
2. 56 + x = 3x + 15
3. **8(7 + x) = 15 + 3x**
4. 56x +1 = 3(x+5)

Ans.3

Explanation:

$8(7+x) = 15+3x$

10. $\{44(x^4 - 5x^3 - 24x^2)\} \div \{11x(x - 8)\}$ =

1. **4x (x + 3)**
2. 7x (x + 2)
3. 5x (x + 4)
4. (x + 2) (x + 3)

Ans.1

Explanation:

$$\frac{44(x^4-5x^3-24x^2)}{11x(x-8)}$$

$$= \frac{4x^2(x^2-5x-24)}{x(x-8)}$$

$$= \frac{4x^2(x-8)(x+3)}{x(x-8)}$$

$$= 4x(x+3)$$

-24
$/x\ \ 3$
$-8\ \ +$
$\ \ -5$

11. In a polygon, sum of interior angles is 360°. Its diagonals are equal but not all the sides. What is that polygon?

1. Parallelogram
2. Rhombus
3. **Rectangle**
4. Square

Ans.3

Explanation:

In Rectangle, the diagonals are equal, but the sides are unequal.

12. If circumference of a circle is 88 cm, then the area of the circle (in cm^2) is (use $\pi = \frac{22}{7}$)

1. 600
2. 612
3. **616**
4. 620

Ans. 3

Explanation:

12) Circumference of circle = 88

$\Rightarrow 2\pi r = 88$

$\Rightarrow 2\left(\frac{22}{7}\right)r = 88$

$\Rightarrow r = 14$ cm

Area of circle $= \pi r^2$

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

$= 44 \times 14$

$= 616\ cm^2$

13. Numbers 1 to 40 are written on different cards (one number on one card) and kept in a box. One card is picked up from the box. What is the probability that the card shows a perfect square number?

1. $\frac{1}{8}$
2. $\frac{12}{5}$
3. $\frac{3}{20}$
4. $\frac{1}{10}$

Ans. 3

Explanation:

Probability that the card shows a perfect square number from 1 to 40

$= \frac{6}{40}$

$= \frac{3}{20}$

14. 6 identical pipes can fill a tank in one hour and 30 minutes. How long will it take to fill the tank if 3 pipes stop working after filling half the tank?

1. **135 minutes**
2. 125 minutes
3. 110 minutes
4. 130 minutes

Ans. 1

Explanation:

$6p = \frac{1}{90}$ [1 hour 30 mins = 90 mins]

$\Rightarrow p = \frac{1}{540}$

Half of the tank filled by 6 pipes,

$\frac{1}{2} = \frac{6t_1}{540}$

$\Rightarrow t_1 = 45$ mins

Half of the tank filled by 3 pipes,

$\frac{1}{2} = \frac{3t_2}{540}$

$\Rightarrow t_2 = 90$ mins

$\therefore$ Total time taken $= t_1 + t_2 = 45$ mins $+ 90$ mins

$= 135$ minutes

15. A certain number of men can complete a work in 50 days. If there were 6 men more, the work can be finished in 10 days less. The number of men originally working are:

1. 36
2. 30
3. 28
4. **24**

Ans.4

Explanation:

Formula: $M_1D_1 = M_2D_2$

$M_1 = x$ men, $D = 50$ days | $M_2 = (x+6)$ men, $D_2 = 40$ days

$50x = (x+6)40 \Rightarrow x = 24$ men

16. If one angle of a triangle is 63° and remaining two angles are in the ration 1: 2, then the measure of the largest angle of the triangle, is:

1. 63°
2. 70°
3. **78°**
4. 82°

Ans. 3

Explanation:

Sum of angles in a triangle = 180°

$63 + x + 2x = 180°$

$\Rightarrow 3x = 117$

$\Rightarrow x = 39$

$\Rightarrow$ Largest angle $= 2x = 2(39) = 78°$

17. If a: b: c: d = 1: 2: 3: 5, then the value of $\frac{a2+b2+c2}{b2+c2+d2}$, is:

1. $\frac{7}{19}$
2. $\frac{19}{5}$
3. $\frac{8}{17}$
4. $\frac{4}{21}$

Ans. 1

Explanation:

f) $\frac{a^2+b^2+c^2}{b^2+c^2+d^2} = \frac{x^2+4x^2+9x^2}{4x^2+9x^2+25x^2} = \frac{14x^2}{38x^2} = \frac{7}{19}$

[Since $a:b:c:d = 1:2:3:5$

$a = x, b = 2x, c = 3x, d = 5x$]

18. Atul drives a car at a speed of 48 km/h and starts his journey for his hometown 132 km away from residence at 9 am. At what time, will he reach his hometown?

1. 11 am
2. 11: 20 am
3. 11: 40 am
4. **11: 45 am**

Ans. 4

Explanation:

18) Speed = 48 km/h

Distance = 132 km

Time = $\frac{\text{Distance}}{\text{Speed}}$

$= \frac{132}{48}$

$= \frac{11}{4}$ hours

$= 2\frac{3}{4}$ hours

$= 2$ hours $\left(\frac{3}{4} \times 60\right)$ minutes

$= 2$ hours 45 minutes

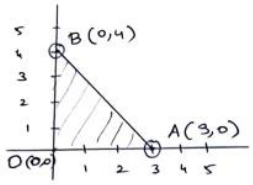
Atul started journey at 9 am, he will reach his home town by 11:45 am

19. If the points A (3, 0) and B (0, 4) are joined, then what will be the area of the triangle formed by AB and the coordinate axes?

1. 5 unit^2
2. **6 unit^2**
3. 7 unit^2
4. 12 unit^2

Ans. 2

Explanation:



Area of triangle AOB $= \frac{1}{2}$ (base)(height)

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

$= 6$ unit^2

20. If in polyhedron, V stands for number of vertices, F stands for number of faces and E stands for number of edges, then which of the following cannot be true for a polyhedron?

1. V = 8 F = 6 E = 12
2. V = 5 F = 5 E = 8
3. **V = 6 F = 5 E = 10**
4. V = 4 F = 4 E = 6

Ans. 3

Explanation:

20) Euler's formula (for no. of faces): $F + V = E + 2$

(or) $F + V - E = 2$

(1) $V = 8, F = 6, E = 12$

$8 + 6 = 12 + 2$

$14 = 14$

(2) $V = 5, F = 5, E = 8$

$5 + 5 = 8 + 2$

$10 = 10$

(3) $V = 6, F = 5, E = 10$

$6 + 5 \neq 10 + 2$

$11 \neq 12$

[Euler's formula is not true for this polyhedron]

(4) $V = 4, F = 4, E = 6$

$4 + 4 = 6 + 2$

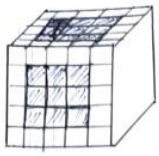
$8 = 8$

21. All faces of a cube of side 5 cm are red painted and is cut into smaller cube of side one cm. What is the total volume of smaller cubes formed, which have no face with red colour?

1. 54 cm^3
2. **45 cm^3**
3. 34 cm^3
4. 27 cm^3

Ans. 4

Explanation:



Total no. of smaller cubes of side 1 cm cut from 5 cm cube = 125 cubes

No. of faces painted red = 3 faces painted + 2 faces painted + 1 face painted

= 8 corners cubes + (12 edges × 3) + (6 faces × 9 cube)

= 8 + 36 + 54

= 98

No. of faces which are not painted red cubes

= 125 − 98

= 27 cubes

22. What is the greatest value of A for which the 6-digit number 326A50 is divisible by 3?

1. 2
2. 6
3. **8**
4. 9

Ans. 3

Explanation:

Divisibility rule of 3 :

Sum of digits divisible by 3, then number is divisible by 3

3+2+6+A+5+0 = 16+A

= 16+8

= 24 → Divisible by 3

∴ The largest value of A = 8

23. $\frac{7}{3} + \frac{7}{3} \div \frac{14}{3} - \frac{1}{7} \div (-\frac{14}{49})$ =

1. $\frac{7}{3}$
2. $\frac{3}{2}$
3. $\frac{10}{3}$
4. $\frac{1}{2}$

Ans. 3

Explanation:

$$\frac{7}{3} + \frac{7}{3} \div \frac{14}{3} - \frac{1}{7} \div \left(\frac{-14}{49}\right)$$

$$= \frac{7}{3} + \left(\frac{7}{3} \div \frac{14}{3}\right) - \frac{1}{7} \div \frac{(-14)}{49}$$

$$= \frac{7}{3} + \left(\frac{7}{3} \times \frac{3}{14}\right) + \left(\frac{1}{7} \times \frac{49}{14}\right)$$

$$= \frac{7}{3} + \frac{1}{2} + \frac{1}{2}$$

$$= \frac{7}{3} + 1$$

$$= \frac{10}{3}$$

24. $\sqrt{\sqrt[3]{27} - 2 \times \sqrt[3]{8} + \sqrt[3]{125}}$ =

1. 4
2. 3
3. 2
4. 1

Ans. 3

Explanation:

$$\sqrt{\sqrt[3]{27} - 2 \times \sqrt[3]{8} + \sqrt[3]{125}}$$

$$= \sqrt{3 - 2(2) + 5}$$

$$= \sqrt{3 - 4 + 5}$$

$$= \sqrt{3 + 1}$$

$$= \sqrt{4}$$

$$= 2$$

25. The average of first five prime numbers is:

1. 3.6
2. 5
3. 5.2
4. **5.6**

Ans. 4

Explanation:

