



SCIENCE APTITUDE TEST CLASS - 6 SOLUTIONS

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www.iitashram.com
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Ph.: 63588 91896 / 90330 34152

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PART - I : MENTAL ABILITY

1.

Sol: (b) 10, 13

Pattern: +3, -2, +3, -2 ...

$$\Rightarrow 12 - 2 = 10$$

$$\Rightarrow 10 + 3 = 13$$

2.

Sol: (b) NEOFirst letters +1 ($J \rightarrow K \rightarrow L \rightarrow M \rightarrow N$),second letters +1 ($A \rightarrow B \rightarrow C \rightarrow D \rightarrow E$),third letters +1 ($K \rightarrow L \rightarrow M \rightarrow N \rightarrow O$)

3.

Sol: (d) Editor

Chairman presides over Conference; Editor oversees Newspaper

4.

Sol: (b) abccb

Pattern : cabbbb cabbbb cabbbb

5.

Sol: (c) 1, 3, 2, 4, 5Key $\rightarrow$ Lock $\rightarrow$ Door $\rightarrow$ Room $\rightarrow$ Switch on (logical sequence)

6.

Sol: (d) Cylinder

Circle, Rectangle, Triangle are 2D; Cylinder is 3D

7.

Sol: (a) Brother

Grandfather's only son = Lata's father; his son = Lata's brother

8.

Sol: (d) Wood

Copper, Iron, Gold are metals; Wood is a mixture.

9.

Sol: (d) aaaba

Pattern : aa bab aa bab aa bab

10.

Sol: (b) 56Pattern: $\times 2, -8, \times 2, -8 \dots$

$$\Rightarrow 64 - 8 = 56$$

11.

Sol: (d) Mother

Sudeep is Ashok's only brother; Kalyani is Sudeep's mother → Ashok's mother too

12.

Sol: (c) 2, 4, 1, 5, 3

Population → Unemployment → Poverty → Disease → Death (cause-effect chain)

13.

Sol: (b) West

East → Left (North) → Left again (West) → facing West

14.

