



Hunt for
Young Talents



SCIENCE APTITUDE TEST CLASS - 7 SOLUTIONS

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PART - I : MENTAL ABILITY

1.

Sol: (b) A regular hexagon

The pattern increases the number of sides by 1 each time: 3, 4, 5, so next is 6 sides → regular hexagon.

2.

Sol: (a) -1

The pattern adds +5, +4, +3, next term is $-3 + 2 = -1$.

3.

Sol: (a) South-East

North-East rotated 90° clockwise

⇒ South-East. (Visualize: NE → E → SE)

4.

Sol: (c) $1/6$

Fold vertically into 3 equal parts

⇒ each part is $1/3$. Fold horizontally into 2 equal parts

⇒ each part is $1/2$ of $1/3 = 1/6$.

5.

Sol: (b) NJOVT

The code shifts each letter forward by one position in the alphabet (+1):

- P (+1) → Q
- L (+1) → M
- U (+1) → V
- S (+1) → T

Applying the same (+1) pattern to MINUS:

- M (+1) → N
- I (+1) → J
- N (+1) → O
- U (+1) → V
- S (+1) → T

6.

Sol: (c) 16 and 18

Median of 5 numbers is the 3rd when arranged. Given 12,14,15 and median 15 means 15 must be 3rd.

So the other two must be greater than 15. Only (16,18) works.

7.

Sol: (c) 7

Let number = x.

$$\Rightarrow 3x - 7 = 14$$

$$\Rightarrow 3x = 21$$

$$\Rightarrow x = 7.$$

8.

Sol: (b) A straight line of 6 squares

A straight line of 6 squares cannot fold into a cube because opposite faces will overlap; a standard dice net must have a specific arrangement.

9.

Sol: (c) 9

2, 3, 5, 11 are prime numbers; 9 is not prime (composite).

10.

Sol: (d) Anil's son

"Only son of my father" = Anil himself. So "His father is Anil" → the person in portrait is Anil's son.

11.

Sol: (b) 20th

Rank from bottom = Total + 1 - Rank from top = $30 + 1 - 11 = 20$ th.

12.

Sol: (d) Less than 130 meters but greater than 30 meters

Triangle inequality: third side $> 80 - 50 = 30$ and $< 80 + 50 = 130$.

13.

Sol: (c) 5 cycles

Each cycle net gain = $+5 - 2 = +3$ steps. After 4 cycles = 12; 5th cycle: $12+5=17$ (passes 14). So 5 cycles.

14.

Sol: (c) 30

Total squares = $1^2 + 2^2 + 3^2 + 4^2 = 1 + 4 + 9 + 16 = 30$.

15.

Sol: (a) 5

Total like at least one = $25 + 20 - 10 = 35$. Neither = $40 - 35 = 5$.

PART - II : MATHEMATICS

1.

Sol: (c) 0 is the smallest whole number

Natural numbers start from 1, so 0 is not a natural number. Whole numbers = $\{0, 1, 2, 3, \dots\}$, so 0 is the smallest whole number.

2.

Sol: (c) $\frac{4}{3}$

3.

Sol: (b) -15

$$\begin{aligned} & (-10) + (-12) + 5 \times 2 - 3 \\ &= -10 - 12 + 10 - 3 \\ &= -15 \end{aligned}$$

4.

Sol: (a) $-\frac{106}{2}$

$$-\frac{106}{2} = -53$$

5.

Sol: (b) 180°

Supplementary angles sum to 180° .

6.

Sol: (c) 0.75

Seven tenths = 0.7, five hundredths = 0.05 $\rightarrow 0.7 + 0.05 = 0.75$.

7.

Sol: (d) 4

$$\begin{aligned} & 2(x - 7) + 5 = -1 \\ \Rightarrow & 2(x - 7) = -6 \\ \Rightarrow & x - 7 = -3 \\ \Rightarrow & x = 7 - 3 \\ \Rightarrow & x = 4. \end{aligned}$$

8.

Sol: (b) 48

$$12 = 2^2 \times 3, 16 = 2^4, 24 = 2^3 \times 3 \Rightarrow \text{LCM of } (12, 16, 24) = 2^4 \times 3 = 48.$$

9.

Sol: (b) 0.4 meters

$$2 \div 5 = 0.4 \text{ meters.}$$

10.

Sol: (b) -120

$$(-5) \times (-2) = 10, 10 \times (-3) = -30, -30 \times 4 = -120.$$

11.

Sol: (c) 65

$$\begin{aligned} 243 &= 89 \times 2 + 65 \\ &= 178 + 65 \end{aligned}$$

12.

