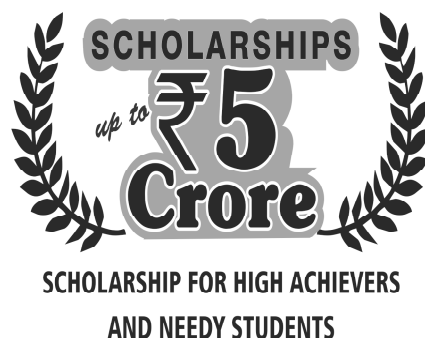




SCIENCE APTITUDE TEST

CLASS - 7

SOLUTIONS

TEST CODE - 05

WhatsApp Channel



Result will be Declared on 14th Oct. 2025

Video Solutions will be available on

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ANAND - IIT ASHRAM : 2nd Floor, HR Stone Building, Beside Croma Showroom, A.V. Road, Nr. Town Hall, Anand. **M: 9227777098, 8460009041.**

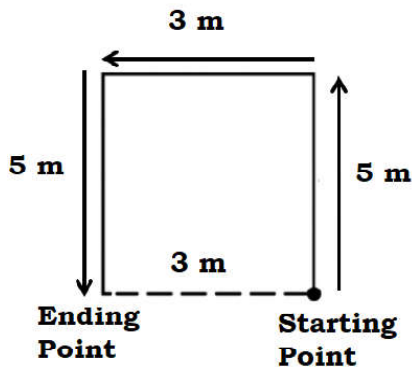
Bhayli - IIT ASHRAM : Akshar Pavilion, 3rd floor, Tower A, Nilamber Circle, Main rd, Bhayli, Vadodara, Gujarat 391410. **M : 6358891896, 9081062221**

PART - I : MENTAL ABILITY

1.
Sol. (a) Meow

2.
Sol. (c) 48 ($\times 2$ pattern)

3.
Sol. (a) 3 m



4.
Sol. (b) I
(skipping one letter each time)

5.
Sol. (a) Cousin

6.
Sol. (d) Potato
(vegetable, rest are fruits)

7.
Sol. (a) EPH
(each letter shifted +1)

8.
Sol. (c) 13
 $3x + 12 = 51$
 $3x = 51 - 12$
 $x = 39/3$
 $x = 13$

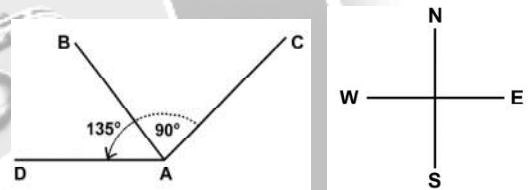
9.
Sol. (d)

10.
Sol. (c) Wednesday
→ Check: Jan has 31 days
→ $31 = 3 \pmod{7}$
→ Sunday + 3 = Wednesday
(a) Wednesday.

11.
Sol. (b) By observation

12.
Sol. (c) By observations

13.
Sol. (b) The movements of Geeta are as shown in figure:



Starting point is A. Initially she is facing AB. Finally the position is AD, which is west from starting position.

14.
Sol. (b) Horse
All except Horse, are wild animals, while Horse can be domesticated.

15.
Sol. (b)

PART - II : MATHEMATICS

1.

Sol. (a) $\frac{-11}{28} \times \frac{3}{3} = \frac{-33}{84}$

$$\frac{-5}{7} \times \frac{12}{12} = \frac{-60}{84}$$

$$\frac{9}{-14} \times \frac{(-6)}{(-6)} = \frac{-54}{84}$$

$$\frac{29}{-42} \times \frac{(-2)}{(-2)} = \frac{-58}{84}$$

$$\frac{-33}{84} > \frac{-54}{84} > \frac{-58}{84} > \frac{-60}{84}$$

So (a) $\frac{-11}{28}$ is greatest.

2.

Sol. (c) 35 → additive inverse of -35 is +35

3.

Sol. (a) -10.5

$$(-0.7) \times (-0.3) \times \frac{1}{(-0.02)}$$

$$\Rightarrow \frac{(-0.7) \times 0.3}{0.02} = \frac{(-21)}{2} = (-10.5)$$

4.