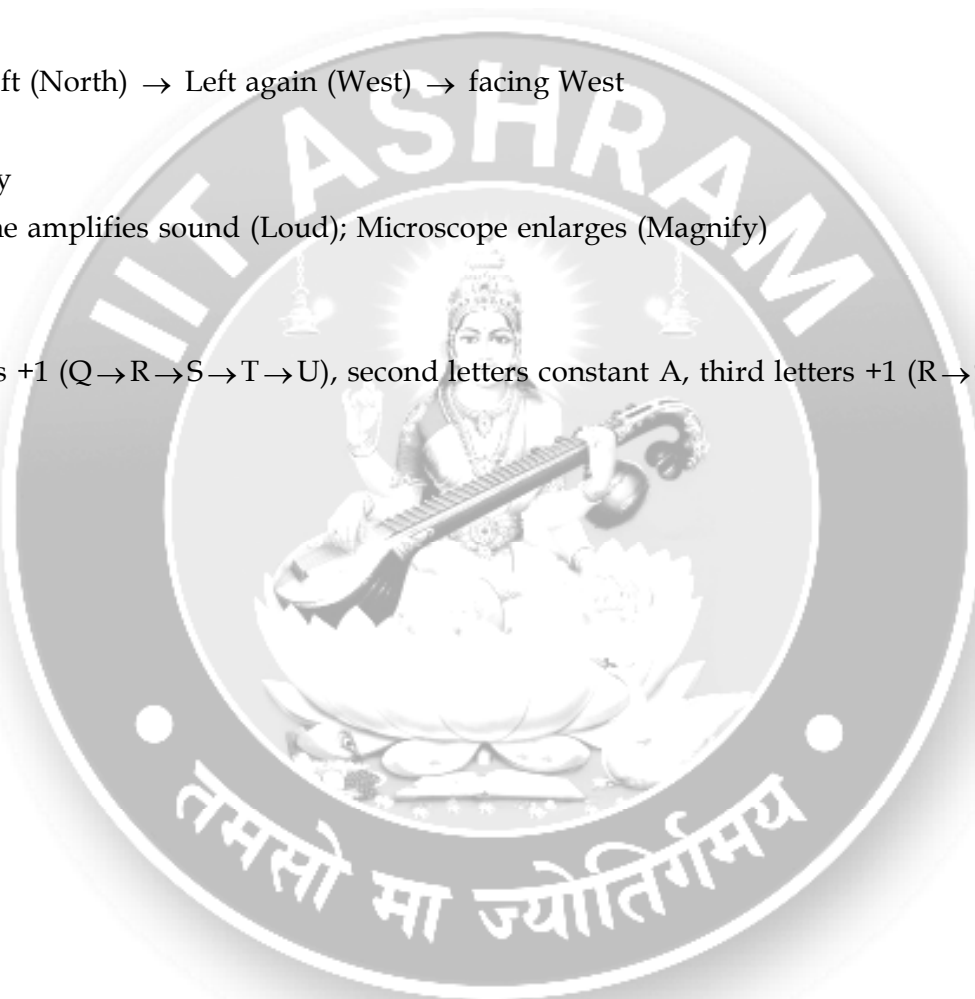
Sol: (c) Magnify

Microphone amplifies sound (Loud); Microscope enlarges (Magnify)

15.

Sol: (a) UAV

First letters +1 (Q → R → S → T → U), second letters constant A, third letters +1 (R → S → T → U → V)



PART - II : MATHEMATICS

1.

Sol: (c) Rs 750

Cost of 1 kg = Rs 150;

Cost of 5 kg = $150 \times 5 = \text{Rs } 750$

2.

Sol: (d) Square

A square has 4 equal sides and 4 right angles.

3.

Sol: (c) 6 cm
$$\text{Area of square} = \text{side} \times \text{side} \quad \Rightarrow \text{side} = \sqrt{\text{Area of square}} \quad \Rightarrow \text{side} = \sqrt{36} = 6 \text{ cm}$$

4.

Sol: (b) $\frac{1}{4}$

$$\text{Fraction} = \frac{6}{24} = \frac{1}{4}$$

5.

Sol: (c) A

Letter 'A' has a vertical line of symmetry (P, Q, J do not).

6.

Sol: (a) 1, 2, 3, 4, 6, 12

Factors of 12 are all numbers that divide 12 completely.

7.

Sol: (b) (15, 22)

To find the co-prime pair, check the HCF of each pair. Co-prime numbers have HCF = 1.

Option A: (12, 18)

Factors of 12 = 1, 2, 3, 4, 6, 12

Factors of 18 = 1, 2, 3, 6, 9, 18

HCF = 6

Not co-prime.

Option B: (15, 22)

Factors of 15 = 1, 3, 5, 15

Factors of 22 = 1, 2, 11, 22

HCF = 1

Co-prime.

Option C: (24, 36)

HCF = 12

Not co-prime.

Option D: (9, 27)

HCF = 9

Not co-prime.

8.

Sol: (a) Rs 5.25

$$5 \text{ Rs} + 25 \text{ paise} = 5 + 0.25 = \text{Rs } 5.25$$

9.

Sol: (b) 12

10.

Sol: (a) 4.650

$$46.5 \times 0.10 = 4.650$$

11.

Sol: (b) Square

Stacked squares give square numbers (1, 4, 9, 16...)

12.

Sol: (c) Straight angle

Half of a full turn ($360^\circ \div 2 = 180^\circ$) is a straight angle.

13.

Sol: (a) 12 sec

$$\text{LCM}(4, 6) = 12 \text{ sec}$$

14.

Sol: (a) 95000

Largest 5-digit number with digit sum 14: $9+5+0+0+0 = 14 \rightarrow 95000$

15.

Sol: (b) 61

$$\begin{aligned} \text{5th centered hexagonal number} &= 3n(n-1) + 1 \\ &= 3 \times 5 \times (5-1) + 1 \\ &= 3 \times 5 \times 4 + 1 \\ &= 61 \end{aligned}$$

16.

Sol: (b) 30°

At 1 o'clock, hour hand at 1, minute at 12; angle = 30° per hour $\rightarrow 1 \times 30 = 30^\circ$

17.

Sol: (c) They must have uniform (equal) widths

In a bar graph, all bars must have equal width.

18.