Avg of first five prime numbers

$= \frac{2+3+5+7+11}{5}$

$= \frac{28}{5}$

$= 5.6$

26. Two cubes have their surface areas in the ratio 4: 9. What is the ratio of their volumes?

1. 64: 729
2. **8: 27**
3. 9: 4
4. 2: 3

Ans. 2

Explanation:

26) Ratio of surface areas of two cubes = 4:9

$6a_1^2 : 6a_2^2 = 4:9$

$\Rightarrow a_1^2 : a_2^2 = 4:9$

$\Rightarrow \left(\frac{a_1}{a_2}\right)^2 = \frac{4}{9}$

$\Rightarrow \frac{a_1}{a_2} = \frac{2}{3}$

Ratio of Volumes $= a_1^3 : a_2^3$

$= \left(\frac{a_1}{a_2}\right)^3$

$= \left(\frac{2}{3}\right)^3$

$= \frac{8}{27}$

$= 8:27$

27. 4 equal cuboids with dimensions 6 cm x 10 cm x 4 cm are joined side by side. The volume of the solid so formed, is:

1. 240 cubic cm
2. 480 cubic cm
3. 864 cubic cm
4. **960 cubic cm**

Ans. 4

Explanation:

Cuboid dimension : 6cm × 10cm × 4 cm

4 cuboids dimension : (6+6+6+6)cm × 10cm × 4cm

= 24 cm × 10cm × 4cm

Volume of the solid

= (24 × 10 × 4) cm^3

= 960 cm^3

28. Ritu is four years younger than her brother Varun. After 5 years, the sum of their ages will be 70 years. What is the present age of Ritu?

1. 30 years
2. $25\frac{1}{2}$ years
3. **28 years**
4. 32 years

Ans. 3

Explanation:

28) Ritu's age = x

Brother's age = $x+4$

After 5 years, Ritu's age + Brother's age = 70

$\Rightarrow (x+5) + [(x+4)+5] = 70$

$\Rightarrow x+5+x+9 = 70$

$\Rightarrow 2x+14 = 70$

$\Rightarrow 2x = 56$

$\Rightarrow x = 28$ years

29. Out of a certain number of marbles, $(\frac{3}{5})^{th}$ are red and half of the remaining are green. If the number of green marbles is 12m then how many are red marbles?

1. 24
2. **36**

3. 9
4. 18

Ans. 2

Explanation:

29) Let 'x' be total no. of marbles

Red marbles $= \frac{3}{5}x$

Green marbles $= \frac{1}{2}\left(\frac{2}{5}\right)x$

Green marbles $= 12$

$\Rightarrow \frac{1}{2}\left(\frac{2}{5}\right)x = 12$

$\Rightarrow \frac{x}{5} = 12$

$\Rightarrow x = 60$

$\therefore$ Red marbles $= \frac{3}{5}x = \frac{3}{5}(60) = 3(12) = 36$

36 red marbles

30. How many sides does a regular polygon have if each of its interior angle is 156°?

1. 9
2. 12
3. **15**
4. 20

Ans. 3

Explanation:

30) Each interior angle $= \frac{(n-2)}{n}180^\circ$

$156 = \frac{(n-2)}{n}180^\circ$

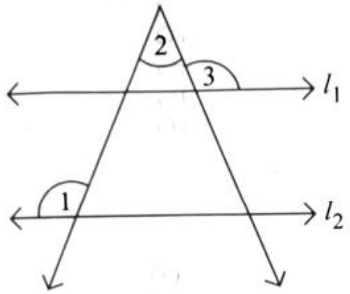
$\Rightarrow 156n = 180n - 360^\circ$

$\Rightarrow 360 = 180n - 156n$

$\Rightarrow 360 = 24n$

$\Rightarrow n = 15$ sides

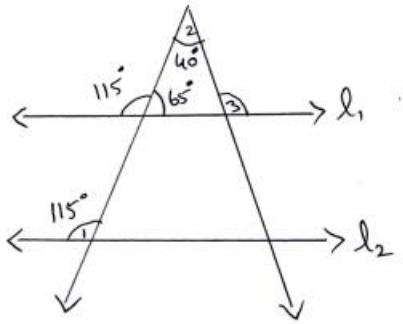
31. In a figure, L1 is parallel to L2 and <1 = 115° , <2 = 40°, then <3 is equal to:



1. 115°
2. 110°
3. **105°**
4. 100°

Ans. 3

Explanation:



Corresponding angles are equal

Straight line angle = 180°

Angles in a triangle = 180°

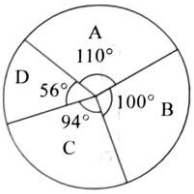
Exterior angle = Sum of opposite two Interior angles

$\Rightarrow \quad \angle 3 = 40° + 65° = 105°$

32. Survey was done on 900 school children about their choice of TV programmes

A. Sports
B. Comedy shows
C. Serials
D. News

Their choices are shown in the Pie chart.



How many children showed interest for Comedy shows?

1. 235
2. **250**
3. 265
4. 275

Ans. 2

Explanation:

32) Degree of an item = $\frac{\text{Individual value}}{\text{Total}} \times 360^\circ$

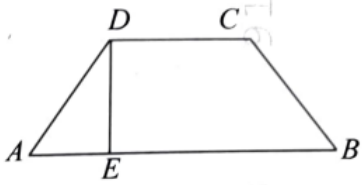
Comedy show, B

$\Rightarrow$ $100^\circ = \frac{\text{Value}}{900} \times 360^\circ$

$\Rightarrow$ $\text{Value} = \frac{100 \times 90}{36} = 250$

$\Rightarrow$ No. of children who are interested in Comedy shows = 250

33. ABCD is a trapezium in which AB || CD and DE ⊥ AB. If AB = 2 DC, DE = 12 cm and area of ABCD = 144 cm^2, then the length of AB, is:

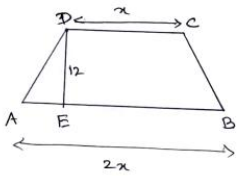


1. **16 cm**
2. 10 cm
3. 8 cm
4. 20 cm

Ans. 1

Explanation:

33)



Area of trapezium = $\frac{(\text{base}_1 + \text{base}_2)}{2}(\text{height})$

$\Rightarrow$ $(144) = \frac{(x+2x)}{2}(12)$

$\Rightarrow$ $12 = \frac{3x}{2}$

$\Rightarrow$ $x = 8$

Length of AB = $2x = 2(8) = 16$ cm

34. Which of the following statements are true?

A. Cube of any odd number is odd.
B. Cube of a single digit number cannot be a single digit number
C. A perfect cube may end with exactly two zeroes.
D. Cube of a 2-digit number has at least 3 digits.

1. A, B, C only
2. B, C, D only
3. A, B, D only
4. **A, D only**

Ans. 4

Explanation:

34) (A) Cube of any odd number is odd

(D) Cube of a 2-digit number has at least 3 digits

(A), (D) → true.

Statements which are not true

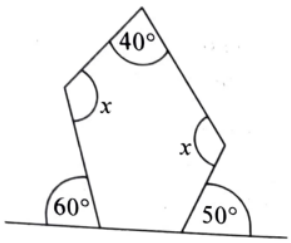
B. Cube of single digit number cannot be a single digit.

Eg: $2^3 = 8$

C. A perfect cube may end with exactly two zeroes.

Explanation: If we take 2700, 27 is a perfect cube but 100 is not a perfect cube.