Sol. (a) $\frac{3}{4}$

$$\rightarrow \frac{3}{4} = 0.75, \frac{5}{8} = 0.625$$

$$\rightarrow 0.75 > 0.625$$

5.

Sol. (b) $\frac{3x+5}{2x+1} = \frac{1}{3}$

$$3(3x+5) = 1(2x+1)$$

$$9x+15 = 2x+1$$

$$9x-2x = 1-15$$

$$7x = -14$$

$$x = \frac{-14}{7} = -2 \quad \mathbf{x = -2}$$

6.

Sol. (d) The width of Rectangle = $2\frac{3}{4}$ cm = 2.75 cm

The semi perimeter of a rectangle = 13 cm

$$(l+b) = 13$$

$$(l+2.75) = 13$$

$$l+2.75 = 13$$

$$l = 13 - 2.75$$

$$l = 10.25 \text{ cm} = 10\frac{1}{4} \text{ cm}$$

7.

Sol. (b) Let 1st angle = 12x,

2nd Angle = 13x, 3rd angle = 1x,

4th angle = 10x

The sum of all angles of quadrilateral = 360°.

$$\Rightarrow 12x + 13x + 1x + 10x = 360^\circ$$

$$\Rightarrow 36x = 360^\circ \Rightarrow x = 10^\circ$$

Then largest angle be $13x = 13 \times 10 = 130^\circ$

8.

Sol. (b) 4.5×10^{-4} → correct standard form (number between 1 and 10×10^n)

9.

Sol. (b) 21

$$\rightarrow \text{Let no. } x, x+7, x+14; 3x+21 = 84$$

$$\Rightarrow x = 21$$

10.

Sol. (a) $\frac{2}{5}$

$$\frac{1}{3} \approx 0.33, \frac{1}{2} = 0.5; \frac{2}{5} = 0.4$$

lies between them.

11.

Sol. (a) $x^2 + y^2$ → binomial (two terms)

12.

Sol. (a) $x^2 + 5x + 6$

$$\rightarrow (x+2)(x+3)$$

$$x^2 + 2x + 3x + (2 \times 3) = x^2 + 5x + 6$$

13.

Sol. (a) $\sqrt{1.21} = \sqrt{1.1 \times 1.1} = 1.1$

14.

Sol. (c) $y = 2x + 5$

15.

Sol. (b) 125

$$\frac{3^{-5} \times 5^{-5} \times 2^{-5} \times 5^3}{5^{-5} \times 3^{-5} \times 2^{-5}} = 5^{-2} \times 5^5 = 5^3 = 125$$

16.

Sol. (b) $110^\circ \rightarrow 180 - 70 = 110^\circ$

17.

Sol. (c) $(a + b - 3) - (b - a + 3) + (a - b + 3)$
 $= a + b - 3 - b + a - 3 + a - b + 3$
 $= 3a - b - 3$

18.

Sol. (a) $\frac{12}{60} = \frac{1}{5}$

19.

Sol. (a) $\frac{360}{72} = 5^\circ$

20.

Sol. (a) $x = 78^\circ$ [corresponding angle]

21.

Sol. (d) Prime numbers greater than 100 are
 101, 103, 107, 109, 113
 $101 + 103 + 107 + 109 + 113 = 533$

22.

Sol. (c)
 LCM (2, 3, 7, 12, 16, 18, 30)
 $= 2^4 \times 3^2 \times 5 \times 7 = 5040$

23.

Sol. (c) Three

24.

Sol. (b) Cuboid

25.

Sol. (b) $-6x$

26.

Sol. (b) 2.67

27.

Sol. (a) Total age of three kids = 27 years After three years, the age of each kid will increase by 3.

So, the total age after three years

$$= 27 + (3 \times 3) = 27 + 9 = 36$$

Therefore, the total age of three kids after three years will be 36 years.

28.

Sol. (a) $133 - 19 \times 2 + 15$
 $= 133 + (-19 \times 2) + 15$
 $= 133 + (-38) + 15$
 $= (133 + 15) + (-38)$
 $= 148 + (-38) = 110$

Therefore, $133 - 19 \times 2 + 15 = 110$.

29.