Sol: (b) 12

HCF of 24, 36, 60

$$\Rightarrow \text{Factors of } 24 = 2^3 \times 3$$

$$\Rightarrow \text{Factors of } 36 = 2^2 \times 3^2$$

$$\Rightarrow \text{Factors of } 60 = 2^2 \times 3 \times 5$$

$$\Rightarrow \text{HCF}(24, 36, 60) = 2^2 \times 3 = 12$$

19.

Sol: (a) 1.21 cm^2

$$\text{Perimeter} = 4 \times \text{side} = 4.4$$

$$\Rightarrow \text{side} = \frac{\text{Perimeter}}{4}$$

$$\Rightarrow \text{side} = \frac{4.4}{4} = 1.1 \text{ cm}$$

$$\text{Area of square} = (1.1)^2 = 1.21 \text{ cm}^2$$

20.

Sol: (b) 7

Kaprekar constant for 4-digit numbers is 6174.

Round 1: Digits of 5683 $\rightarrow 8653 - 3568 = 5085$ Round 2: Digits of 5085 $\rightarrow 8550 - 558 = 7992$ Round 3: Digits of 7992 $\rightarrow 9972 - 2799 = 7173$ Round 4: Digits of 7173 $\rightarrow 7731 - 1377 = 6354$ Round 5: Digits of 6354 $\rightarrow 6543 - 3456 = 3087$ Round 6: Digits of 3087 $\rightarrow 8730 - 378 = 8352$ Round 7: Digits of 8352 $\rightarrow 8532 - 2358 = 6174$

5683 takes 7 steps to reach 6174.

21.

Sol: (d) 24, 48, 72

Multiple of 8:- 8, 16, 24, 32, 40, 48, 56, 64, 72, 80

Multiple of 6:- 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 72, 78

Therefore common multiple of 8, 6 is 24, 48, 72

22.

Sol: (b) Rs 12,000

$$\text{Perimeter of square} = 4 \times \text{side} = 4 \times 250 = 1000 \text{ m}$$

$$\text{Total cost} = 1000 \times 12 = \text{Rs } 12,000$$

23.

Sol: (c) 50

$$5 = 5,$$

$$10 = 2 \times 5, 25 = 5^2$$

$$\text{LCM } (5, 10, 25) = 2 \times 5^2 = 2 \times 25 = 50$$

24.

Sol: (c) Superimposition

Comparing angles without protractor can be done by superimposition (placing one over another).

25.

Sol: (b) 1

Co-prime numbers have HCF = 1

26.

Sol: (b) 400

$$\text{Sum of } n \text{ natural number} = \frac{n(n+1)}{2}$$

$$1 + 2 + \dots + 20 = \frac{20(20+1)}{2} = \frac{20 \times 21}{2} = 210$$

$$19 + 18 + \dots + 1 = \frac{19(19+1)}{2} = \frac{19 \times 20}{2} = 190$$

$$\text{Total} = 210 + 190 = 400$$

27.

Sol: (b) 49

$$\begin{aligned} &= (-23) + (-72) - (-144) \\ &= -23 - 72 + 144 \\ &= -95 + 144 = 49 \end{aligned}$$

28.

Sol: (b) 225°

$$1 \text{ right angle} = 90^\circ$$

$$\Rightarrow 2\frac{1}{2} \text{ right angles} = 2 \text{ right angle} + \frac{1}{2} \text{ right angle}$$

$$= 2 \times 90^\circ + \frac{1}{2} \times 90^\circ = 225^\circ$$

29.