Sol: (b) 40

$$\text{Mean} = \frac{(45+0+72+53+30)}{5} = \frac{200}{5} = 40.$$

13.

Sol: (b) $2y+4=26$, $y=11$

$$2y + 4 = 26 \rightarrow 2y = 22 \rightarrow y = 11.$$

14.

Sol: (b) 115°

Vertically opposite angles are equal = 65° . Adjacent linear pair sums to 180 $\rightarrow 180^\circ - 65^\circ = 115^\circ$.

15.

Sol: (c) 55°

Right triangle: $90^\circ + 35^\circ + x = 180^\circ$ (Angle sum property of a triangle)
 $\Rightarrow x = 55^\circ$.

16.

Sol: (b) 25%

$$\text{Profit} = 1500 - 1200 = 300. \text{ Profit\%} = \left(\frac{300}{1200} \right) \times 100\% = 25\%.$$

17.

Sol: (b) 36%

$$\text{Don't love Maths} = 25 - 16 = 9. \text{ Percentage} = \frac{9}{25} \times 100\% = 36\%.$$

18.

Sol: (c) $\frac{31}{35}$

$$\frac{3}{5} + \frac{2}{7} = \frac{21+10}{35} = \frac{31}{35}$$

19.

Sol: (a) Mode = 12, Range = 10

Mode = most frequent = 12 (appears 3 times). Range = $22 - 12 = 10$.

20.

Sol: (b) 2,541

Divisible by 11: difference = (sum of digits at odd places) - (sum at even places) = multiple of 11.

For 2541: (sum of digits at even places) = $(2+4)=6$,

(sum of digits at odd places) = $(5+1)=6$

$\Rightarrow$ Difference = $6-6=0$ is Divisible by 11.

21.

Sol: (a) 2

2 comes four times

22.

Sol: (b) 75°

Corresponding angles are equal to alternate interior angles when lines are parallel.

23.

Sol: (b) 12 cm

Isosceles triangle: two sides equal. $6+6=12$ not >12 (invalid). So equal sides must be 12,12 and base 6.
Third side = 12 cm.

24.

Sol: (b) Rs 800

$$SI = \frac{P \times R \times T}{100} = \frac{5000 \times 8 \times 2}{100} = \text{Rs } 800.$$

25.

Sol: (c) 5

$$\text{Number of diagonals} = \frac{n(n-3)}{2} = \frac{5(5-3)}{2} = 5.$$

26.

Sol: (b) 10

Correct marks = $12 \times 4 = 48$. Let incorrect = x . Total = $48 - 2x = 28 \rightarrow 2x = 20 \rightarrow x = 10$.

27.

Sol: (a) 96 litersAmount of milk taken out = $43 \times 28 = 1204$.Remaning Amount of milk = $1300 - 1204 = 96$ Liters

28.

Sol: (c) 9Let integers be $x, x+1, x+2$.

$$\Rightarrow 2x + 3(x+1) + 4(x+2) = 74$$

$$\Rightarrow 2x + 3x + 3 + 4x + 8 = 74$$

$$\Rightarrow 9x + 11 = 74$$

$$\Rightarrow 9x = 63$$

$$\Rightarrow x = 7. \text{ Largest} = 9.$$

29.

Sol: (c) 80°

Exterior angle of a triangle = sum of interior opposite angles = 120° .

$\Rightarrow$ Ratio 1:2, Let angle are $1x, 2x$

$\Rightarrow 1x + 2x = 120^\circ \Rightarrow x = 40^\circ$

$\Rightarrow$ angles are = 40° and 80°

$\Rightarrow$ Largest interior = 80° .

30.

Sol: (c) 1% net decrease

Let initial Amount = 100. After 10% decrease = 90.

$\Rightarrow$ After 10% increase = $90 + 9 = 99$.

$\Rightarrow$ Net change = -1% (decrease).



PART - III : PHYSICS & CHEMISTRY

1.

Sol: (c) The two wires are connected to the same terminal of the cell.

A bulb glows only when current flows through a complete circuit. If both wires are connected to the same terminal, current cannot flow through the bulb.

2.

Sol: (a) It will become larger because the object blocks a wider region of the diverging light.

Light from a torch spreads out. When the object moves closer to the torch, it blocks a larger portion of the spreading light, so the shadow becomes larger.

3.

Sol: (b) Iron nail and steel spoon.

Iron and steel are attracted by a magnet, whereas wood and copper are not attracted by an ordinary magnet.

4.

Sol: (c) P is a better conductor of heat than Q and R.

The wax on P melts first, showing that heat travels through P faster. Therefore, P is the better conductor.

5.