Sol. (b)

Number of cupcakes bought by Rajani = 12

The cost of each cupcake = Rs 20

Total cost of 12 cupcakes = $(12 \times 20) = 240$

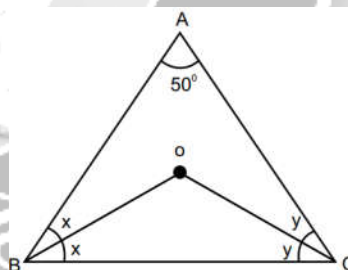
Since the baker gave her a discount of Rs 18 on the total cost.

Therefore, the amount of money Rajani has to pay to the baker for 12 cupcakes = $(12 \times 20) - 18$

$$= 12 \times 20 + (-18) = 240 + (-18) = 222$$

Thus, Rajani will pay Rs 222 for 12 cupcakes.

30.

Sol. (a)

$$\angle BAC = 50^\circ$$

(Assume that $\angle B = 2x$, $\angle C = 2y$)

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\therefore 50^\circ + 2x + 2y = 180^\circ$$

$$\therefore 2(x + y) = 130^\circ$$

$$\therefore x + y = 65^\circ$$

Now, In $\triangle BOC$

$$\angle BOC + \angle OBC + \angle OCB = 180^\circ$$

$$\angle BOC + x + y = 180^\circ$$

$$\therefore \angle BOC + 65 = 180^\circ$$

$$\therefore \angle BOC = 115^\circ$$

PART - III : PHYSICS & CHEMISTRY

1.
Sol. (c) Convex mirror
Convex mirrors curve outward. They produce a smaller, upright, and wider field of view, allowing drivers to see more area behind them. Plane mirrors would show a normal-sized view, and concave mirrors would distort or invert the image.
2.
Sol. (c) Coal energy
Renewable energies (solar, wind, hydro) can be naturally replenished.
Coal is a fossil fuel, which takes millions of years to form and cannot be renewed quickly, so it is non-renewable.
3.
Sol. (a) Plane mirror
When light reflects from a mirror, it changes direction but its speed in the medium (air) remains the same. Refraction (like in water or glass) changes both direction and speed.
4.
Sol. (a) Potential energy $\rightarrow$ Kinetic energy
At a height, the ball has gravitational potential energy.
As it falls, this energy is converted into kinetic energy (energy of motion).
Potential energy decreases and kinetic energy increases.
5.
Sol. (c) Zero
 $\text{Work} = \text{Force} \times \text{Displacement}$.
The wall does not move (displacement = 0), so work done = 0, even though force is applied.
6.
Sol. (c) To survive in vacuum and extreme temperatures
Space has no air, extreme temperatures, and low pressure, which are lethal.
Space suits provide oxygen, pressure, temperature control, and protection from radiation.
7.
Sol. (b) There is no medium (like air) to carry vibrations
Sound is a mechanical wave and needs a medium (solid, liquid, or gas) to vibrate.
Space is mostly vacuum, so there's no medium for sound to travel.
8.
Sol. (c) Energy can neither be created nor destroyed, only transformed
This is the Law of Conservation of Energy.
Energy can change forms (e.g., potential $\rightarrow$ kinetic $\rightarrow$ heat) but total energy remains constant.
9.
Sol. (c) Both astronauts and ISS are in continuous free fall around Earth
The ISS and astronauts are constantly falling towards Earth due to gravity, but because they move forward fast, they orbit the Earth. This creates apparent weightlessness; they float inside the spacecraft.
10.
Sol. (b) 2.5 kg
 $1,000 \text{ grams} = 1 \text{ kilogram}$
 $\rightarrow = 2,500 \text{ grams} = 2.5 \text{ kg}$
11.
Sol. (a) Water formula is H_2O , not HO
 $\rightarrow 2 \text{ hydrogens} + 1 \text{ oxygen}$.
12.
Sol. (a) Temporary hardness comes from calcium bicarbonate ($\text{Ca}(\text{HCO}_3)_2$) which can be removed by boiling.

13.

Sol. (c) Burning magnesium is a chemical change
($\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$, new substance formed).

14.

Sol. (b) Metal + acid $\rightarrow$ salt + H_2 gas released.

15.

Sol. (a) Neutralisation always forms salt + water.

16.

Sol. (b) To obtain crystals of copper sulphate $\rightarrow$
Crystallisation method.