Sol: (a) 11 cm

$$\text{Area} = \text{length} \times \text{breadth};$$

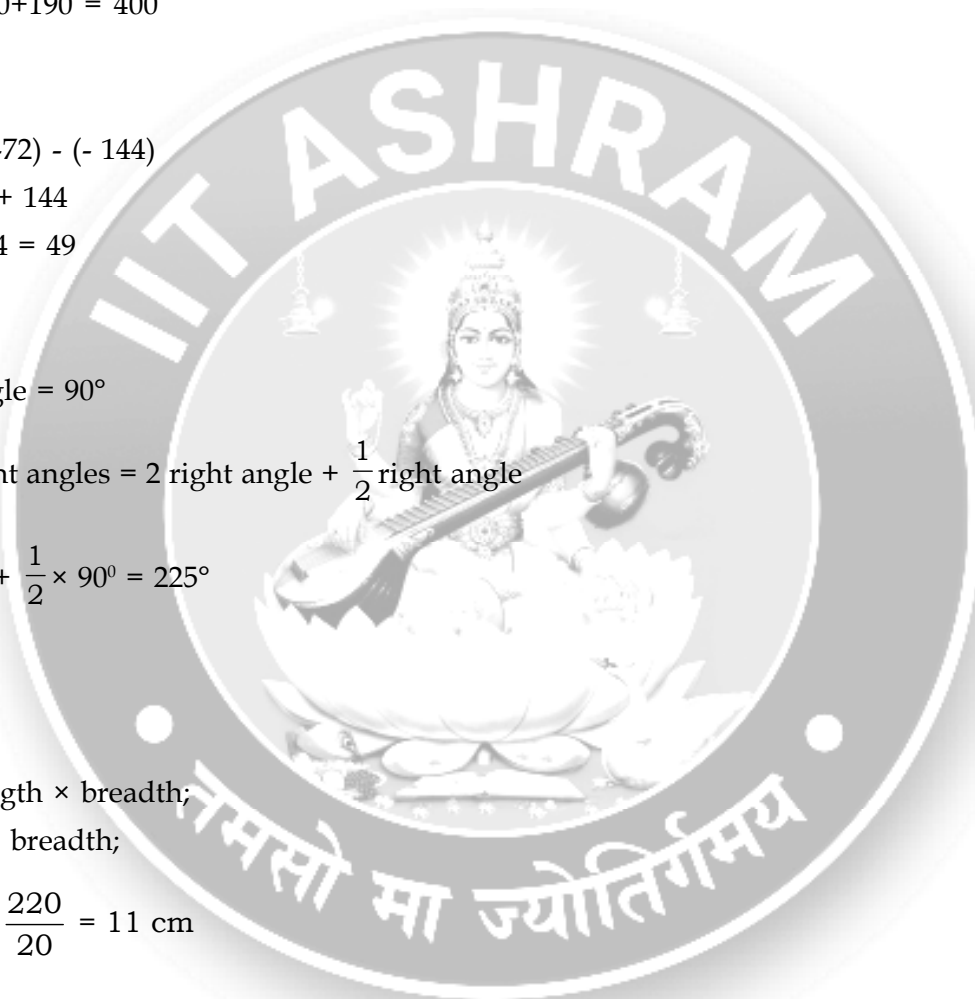
$$220 = 20 \times \text{breadth};$$

$$\text{breadth} = \frac{220}{20} = 11 \text{ cm}$$

30.

Sol: (b) Repeated division by 2 reaches 1

Collatz conjecture: For powers of 2, repeatedly dividing by 2 eventually reaches 1.



PART - III : PHYSICS & CHEMISTRY

1.

Sol: (a) Push force

Force is applied in opposite direction to stop the ball. The goalkeeper uses push force in catching the ball.

2.

Sol: (c) Air occupies space and exerts pressure

The air inside the bottle fills the empty room and pushes against the walls. This helps the bent bottle return to its normal shape.

3.

Sol: (b) Air pushed out from the open end creates a push force that moves the balloon forward

When trapped air shoots out backward from the open end, it creates an opposite reaction that drives the balloon ahead.

4.

Sol: (c) The hands of a clock moving around the dial

The hands of a clock move around a fixed point, so they show circular motion.

5.

Sol: (d) Both are correct

Motion depends on the observer's reference point, so both Meena and her friend are correct.

6.

Sol: (b) S-N and N-S

Unlike poles attract, so only the S-N and N-S pairs attract each other.

7.

Sol: (a) Human body temperature only varies within a small range, so a precise small range is sufficient

Our body temperature stays within a very narrow range. Because of this, a medical thermometer only needs to measure a small, highly detailed scale.

8.

Sol: (c) Meteor, Meteorite

A space rock burning up brightly in the sky is a meteor. If it survives the burn and hits the ground, it is called a meteorite.

9.