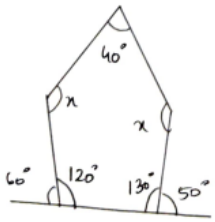
35. The value of x from the following figure, is:



1. 35°
2. 70°
3. **125°**
4. 250°

Ans. 3

Explanation:



Sum of interior angles of 5 sided polygon
$= (n-2) \times 180^\circ = (5-2) \times 180^\circ = 3(180^\circ) = 540^\circ$

$40 + 120 + 130 + x + x = 540$

$\Rightarrow 290 + 2x = 540$

$\Rightarrow 2x = 540 - 290$

$\Rightarrow 2x = 250$

$\Rightarrow x = 125^\circ$

36. Madan scored marks given in the following table. Every paper was of 100 marks.

Maths	English	Hindi	Science	Social Science
95	72	80	68	65

His average marks per subject is:

1. 72
2. 74
3. 75
4. **76**

Ans. 4

Explanation:

Average marks $= \frac{95 + 72 + 80 + 68 + 65}{5}$

$= \frac{380}{5}$

$= 76$

37. Which of the following triangles with given sides is *not* a right-angled triangle?

A. 3, 4, 5
B. 5, 12, 13
C. 6, 7, 8
D. 6, 8, 10

1. A
2. D
3. B
4. **C**

Ans. 4

Explanation:

37) By pythagoras theorem,

$(\text{Hypotenuse})^2 = (\text{Base})^2 + (\text{Altitude})^2$

A. $3^2 + 4^2 = 5^2$

$9 + 16 = 25$

$\Rightarrow 25 = 25$

B. $5^2 + 12^2 = 13^2$

$25 + 144 = 169$

$\Rightarrow 169 = 169$

C. $6^2 + 7^2 \neq 8^2$

$36 + 49 \neq 64$

$\Rightarrow 85 \neq 64$

D. $6^2 + 8^2 = 10^2$

$36 + 64 = 100$

$\Rightarrow 100 = 100$

38. If two perpendicular sides of a triangle are 9 cm and 40 cm and length of the side opposite to right angle is x cm, then the value of x, is:

1. 39
2. 40
3. **41**
4. 42

Ans. 3

Explanation:

38)

$x^2 = 9^2 + 40^2$

$\Rightarrow x^2 = 81 + 1600$

$\Rightarrow x^2 = 1681$

$\Rightarrow x = 41$

39. The value of a car depreciates at 10% per annum. Jayant bought the car for ₹ 8,00,000. What will be its value after 3 years?

1. ₹ 5,83,000
2. ₹ 5,83,890
3. ₹ 5,92,000
4. **₹ 5,83,200**

Ans. 4

Explanation:

Depreciation of 10% for 3 years

Value of 3 years

$= \left(\frac{90}{100}\right)\left(\frac{90}{100}\right)\left(\frac{90}{100}\right)(800000)$

$= (90 \times 90)(9)(8)$

$= ₹\ 5,83,200$

40. The median of the data set 3,11, 8, 9, 6, 7, 12, is:

1. 6
2. 7
3. **8**
4. 9

Ans. 3

Explanation:

Median is the middle value of a data arranged in ascending or descending order.

3, 6, 7, 8, 9, 11, 12

Median = 8

41. The average height of 6 boys is 5′ 3″. If one boy is 6′ 1″ tall, then the average height of remaining boys, is:

1. 5′
2. **5′ 1″**
3. 5′ 2″
4. 5′ 4″

Ans. 2

Explanation:

41) 1 feet = 12 inches

Average of 6 boys = 5' 3"

= 5 feet 3 inches

= (60+3) inches

= 63 inches

Average height of 5 boys = ?

given that height of one boy = 6' 1"

= 73 inches

$\text{Avg} = \frac{\text{Sum}}{n}$

$\Rightarrow 63 = \frac{73 + (S)}{6}$

$\Rightarrow 378 = 73 + (S)$

$\Rightarrow 305 = (S)$

$\Rightarrow S = 305$

Avg of 5 boys height = 61 inches (+) $\frac{305}{5}$

= 5 feet 1 inch

= 5' 1"

42. By which smallest number, 2700 must be multiplies so that the new number is a perfect cube?

1. 6
2. **10**
3. 15
4. 18

Ans. 2

Explanation:

2700 x 10 = 27000 is a perfect cube

∴ The number to be multiplied is 10.

43. The number of zeros at the end of number 1 x 2 x 3 x 4 x ..... x 20, is:

1. 6
2. **4**
3. 5
4. 3

Ans. 2

Explanation:

43) No. of zeros in $1 \times 2 \times 3 \times 4 \times \cdots \times 20$

$2 \times 5 \rightarrow$ 1 zero

$12 \times 15 \rightarrow$ 1 zero

$10 \rightarrow$ 1 zero

$20 \rightarrow$ 1 zero

$\therefore$ Total no. of zeros is 4

44. The cost of 5 kg apples is ₹ 425; the cost of 12 dozen oranges is ₹ 744 and the cost of 4 kg mangoes is ₹ 480. What is the total cost of 8 kg apples, 8 dozen oranges and 8 kg mangoes?

1. ₹ 1, 416
2. **₹ 2, 136**
3. ₹ 1, 826
4. ₹ 2, 756

Ans. 2

Explanation:

Apples → 5kg → ₹425 | 1 kg → $\frac{425}{5}$

Oranges → 12 dozen → ₹744 | 1 dozen → $\frac{744}{12}$

Mangoes → 4kg → ₹480 | 1 kg → $\frac{480}{4}$

8kg Apples + 8 dozen oranges + 8kg Mangoes

$= 8\left(\frac{425}{5} + \frac{744}{12} + \frac{480}{4}\right)$

$= 8(85 + 62 + 120)$

$= 8(267)$

$=$ ₹ 2136

45. Pawan bought a second hand Tv for ₹ 4, 300. He spent ₹ 500 on its repair and sold it for ₹ 5, 856. In these transactions, his gain was:

1. 20%
2. 21%
3. **22%**
4. 24%

Ans. 3

Explanation:

45) C.P = 4300 + 500 = 4800

S.P = 5856

Gain % = $\frac{\text{Gain}}{\text{C.P}} \times 100$

= $\frac{1056}{4800} \times 100$

Gain % = 22%

46. There are 120 students in a hostel and there is food provision for 25 days. How long would these provisions last out if 30 more students join the group?

1. 30 days
2. 22 days
3. **20 days**
4. 17 days

Ans. 3

Explanation:

46) $m_1 d_1 = m_2 d_2$

$m_1 = 120$ students | $m_2 = 120 + 30 = 150$ students

$d_1 = 25$ days | $d_2 = ?$

$\Rightarrow (120)(25) = (150)(d_2)$

$\Rightarrow d_2 = \frac{120 \times 25}{150}$

$\Rightarrow d_2 = 20$ days

47. If an item sold at ₹ 1, 292 after giving a discount of 15%, then the marked price of the item is:

1. ₹ 1, 480
2. ₹ 1, 500
3. **₹ 1, 520**
4. ₹ 1, 530

Ans. 3

Explanation:

47) S.P = (100 − discount %) % of M.P

⇒ 1292 = $\left(\frac{100-15}{100}\right)$ M.P

⇒ 1292 = $\frac{85}{100}$ M.P

⇒ M.P = ₹ 1520

48. 6 kg of metal A and 24 kg of metal B are melt together to form an alloy. The percentage of metal A in the alloy is:

1. **20%**
2. 25%
3. 33.33%
4. 30%

Ans. 1

Explanation:

48) Alloy < A → 6kg, B → 24kg

Total kg of Alloy = 30 kg.

6 is what % of 30.

x % of 30 = 6

⇒ $\frac{x}{100}$ (30) = 6

⇒ $x = \frac{6 \times 100}{30_5}$

⇒ x = 20 %

20 % of metal A is in the alloy

49. What smallest number should be subtracted from 3142 to get a perfect square?

1. 5
2. **6**
3. 7
4. 8

Ans. 2

Explanation:

49) The number to be subtracted from 3142 to get a perfect square = 6

(ie) $56^2 = 3136$

$\therefore$ 3142 − 6 = perfect square number

[(ie) 3142 − 3136 = 6]

50. If alphabets A, B, C, ... are represented by numbers 1, 2, 3, ..., the value of $\sqrt{(Z - A)}$, is:

1. **5**
2. 4
3. 7
4. 11

Ans. 1

Explanation:

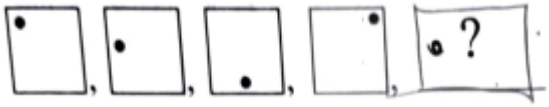
Z = 26

A = 1

$\sqrt{Z-A} = \sqrt{26-1} = \sqrt{25} = 5$

SECTION - 'B': INTELLIGENCE

51. Find the next pattern in the sequence

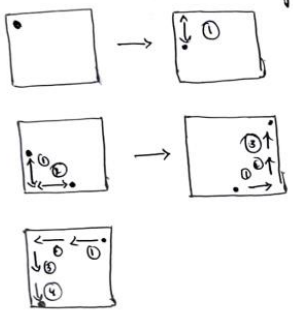


1. 
2. 
3. 
4. 

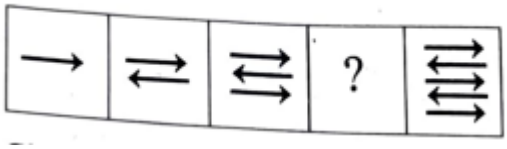
Answer: 4

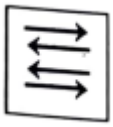
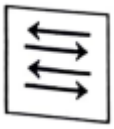
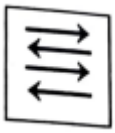
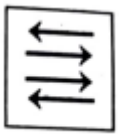
Explanation:

51. Answer - 3 → Rotating Anti-Clockwise.



52. Replace the question mark in the following series:



1. 
2. 
3. 
4. 