Sol: (d) Distance = 55 m and displacement = 25 m towards the school.

Distance = 40 + 15 = 55 m. Displacement = 40 - 15 = 25 m towards the school.

6.

Sol: (b) During the day.

During the day, land heats faster than the sea. Cooler air from the sea moves towards the land, producing sea breeze.

7.

Sol: (a) 120° .

The angle with the mirror is 30° , so the angle of incidence is 60° . The angle of reflection is also 60° . Therefore, the angle between the incident and reflected rays is $60^\circ + 60^\circ = 120^\circ$.

8.

Sol: (c) 0.00000285 km.

1 km = 1,000,000 mm. Therefore, 2.85 mm = $2.85 \div 1,000,000 = 0.00000285$ km.

9.

Sol: (a) The car is showing uniform motion.

The car covers equal distances in equal intervals of time. Therefore, it is showing uniform motion.

10.

Sol: (a) Metal transfers heat from the surroundings to the ice more effectively than wood.

Metal is a better conductor of heat than wood. Therefore, heat reaches the ice faster through the metal plate, making it melt sooner.

11.

Sol: (c) X = Stone; Y = Sugar solution

Stone is hard, does not dissolve in water, and is opaque. Sugar solution can flow easily, dissolves completely, and is transparent.

12.

Sol: (d) Salt + Water + Heat

When an acid reacts with a base, a neutralisation reaction takes place. It produces salt, water, and heat.

13.

Sol: (a) The paper has not yet reached its ignition temperature

Paper burns only when it reaches its ignition temperature. At normal room temperature, it does not catch fire.

14.

Sol: (a) The water cycle

Water evaporates, condenses into clouds, and falls as rain. This continuous process is called the water cycle.

15.

Sol: (b) The acids released by decomposing organic matter neutralise the excess base in soil, making it more suitable for plant growth

The acids released by decomposing organic matter neutralise the excess base in soil, making it more suitable for plant growth. Basic soil is not good for many plants. The acids from compost help balance the soil and make it healthier for plants.

16.

Sol: (d) Three – decomposition of peels, seed germination, and flower blooming

Chopping vegetables is a physical change. Decomposition, seed germination, and flower blooming are chemical changes because new substances are formed.

17.

Sol: (c) Sour

Acidic substances like lemon juice and vinegar taste sour.

18.

Sol: (d) Filtration

Filtration is used to separate insoluble substances like chalk powder from water.

19.

Sol: (a) Chemical change

When we add baking soda to vinegar, new chemicals are formed. So it is a chemical change.

20.

Sol: (b) Wrapping cuts off oxygen supply which extinguishes the fire; synthetic blankets melt and can stick to skin causing more burns

Fire needs oxygen to keep burning. Wrapping with a blanket stops oxygen supply. Synthetic blankets are dangerous because they can melt and stick to the skin.

PART - IV : BIOLOGY

1.

Sol: (b) Development of facial hair such as a moustache

Secondary sexual characteristics distinguish males from females but are not directly involved in reproduction. Facial hair (moustache, beard) is a key secondary sexual characteristic in boys.

2.

Sol: (c) Chemicals produced in the body called hormones

Hormones are chemical messengers that regulate growth, development, and the physical changes during adolescence and puberty.

3.

Sol: (c) The Adam's apple

The voice box (larynx) grows larger in boys during adolescence, forming a visible protrusion called the Adam's apple, which causes the voice to deepen.

4.

Sol: (b) Saliva breaks down the starch in the rice into simpler sugars

Iodine turns blue-black in the presence of starch. Chewing mixes rice with saliva, which contains enzymes that break down starch into simpler sugars, so no starch remains to react with iodine.

5.

Sol: (b) To transport oxygen and nutrients more rapidly to the active parts of the body

During exercise, muscles need more energy and oxygen. The heart beats faster to deliver oxygen and nutrients quickly and remove waste products.

6.

Sol: (d) Stomata

Stomata are small openings on leaf surfaces that allow the exchange of gases—taking in CO₂ for photosynthesis and releasing O₂ and water vapor.

7.

Sol: (a) Phloem

Phloem transports glucose and other nutrients (food) from the leaves to roots, stems, and fruits. Xylem, by contrast, transports water and minerals from roots upward.

8.

Sol: (a) Hinge joint

Hinge joints allow movement in one direction only – like bending and straightening the knee or elbow, similar to how a door hinge works.

9.

Sol: (b) Fins

Fins help fish swim, maintain balance, and change direction in water. They are the primary organs of locomotion in fish.

10.

Sol: (d) Proteins

Proteins are body-building nutrients. They are essential for growth, repair, and maintenance of muscles and other body tissues.