Sol: (b) Earth's atmosphere traps heat during the day and releases it slowly at night, reducing temperature extremes

The atmosphere acts like a blanket. It traps sun heat during the day and lets it out slowly at night so we do not freeze.

10.

Sol: (a) Magnetic force acts at a distance without contact; motion is caused by a force

A magnet exerts a force without touching the iron filings, causing them to move towards it.

11.

Sol: (c) Perfume spray

Perfume spray consists of tiny liquid droplets and gas molecules that diffuse rapidly through the air. Diffusion is fastest in gases because particles move freely and quickly. A wooden block, water, and a metal spoon are solids/liquids with much slower diffusion rates.

12.

Sol: (d) Mass

Mass is the property that determines how heavy or light an object is. Since all cups have equal volume, comparing their mass (weight) helps rank them from lightest to heaviest. Volume is the same for all, solubility and transparency don't relate to weight.

13.

Sol: (b) The water evaporates into the air at room temperature

Evaporation is the process where liquid water changes into water vapour even at room temperature. This happens continuously from wet surfaces. The water does not seep through tiles (unless cracked), freeze, or condense into walls.

14.

Sol: (a) Solid changing into liquid

Ice cream is solid when frozen. When left outside, it absorbs heat from the surroundings and melts, changing from solid to liquid (melting).

15.

Sol: (b) Sedimentation

Muddy water was kept still, so the heavy soil sank down to the bottom of the pot. When heavy things settle at the bottom of water, we call it sedimentation. The soil that settles is called sediment.

16.

Sol: (d) Air

Air is gaseous with particles far apart and lots of empty space between them, making it easily compressible. Stone (solid), water (liquid), and ice (solid) have particles tightly packed and cannot be compressed significantly.

17.

Sol: (b) The farmer in the dry, hot, windy region – because these conditions speed up evaporation of water from the sand, creating a stronger cooling effect

Clay pot coolers work through evaporative cooling. Water seeps through the clay and evaporates from the outer surface, absorbing heat and cooling the inner pot. Dry, hot, and windy conditions increase evaporation, making cooling more effective. High humidity reduces evaporation, so the cooler, humid area works less effectively.

18.

Sol: (a) He collects only metals, because metals are lustrous, hard, and have high mass relative to their size – making them more valuable for remelting

Aluminium is a metal that is lustrous (shiny), hard, and dense (high mass per unit volume). Metals can be melted and recycled, making them valuable. Rubber, plastic, and chalk are non-metals with different properties and are not typically collected for metal recycling.

19.

Sol: (c) Both the glass tumbler and the butter-paper cup, but the juice level appears clearer through the glass

Glass is transparent (allows light to pass through clearly), so you can see the juice level easily. Butter-paper is translucent (allows some light to pass but scatters it), so you can see the juice level but not as clearly. Steel is opaque (blocks light completely), so you cannot see through it at all.

20.

Sol: (a) Grinding wheat grains into flour

Once wheat is ground into flour, we cannot make the grains again from it. So this change cannot be reversed. Sugar can be got back from the water, paper can be opened out, and coal tar becomes hard again when it cools.



PART - IV : BIOLOGY

1.

Sol: (a) I and II only

2.

Sol: (a) Both (A) and (R) are true, and (R) is the correct explanation of (A).

3.

Sol: (a) Both (A) and (R) are true, and (R) is the correct explanation of (A).

4.

Sol: (b) Sense of Hearing. Dogs have sharp hearing and can move their ears in different directions to catch the faintest sounds.

5.

Sol: (c) Starch

The iodine test is a specific chemical test used to identify starch. When iodine interacts with starch, it forms a characteristic blue-black complex.

6.

Sol: (b) Padded feet to walk easily on hot sand

Camels have wide, padded feet that spread their weight out, preventing them from sinking into loose, burning desert sand and helping them walk comfortably.

7.

Sol: (d) A-(r), B-(p), C-(q), D-(s)

8.

Sol: (c) Leaf

Leaves contain chlorophyll and are the primary site where photosynthesis takes place to create food for the plant. They are often called the "food factories" of the plant.

9.

Sol: (a) Both (A) and (R) are true, and (R) is the correct explanation of (A).

10.

Sol: (b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).