Answer: 3

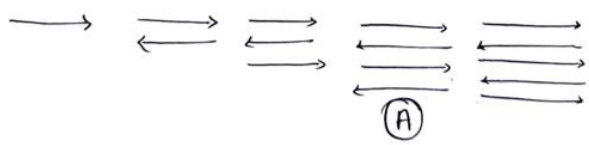
Explanation:

52. Answer - 3

→ number increasing

1 + 2 + 3 + 4 + 5.

→ opposite arrow mark direction



53.Arrange the following words as per order in the dictionary.

A. Consume
B. Consciousness
C. Conscience
D. Conservation
E. Consequence

Choose the correct answer from the options given below.

1. C, B, A, E, D
2. C, A, B, E, D
3. **C, E, B, D, A**
4. C, B, E, D, A

Answer: 4

Explanation:

53. As per the dictionary Answer 4.
1. Conscience 2. Consciousness 3. Consequence 4. Conservation
5. Consume.

54. Find the odd one out:

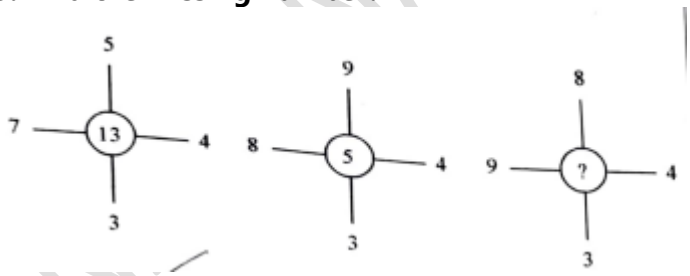
1. 13
2. 17
3. 37
4. **63**

Answer: 4

Explanation:

54.
13, 17, 37 are prime numbers
63 is a composite numbers.

55. Find the missing number:



1. **12**
2. 14
3. 15
4. 18

Answer: 1

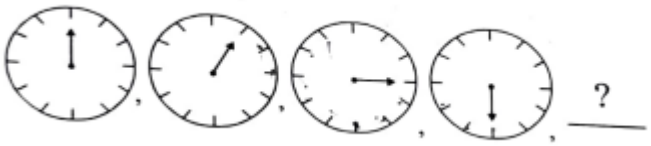
Explanation:

55. Consider the diagram

1. $7 \times 4 = 28$, $5 \times 3 = 15$] 13
2. $8 \times 4 = 32$, $9 \times 3 = 27$] 5
3. $9 \times 4 = 36$, $3 \times 8 = 24$] 12.

So correct option is 4.

56. Find the next pattern in the sequence:



1.

2.

3.

4.

Answer: 4

Explanation:

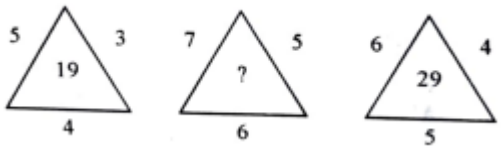
Gap is increasing

Consider

→ 12 → 1 = 1
1 → 3 = 2
3 - 6 = 3
6 - 10 = 4.

Answer is option 4.

57. Find the missing number:



1. 25
2. 37
3. **41**
4. 47

Answer: 3

Explanation:

57. Consider as diagram:

1. $5 \times 3 + 4 = 19$ 2. $7 \times 5 + 6 = (41)$ 3. $6 \times 4 + 5 = 29$.

Correct answer is option 3

58. Complete the analogy:
3:11::7:?

1. 42
2. 29
3. 38
4. **51**

Answer: 4

Explanation:

58. $3 : 11 \rightarrow 3 \times 3 = 9 + 2 = 11$

$7 : ? \rightarrow 7 \times 7 = 49 + 2 = 51$

correct option is (4)

59. Complete the following analogy:
Y: 2 :: T: ?

1. 9
2. **7**
3. 8
4. 12

Answer: 2

Explanation:

Y : 2 :: T : ?

Reversing the Alphabet number.

Z	Y	X	W	V	U	T	S	R	Q	P
1	2	3	4	5	6	7	8	9	10	11

∴ Hence Y : 2 :: T : 7.

Correct answer is option 2.

60. A number is greater than 3 but less than 8. Also, it is greater than 6 but less than 10. The number is:

1. 5
2. 6
3. **7**
4. 8

Answer: 3

Explanation:

From the question

→ x is greater than 3 and less than 8

$3 < x > 8$ [can be 4, 5, 6, 7]

→ Also x is greater than 6.

Then only left out number among 4, 5, 6, 7 is 7. So the answer is 7

∴ Correct option is 3.

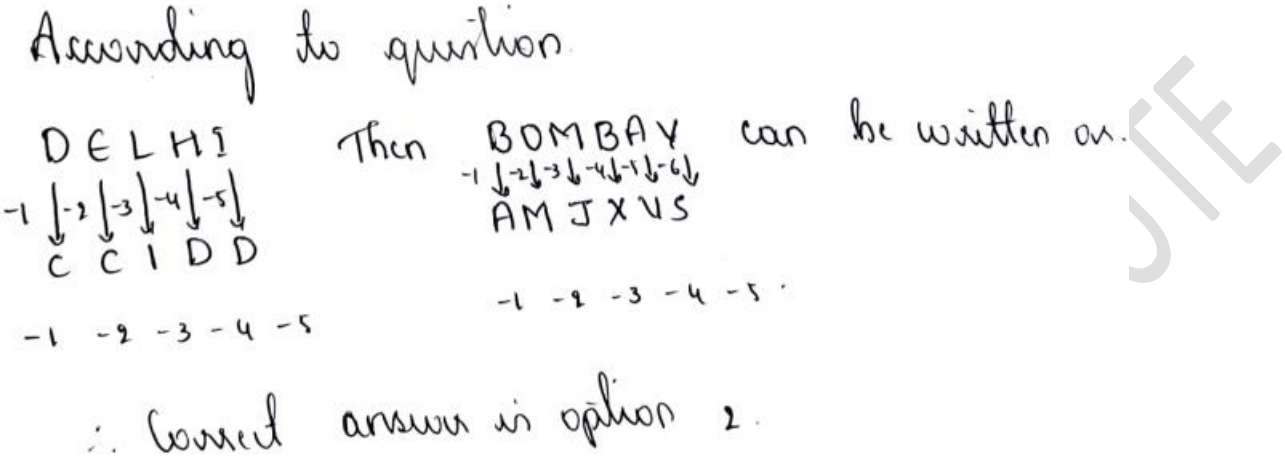
61. If DELHI can be coded as CCIDD, how would you code BOMBAY?

1. AJMTVT
2. **AMJXVS**

3. MJXVSU
4. WXYZAX

Answer: 2

Explanation:

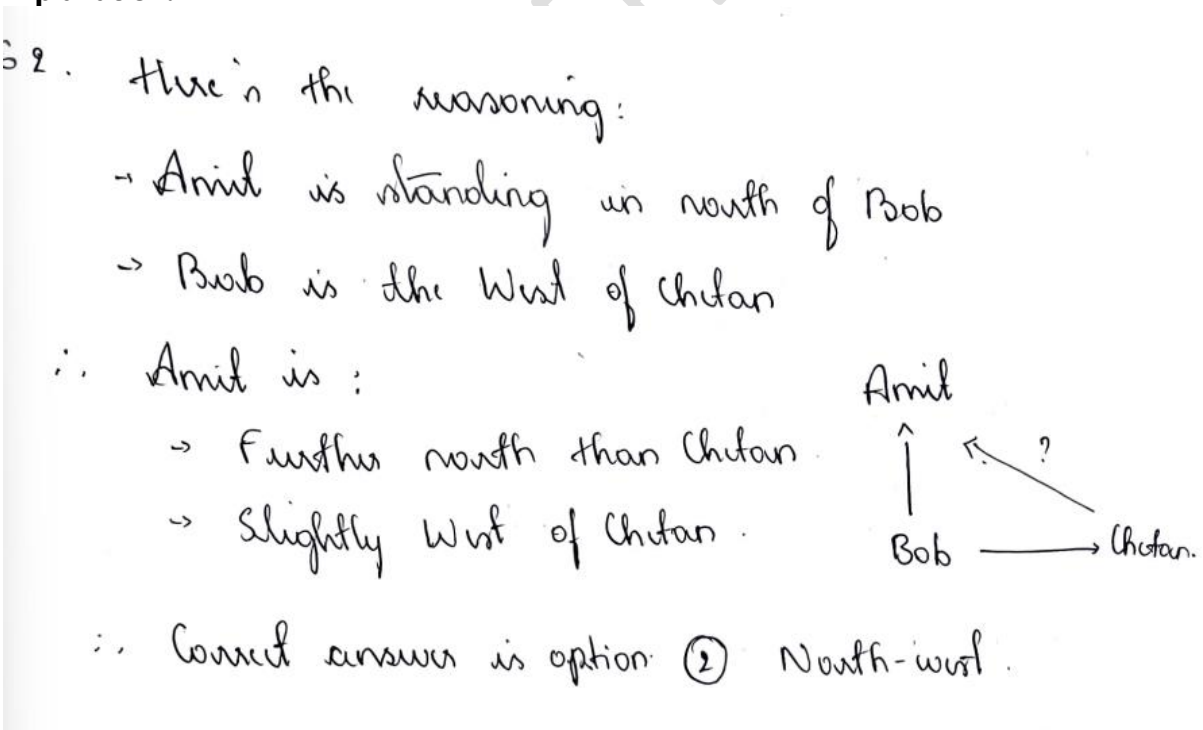


62. Amit is standing in the North of Bob who is in the West of Chetan on a ground. The position of Amit with respect to Chetan is in the direction

1. East
2. **North West**
3. North south
4. North

Answer: 2

Explanation:



63. Complete the analogy.
MAN: PDQ :: WAN:?

1. NAW
2. **ZDQ**
3. YDQ
4. YQD

Answer: 2
Explanation:

From the question.

MAN then WAN can be answered as.

+3 ↓ +3 ↓ +3 ↓ → P D Q

+3 ↓ +3 ↓ +3 ↓ → Z D Q

∴ Correct option is (2). ZDQ.

64. Complete the analogy.
25: 125:: 36:?

1. 126
2. 206
3. **216**
4. 318

Answer: 3
Explanation:

From the given question.

25 → 125 that is $25 \times 5 = 125$ 5^3

36 → ? that is $36 \times 6 = 216$ 6^3

Correct option is (3) i.e., 216

65. Find the odd one out:

1. Pen
2. sharpener
3. Scale
4. **Stationery**

Answer: 4

Explanation:

65. Here the odd one is stationary.

→ Pen, sharpener and scale are all instrument or tools used for writing and drawing.

→ Stationary is a broader category that encompasses various writing and drawing related items including pen, sharpner, scales, paper, notebooks etc.

66. How many such 5's are there in the following number sequence each of which is immediately preceded by 3 or 4 but not immediately followed by 8 & or 9?

3595455358456735754523

1. 3
2. 4
3. **5**
4. 6

Answer: 3

Explanation:

66.

There are 4 such 5's in the given number sequence.

→ Identify the criteria: The 5's must be:

- Immediately preceded by either 3 or 4.
- Not immediately followed by 8 or 9.

→ If you see the questions, there are 4 valid 5's that meet the given criteria.

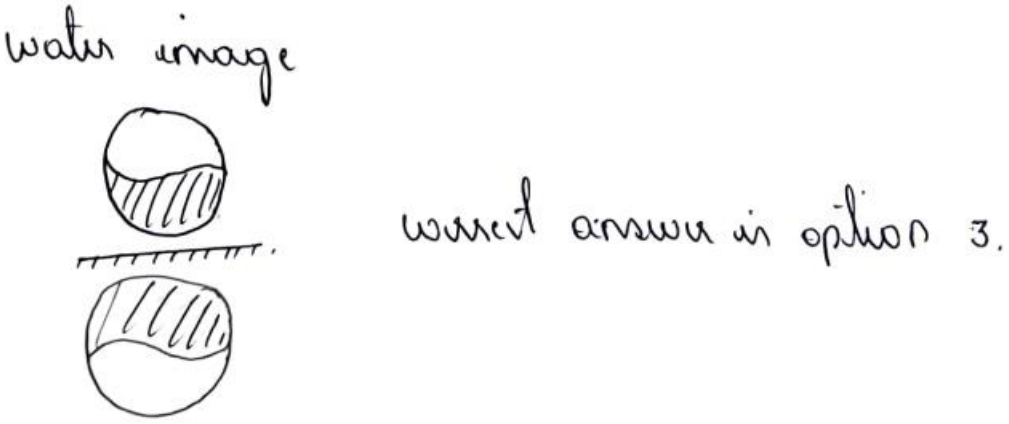
∴ Correct answer is option (2) i.e, 4.

67. Identify the correct water image of the following figure.

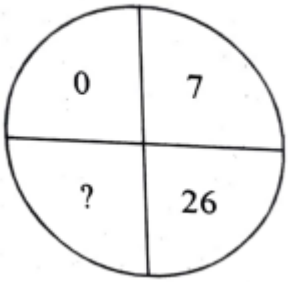
1. 
2. 
3. 
4. 

Answer: 3

Explanation:



68. Find the missing number out of the options given below:



1. 45
2. 60
3. **63**
4. 76

Answer: 3

Explanation:

Pattern given in a sequence of.

1. $0 = 1^3 - 1$
2. $7 = 2^3 - 1$
3. $26 = 3^3 - 1$
4. $63 = 4^3 - 1$

∴ Hence correct answer is option (3)

$= 63$

69. Arrange the following in a logical order

A. Day
B. Week
C. Second
D. Minute
E. Hour

Choose the correct answer from the options given below.

1. A, B, C, D, E
2. C, D, E, B, A
3. C, D B, E, A
4. **C, D, E, A, B**

Answer: 4

Explanation:

69. Let's arrange the units of time in a logical order.

1. Second (C): The smallest unit of time.
2. Minute (D): Comprising 60 seconds.
3. Hour (E): Consisting of 60 minutes
4. Day (A): A period of 24 hours.
5. Week (B): Consisting of 7 days

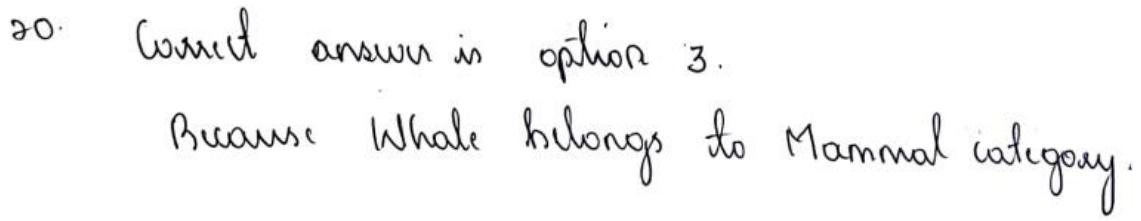
∴ Correct answer is option (4). C D E A B.

70. Complete the analogy. Lizard: Reptile:: Whale:?

1. Rodent
2. Amphibian
3. **Mammal**
4. Ocean

Answer: 3

Explanation:

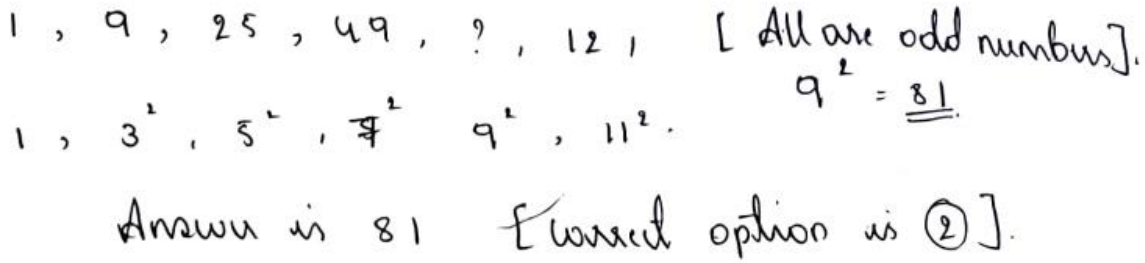


71. Find the missing number in the following Series:
1,9,25, 49,? , 121

1. 64
2. **81**
3. 91
4. 100

Answer: 2

Explanation:



72. Arrange the following in the chronological order.
A. Birth
B. Death
C. Funeral
D. Marriage
E. Education
Choose the correct answer from the options given below.

1. A, E, D, C, B
2. A, C, D, E, B
3. **A, E, D, B, C**
4. A, E, B, D, C

Answer: 3

Explanation:

72. The chronological order for the given events would typically be.

1. Birth (A) : starting point of an individual's life.
2. Education (E) : continues for a significant period.
3. Marriage (D) : Typically occurs after education.
4. Funeral (C) : Marks the end of a person's life.
5. Death (B) : The end of a person's life.

∴ Correct answer is option 3. i.e, A E B D C.

73. Find the odd one out:

1. BCD
2. **KMN**
3. GHÊ
4. WXY

Answer: 2

Explanation:

73. Analyzing a pattern.

BCD , KMN , GHI , WXY

→ BCD, GHI, WXY } follow a consecutive alphabetical order.

∴ KMN does not follow the same pattern

→ option 2 is correct answer.

74. Anil, Bobby, Chetan, Deepak and Elen are five friends. Anil is shorter than Bobby but taller than Elen. Chetan is the tallest. Deepak is shorter than Bobby and taller than Anil. Who is in the middle with respect to their heights?

1. Bobby
2. Chetan
3. **Deepak**
4. Anil

Answer: 3

Explanation:

74. By the question arranging them in terms of height :

1. Chetan [tallest]
2. Bobby
3. Deepak.
4. Anil
5. Elen [Shortest]

∴ The person in the middle is Deepak.

∴ Correct option is 3.

75. If February 1, 2004 was Wednesday, what day was March 12th 2004?

1. Sunday
2. Saturday
3. Tuesday
4. **Monday**

Answer: 4

Explanation:

75. As per the question

February has 29 days
March has 12 days
So totaly = 41 days
41 divided by 7.
= 6 days will remain
According to question monday will fall on 6th day.
Answer is monday

SECTION - 'C': ENGLISH

Spot the error:

76. He is | the carpenter | who | made my chair.

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

1. A
2. B
3. C
4. No error

Answer: 1

EXPLANATION: This sentence is grammatically correct. "The carpenter" is a defining relative clause specifying which carpenter made the chair, and the relative pronoun "who" agrees with its antecedent "carpenter."

77. Change the given sentence to indirect narration:
Rita said to me, "I never eat junk food."

1. Rita told me that she never ate junk food.
2. Rita said to me that she never eats junk food.
3. Rita said that she never ever eats junk food.
4. Rita told me that I never ate junk food.

Answer: 1. Rita told me that she never ate junk food.

EXPLANATION: The reporting verb changes to "told," and the pronoun "I" changes to "she."

78. Change the given sentence to indirect narration:
They said to Rahul, "We are watching cricket."

1. They said Rahul, that they are watching cricket.
2. They told Rahul that they were watching cricket.
3. They told Rahul that they are watching cricket.
4. They told Rahul that they have been watching cricket.

Answer: 2. They told Rahul that they were watching cricket.

EXPLANATION: The reporting verb changes to "told," and the pronoun "to Rahul" is included.

79. Superlative degree of 'Top' is:

1. Topest
2. Topmost
3. Toppest
4. Most Top

Answer: 2. Topmost

EXPLANATION: The superlative degree of "top" is "topmost."

80. Choose the correct option indicating the meaning of the given sentence:
She is too slow to be a runner.

1. She is so slow to be a runner.
2. She is slow to run
3. She is so slow that she cannot be a runner.
4. She is too slow, 'she couldn't be a runner.

Answer: 3. She is so slow that she cannot be a runner.

EXPLANATION: The sentence implies that she is too slow to qualify as a runner.

81. Choose the correct Question Tag for the following sentence:
It is quite hot outside today?

1. is it
2. isn't it
3. doesn't it
4. aren't it

Answer: 2. isn't it

EXPLANATION: The positive sentence is affirmative, so a negative question tag is needed. "Isn't it" conveys the same meaning as the original sentence with a questioning intonation.

82. Choose the correct conjunction for the following:
This is the ring ____ she gifted me.

1. beside
2. where
3. that
4. if

Answer: 3.

EXPLANATION:
"That" introduces a defining relative clause specifying the ring.

83. Fill in the blank:
Neither she ____ he was present in the class.

1. nor
2. or
3. and
4. but

Answer: 1.

EXPLANATION: "Neither" requires "nor" in the following clause for parallelism.

84. Fill in the blank:
she lost her daughter.

1. Hello!
2. Alas!
3. Hurrah!
4. Look!

Answer: 1.

EXPLANATION: "Alas!" expresses sadness or sympathy, appropriate for the situation of losing a daughter.

85. Choose the most appropriate option;
Reema is too generous not to help the needy.

1. Reema is so generous not to help the needy.
2. Reema is so generous that she can help the needy.
3. Reema is so generous enough to help the needy.

4. Reema is so generous she will help.

Answer: 2.

EXPLANATION: Reema is so generous that she can help the needy. (Correct) This option accurately conveys the reason behind Reema's potential help - her generosity.

86. Change the given sentence to Passive Voice:
People speak different languages all over the world.

1. Different languages are spoken all over the world.
2. Different languages were being spoken all over the world.
3. Different languages was spoken all over the world.
4. Different languages were spoken all over the world.

Answer: 1.

EXPLANATION: Different languages are spoken all over the world. (Correct) This is the most accurate and grammatically correct way to convert the sentence to passive voice.

87. Choose the correct meaning of the given Idiom / Phrase:
'Helter skelter'

1. Natural and simple
2. Here and there
3. Merits and demerits
4. Arrogant and naughty

Answer: 2.

EXPLANATION: Here and there (Correct) "Helter skelter" means in a confused or disordered way, not necessarily everywhere

88. Choose the correct meaning of the following idiom:
'A wolf in a sheep's clothing'

1. A very relatable person
2. A weak person
3. A fair and honest person
4. A dangerous person pretending to be a harmless person

Answer: 4.

EXPLANATION: "A wolf in sheep's clothing" refers to someone who is dangerous or deceptive but appears innocent or harmless.

89. Choose the correct option from the following:
Her uncle who ___ to her was___.

1. had been kind, dead
2. was dead, kind
3. is dead, kind
4. has been kind, dead

Answer: 1.

EXPLANATION: Her uncle who had been kind, was dead. (Correct) This option uses the past perfect tense ("had been") to indicate the uncle was kind before he died, and past tense ("was") for his current state.

90. Fill in the blank with correct preposition:
I saw him climbing ____ the tree to pluck mangoes.

1. upon
2. on
3. up
4. over

Answer: 3.

EXPLANATION: "He climbed up the tree" is the most natural and idiomatic way to describe ascending a tree.

91. Choose the correct spelt, word:

1. Autonomus
2. Autonomous
3. Autonemous
4. Autenomus

Answer: 2.

EXPLANATION: This is the standard spelling of the word meaning self-governing or independent**.**

92. Choose the correct sentence having an adverb:

1. He waited long for me.
2. He went on a long journey.
3. He came by an early flight.
4. He is of my near relation.

Answer: 1.

EXPLANATION: He waited long for me. (Correct) "Long" modifies the verb "waited," describing the duration of his waiting, making it an adverb.

93. Change into passive voice:
'Please don't disturb me.'

1. You are requested not to disturb me.
2. You are requested not disturb me.
3. Please do not disturb me.
4. You are requested do not disturb me.

Answer: 1.

EXPLANATION: You are requested not to disturb me. This option accurately conveys the meaning of the original sentence in passive voice, retaining the polite request with proper verb form.

94. Fill in the blank with correct conjunction:
She is rich __she is not contented.

1. since
2. yet
3. as
4. while

Answer: 2.

EXPLANATION: "She is rich, yet she is not contented" indicates a surprising contrast between her wealth and discontent.

95. Read the passage carefully and answer the questions given below: (Q. 95 – 100)

The Walt Disney Company became the first major media company to ban advertisements for candy bars and junk food on its television channels, radio stations and websites, to stop food manufacturers from peddling nutritionally challenged fattening junk for kids. The ban covers foods with too much sugar, 'too much salt or a full meal more than 600 calories. Predictably, the outraged public said that banning smoking in public places and artery- blocking trans fats in food was bad enough, but stopping them from' guzzling comfort drinks by the litres was almost a human rights violation.

It seems most people are not just happy choosing their own poison. They also want it in super- sized doses, guaranteed to kill sooner than later, for after tobacco use, obesity is the biggest public health bugbear that triggers more avoidable diseases and deaths than malnutrition. Overweight and obesity are the leading causes for global deaths, killing 2.8 million adults each year. Worldwide obesity has more than doubled since 1980. The reasons for poor lifestyle choices are many, with almost all driven by socio-economic causes such as low education, and limited income. Like killer infections, obesity and the resultant type-2 diabetes affect the poor more than the affluent, largely because processed and fast food are cheaper and take less or no time to prepare than healthy home. Cooked meals. Limiting food choices, however, is not enough.

The need is to get children off their chairs and into the playgrounds. Too much screen time, largely social – networking followed by online and video gaming and television, are making healthy children fat and putting them at risk of type-2 diabetes in the second decade of their lives. The lifestyle disease that interferes with the way the body metabolises glucose typically affects people in their fifties and sixties and is linked with a host of complications.

The official measure of obesity in adults is Body Mass Index (BMI), which is calculated by dividing a person's weight in kilograms by the square of his height in metres (kg/m2). The WHO definition is: a BMI greater than or equal to 25 is overweight, 30 is" obese, but the cut- offs for the South Asians are 23 for overweight and 25 for obese.

95. Obesity affects ___ more than the affluent.

1. the middle class
2. the educated
3. the poor
4. the sick

Answer: 3. The poor

96. 'Limiting food choices, however, isn't enough.'
Choose the synonym of underlined word.

1. Restricting
2. Calculating
3. Ignoring
4. Restructuring

Answer: 1. Restricting

97. Choose the correct option:
The antonym of 'miser' is

1. Rich

2. Strong
3. Popular
4. Generous

Answer: 4. Generous

98. What did the Walt Disney Company bar

1. Candy bars
2. Junk food
3. The foods were healthy
4. Advertisement for candy bars and junk food

Answer: 4. Advertisement for candy bars and junk food

99. What was purpose behind the ban?

1. The foods were unhealthy
2. The foods were healthy
3. The foods were cheap
4. The foods were costly

Answer: 1. The foods were unhealthy

100. Overweight and obesity are the leading causes for global deaths, killing ___ adults each year.

1. 2.6 million
2. 8 million
3. 8.2 million
4. 2.8 million

Answer: 3. 8.2 million

SECTION - 'D': GENERAL SCIENCE

101. When electric current is passed through the Copper Sulphate solution?

1. Copper gets deposited on electrode the connected to the positive terminal of the
2. battery. Copper gets deposited on the electrode connected to the negative terminal of the battery.
3. No reaction takes place
4. Copper gets positive deposited either on or on negative terminal of the battery.

Answer: 4

Explanation: Copper is deposited on the plate connected to the negative terminal of the battery.
When electricity is passed through the copper sulphate solution, copper sulphate dissociates into copper ions and sulphate ions.
The copper ions move towards the electrode connected to the negative terminal of the battery (cathode) and gets deposited on it.

102. Match the following:

Heavenly body	**Characteristics**
A. Orion	I Small objects revolving around Sun between Mars & Jupiter.
B. Comet	II Brightest star in the sky located close to Orion.

C. Sirius	IIII A constellation can be seen during winter time in late evenings.
D. Asteroid	IV An object which revolves around Sun in elliptical orbit and has a bright head and a tail.

Choose the correct option from the answers given below:

1. A-III, B-IV, C-I, D-II
2. A-III, B-IV, C-II, D-I
3. A-IV, B-I, C-II, D-I
4. A-III, B-II, C-IV, D-I

Answer: 2

103. Which of the following gases has the highest concentration in the atmosphere?

1. Oxygen
2. Carbon dioxide
3. Nitrogen
4. Sulphur dioxide

Answer: 3

Explanation: The atmosphere is composed of a mix of several different gases in differing amounts. Nitrogen accounts for 78% of the atmosphere, oxygen 21% and argon 0.9%.

104. Global Warming is not responsible for:

1. Increase in sea level
2. More severe storms
3. Increased droughts
4. More earthquakes

Answer: 4

Explanation: Global warming is not directly responsible for more earthquakes.
Earthquakes are caused by the movement of tectonic plates and the release of stress along fault lines, which is a natural geological process.

105. Identify the multicellular microorganism from the following:

A. Bacteria
B. Aspergillus
C. Paramaecium
D. Penicillium

Choose the correct option from the following:

1. A only
2. A and B only
3. B, C and D only
4. B and D only

Answer: 4

Explanation:

- Bacteria are generally unicellular.
- Aspergillus is a multicellular fungus
- Paramecium is a unicellular organism which is included in the kingdom Protista and not kingdom Animalia.
- Penicillium is multicellular and produces antibiotics.

106. Match List I with List II:

List I	List II
A. Coke	I Obtained during the processing of coal to get coke.
B. Coal Tar	II Almost pure form of carbon
C. Coal Gas	III Petroleum
D. Petrol	IV Naphthalene balls

Choose the correct option from the answers given below:

1. A-1, B-II, C-I, D-IV
2. A-II, B-IV, C-III, D-J
3. A-II, B-IV, C-I, D-III
4. A-III, B-II, C-IV, D-I

Answer: 3

107. A combustible substance catches fire/burn as long as its temperature is its ignition temperature.

1. Higher than
2. Lower than
3. Equal to or higher than
4. Equal to or lower than

Answer: 2

Explanation: A combustible substance cannot catch fire or burn as long as its temperature is lower than its ignition temperature.

108. Which of the following is/are present only in plant cell?

A. Cell membrane
B. Cell wall
C. Chloroplast
D. Nuclear membrane

Select the correct answer using the code given below:

1. B and C
2. A and D
3. B
4. C

Answer: 1

Explanation: The organelles found only in plant cells include chloroplast, cell wall and a vacuole.

109. Given below are the different stages in the life cycle of frog. Arrange them in order of occurrence

A. Fertilisation
B. Tadpole
C. Laying of eggs
D. Development of embryos

Choose the correct option from the following:

1. A, C, B, D

2. C, A, D, B
3. C, B, D, A
4. D, A, C, B

Answer: 2

Explanation: A female frog lays eggs in the water, which are fertilized by sperm from a male frog. The resulting zygote goes through embryonic development to become a free-living tadpole.

110. Which source book keeps a endangered record of all animals and plants?

1. Blue Data Book
2. Green Data Book
3. Red Data Book
4. White Data Book

Answer: 3

Explanation:

- The Red Data Book is the sourcebook which keeps a record of all the endangered plants and animals.
- It is published by the International Union for Conservation of Nature and Natural Resource (IUCN).
- The species are classified into different categories by IUCN such as vulnerable, endangered etc. on the basis of data collected from across the globe.

111. Identify the endemic flora of the Pachmarhi Biosphere Reserve from the following:

1. Bison and flying squirrel
2. Bison and sal
3. Sal and wild mango
4. Flying squirrel and wild mango

Answer: 3

Explanation: The endemic flora of the Pachmarhi biosphere reserve includes sal and wild mango. The endemic fauna includes bison, indian giant squirrel and flying squirrel.

112. When fertilisation does not occur then the released egg and thickened lining of the uterus is shed off. It is called:

1. Pregnancy
2. Menarche
3. Menopause
4. Menstruation

Answer: 4

Explanation: If the egg does not become fertilized, the lining of the uterus (endometrium) is shed during menstruation. On average, menarche (a young person's first menstrual period) occurs between the ages of 12 and 13 years old. The average menstrual cycle lasts 28 days

113. Increase in height during puberty depends on:

1. Genes
2. inherited from mother only Eating right kind of exercise food and exercise
3. Exercise and genes inherited from parents
4. Eating right kind of food and genes inherited from parents

Answer: 4

Explanation: Height depends on the genes inherited from parents. It is, however, very important to eat the right kind of food during these growing years. This helps the bones, muscles and other parts of the body get adequate nourishment for growth.

114. Consider the following statements

A. Endocrine glands release hormones into the blood stream to reach a target site.

B. Hormones are not chemical substances.

Select the correct given below answer using the code

1. Only A is correct
2. Only B is correct
3. A and B are correct
4. Neither A nor B is correct

Answer: 1

Explanation:

- The endocrine glands release hormones directly into the bloodstream. These hormones reach target cells which responds to these hormones by stimulating changes in the body.
- Hormones are chemical messengers that affect and manage hundreds of bodily processes.

115. The magnitude of the power of an earthquake is expressed on a scale called

1. Richter scale
2. Vernier scale
3. Ratio scale
4. Graphic scale

Answer: 1

Explanation: Richter scale measures magnitude of earthquake whereas Mercalli scale is used to measure the intensity of earthquake.

116. Calorific value of a fuel is expressed in:

1. Joule
2. Kilo Joule per kg (kJ/kg)
3. Kilo Joule
4. Kilo Joule/m2

Answer: 2

Explanation: The calorific value of a fuel is expressed in a unit called kilojoule per kilogram (kJ/kg). Calorific value is used to measure fuel efficiency.

117. Tin cans are made by electro plating tin on to iron because Tin:

1. is less reactive than Iron
2. is more reactive than Iron
3. does not react with Iron
4. and Iron both are least reactive

Answer: 1

Explanation: Tin cans are thin electroplated on iron. These tin cans are used to preserve food items. Because tin is less reactive than iron as it will prevent food from being poisoned.

Electroplating is the process of plating one metal onto another by hydrolysis, most commonly for decorative purposes or to prevent corrosion of a metal.

118. Arrange the rolling, sliding and static friction in stage increasing order of friction and choose the correct option.

1. Rolling, Static, Sliding
2. Rolling, Sliding, Static
3. Static, Sliding, Rolling
4. Static, Rolling, Sliding

Answer: 2

Explanation: Rolling friction < Sliding friction < Static friction

119. Which of the following is not a Rabi crop?

1. Wheat
2. Pea
3. Mustard
4. Paddy

Answer: 4

Explanation: Rabi crops or rabi harvest are agricultural crops that are sown in winter and harvested in the spring in India. Some example of Rabi crops is wheat, barley, gram, peas, mustard, rapeseed and linseed. Hence paddy is NOT a rabi crop.

Rabi crops, which are also known as winter crops, are the crops that are grown in the winter season (October or November). Some of the main rabi crops of India include wheat, gram, oat, barley, potato, and seeds like mustard, linseed, sunflower, coriander, cumin, etc.

Kharif crops, which are also known as monsoon crops, are the crops that are grown during the monsoon or rainy season (June to October). The main Kharif crops grown in India include paddy, maize, jowar, bajra, cotton, sugarcane, groundnut, pulses etc.

120. identify the methods for replenishing soil with nutrients from the following:

A. Growing different crops alternately
B. Usage of manures.
C. Sowing healthy seeds.
D. Growing legumes as fodder in one season and wheat crop in the next season.

Choose the correct option from the following:

1. A, C and D
2. A, B and D
3. A and D
4. B and C

Answer: 1

Explanation:

- Farmers in northern India grow legumes as fodder in one season and cereal crops like wheat in another season. This process is called as crop rotation. This helps in the replenishment of the soil with nitrogen.
- Another method of replenishing the soil with nutrients is through crop rotation. This can be done by growing different crops alternately.
- Manure contains multiple elements or minerals which can replenish the soil back to the normal level.

121. The bulb of the dropper. immersed in water is pressed. When the pressure is released. water gets filled in the dropper. This happens due to

1. Force of water
2. Force of gravity
3. Pressure of water
4. Atmospheric pressure

Answer: 4

Explanation: Water moves from higher pressure to lower pressure.
Water rises in the dropper due to atmospheric pressure.

122. An oscillating body is making 360 oscillations in 3 minutes. Its frequency in hertz will be

1. 120
2. 2
3. 20
4. 12

Answer: 1

123. A person who is standing 2m in front of a plane mirror, seems to be _____m away from his image.

1. 2 m
2. 4 m
3. 0.5 m
4. 1 m

Answer: 2

Explanation: Image formed by plane mirror is at equal distance from the mirror as of object the mirror. Hence distance between object and image is 4m.

124. Which of the following statements are not true for metals?

A. Metals are good conductor of heat and electricity.
B. The property of metals by which they can be beaten into thin sheets is called ductility
C. Metals produce ringing sounds So they are said to be Sonorous.
D. In general metallic Oxides are acidic in nature.

Choose the correct option from below:

1. B and C
2. C and D
3. B and D
4. A, B and D

Answer: 3

Explanation:

- Metals are ductile. They can be drawn into wires.
- Metals are a good conductor of heat and electricity.
- Metals are sonorous. It means when we strike them, they make a ringing sound.
- Metal oxides are basic in nature. Because they react with weak acids to produce salt and water.

125. Polythene and PVC are examples of:

1. Thermoplastics
2. Thermosetting plastics

3. Melamine
4. Bakelite

Answer: 1

Explanation: Thermoplastic: Plastic which gets deformed easily on heating and can be bent easily are known as thermoplastics. Polythene and PVC are some of the examples of thermoplastics.

SECTION - 'E': SOCIAL SCIENCE

126. Match List I with List II:

List I	List IT
A. Prejudice customs etc.	I. Difference in language, food, dress,
B. Stereotype	II. Judging people 'negatively.
C. Discrimination	III. Fixing people into one image.
D. Diversity	IV. Inequality

Choose the correct option from the answers given below;

1. A-II B-II, C-III, D-IV
2. A-II, B-III, C-IV, D-I
3. A-III B-II C-I, D-IV
4. A-IV, B-III, C-II, D-I

Answer: 2

127. Which of the following is the main work of Patwari?

1. Maintaining law and order
2. Measuring land and keeping lang records
3. Maintaining accounts of the village
4. Settles disputes of the villagers

Answer: 2

Explanation: Measuring land and keeping land records is the main work of the Patwari. The Patwari is known by different names in different states - in some villages, such officers are called Lekhpal, in others Kanungo or Karamchari or Village Officer.

128. Which of the following is a human made resource?

1. Technology
2. Water
3. Copper
4. Natural gas

Answer: 1

Explanation: Other than technology all others are naturally made resource.

129. Which of the following is NOT a component of maps?

1. Distance
2. Direction
3. Plan
4. Scale

Answer: 3

Explanation: The Components of Maps – distance, direction, symbol and scale.

130. Which of the following is NOT a natural ecosystem?

1. Forest
2. Sea
3. Aquarium
4. Desert

Answer: 3

Explanation:

- Aquariums is not a natural ecosystem.
- The Community or group of living organisms that live together and interact with each other in a specific environment is Ecosystem.

131. Where are mushroom rocks found?

1. Valleys
2. Glaciers
3. Hills
4. Deserts

Answer: 4

Explanation: Mushroom rocks are found in deserts. They are the erosional landforms of the arid or desert region. The erosive power of wind becomes very high at a certain height from the ground level. The resistant rocks take the shape of mushroom having large top and a small neck.

132. 'Which of the following is formed by the material carried by glaciers?

1. Flood plains
2. Moraines
3. Beach
4. Loess

Answer: 2

Explanation: Moraine is the depositional feature of a glacier. A general term applied to rock fragments, gravel, sand, etc. carried by a glacier.

133. Which of the following are the key features of the Constitution of India?

A. Federalism,
B. Parliamentary form of Government,
C. Separation of Powers.

Select the correct answer using the code given below:

1. A and B only
2. B and C only
3. A and C only
4. A, B and C

Answer: 4

Explanation: Federalism is a mixed or compound mode of government that combines a general government (the central or "federal" government) with regional governments (provincial, state,) in a single political system, dividing the powers between the two.
Parliamentary system, a democratic form of government in which the party (or a coalition of parties) with the greatest representation in the parliament (legislature) forms the government, its leader becoming prime minister or chancellor.

134. Ox bow lakes are found in:

1. Mountains
2. Deserts
3. Glaciers
4. River valleys

Answer: 4

Explanation: Oxbow lakes are found in river valleys. An oxbow is a crescent-shaped lake lying alongside a winding river. The oxbow lake is created over time as erosion and deposition of soil changes the river's course.

135. Match List I with List II

List I	List ii
A. Biotic	I. Rivers, Lakes, Seas, Oceans
B. Hydrosphere	II. Thin layer of air
C. Atmosphere	III. Hard top layer of the earth
D. Lithosphere	IV. The world of living organisms

Choose the correct option from the answers given below

1. A-I, B-II, C-III, D-IV
2. A-II, B-III, C-I, D-IV
3. A-III, B-I, C-II, D-IV
4. A-IV, B-I, C-II, D-III

Answer: 4

136. Who began a campaign against the practice of Sati?

1. Raja Rammohan Roy
2. Ishwarchandra Vidyasagar
3. Jyotirao Phule
4. Shri Narayana Gara

Answer: 1

Explanation: In 1812, Raja Ram Mohan Roy, founder of Brahmo Samaj, began to champion the cause of banning sati practice. He was motivated by the experience of seeing his own sister-in-law being forced to die by sati.

137. Where is The Tata Iron and Steel Company situated?

1. On the banks of Hooghly River
2. On the banks of Son River
3. On the banks of Ganges
4. On the banks of Subarnarekha

Answer: 4

Explanation: TISCO is located in Jamshedpur, Jharkhand. This steel plant is located in Jamshedpur a city of Jharkhand state which is located on the banks of river Subarnarekha and Kharkai.

138. When was The English Education Act introduced?

1. 1735
2. 1800
3. 1835
4. 1870

Answer: 3

Explanation:

- English Education Act was enacted in 1835.
- Lord William Bentick passed the act.
- Lord Macaulay presented his education policy titled "Minute on Indian Education" in the year 1835.

139. Match List I with List II:

List I	List II
A. Sukta	I. Slave
B. Chariots	II. Sacrifice
C. Yajna	III. Used in battles
D. Dasa	IV. Well said

Choose the correct option from the answers given below**:**

1. A-II, B-IV, C-III, D-I
2. A-IV, B-I, C-III, D-II
3. A-III, B-II, C-IV, D-I
4. A-IV, B-III, C-II, D-I

Answer: 4

140. Where is Gangri glacier?

1. Assam
2. Mizoram
3. Ladakh
4. Uttarakhand

Answer: 3

Explanation: Several rivers flow through Ladakh like Sutlej, Beas, Ravi, Shyok, Chenab, Drass and Zanskar. Indus is the most important among them. The rivers form deep valleys and gorges. Several glaciers are found in Ladakh, for example the Gangri glacier.

141. Which one of the following may be called a 'dwarf' planet?

1. Pluto
2. Saturn
3. Mercury
4. Venus

Answer: 1

Explanation:

- A dwarf planet is, "a celestial body orbiting a star that is massive enough to be rounded by its own gravity but has not cleared its neighboring region of planetesimals and is not a satellite.

- Pluto prior to this adaptation was considered the ninth planet of the Solar system.
- In 2006, its status changed to dwarf planet.

142. Where was the Harappan city of Dholavira located?

1. Rajasthan
2. Rann of Kutch
3. Gulf of Khambhat
4. Punjab

Answer: 2

Explanation: The city of Dholavira was located on Khadir Beyt in the Rann of Kutch (in present-day Gujarat), where there were fresh water and fertile soil.

143. Which of the following is a conventional source of energy?

1. Biogas
2. Firewood
3. Solar energy
4. Wind energy

Answer: 2

Explanation: Conventional sources include: firewood, cattle dung cake, coal, petroleum, natural gas and electricity (both hydel and thermal). Non-conventional sources include solar, wind, tidal, geothermal, biogas and atomic energy.

144. Arrange the following steps of terrace farming in chronological order:

A. The sides of each plot are raised to retain water.
B. They cultivate rice on it.
C. The land on a hill slope is made into flat plots.
D. Plots are carved out in steps.

1. A, B, C, D
2. B, C, D, A
3. D, B, C, A
4. C, D, A, B

Answer: 4

145. For how many years is a Gram Panchayat elected?

1. 1
2. 3
3. 2
4. 5

Answer: 4

Explanation: The Panchayat is chaired by the president of the village, known as a Sarpanch. The term of the elected representatives is five years.

146. Which of the, following soldiers was hanged to death on 29 March 1857?

1. Bhagat Singh
2. Rajguru
3. Sukhdev