17.

Sol. (a) Iron is more reactive than copper $\rightarrow$
displaces Cu from $\text{CuSO}_4 \rightarrow$ copper
deposits on nail.

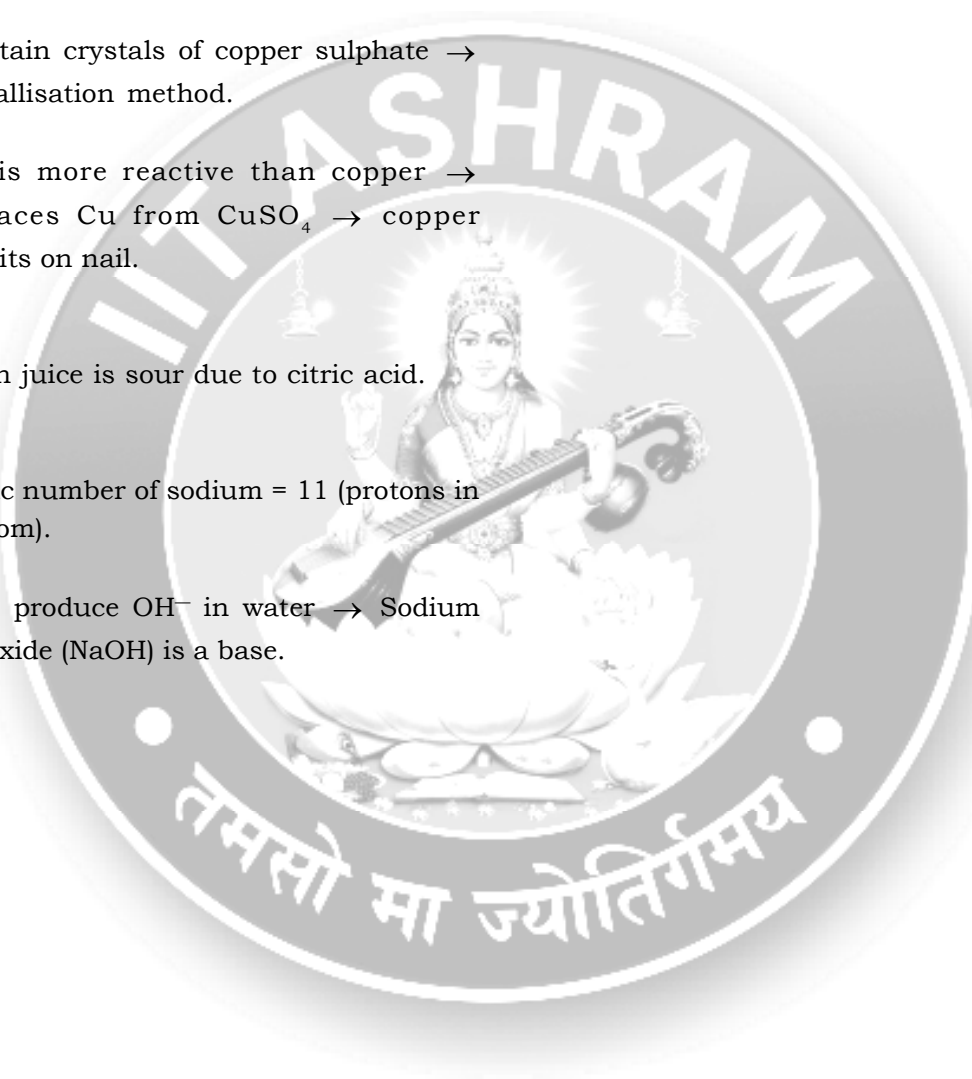
18.

Sol. (b) Lemon juice is sour due to citric acid.

19.

Sol. (d) Atomic number of sodium = 11 (protons in
Na atom).

20. (c) Bases produce OH^- in water $\rightarrow$ Sodium
hydroxide (NaOH) is a base.



PART - IV : BIOLOGY

1.

Sol. (a) Stomata

Stomata are small openings on the leaf surface that allow exchange of gases (O_2 , CO_2 , water vapor).

2.

Sol. (b) Root hairs

Root hairs increase the surface area of roots and absorb water and minerals from the soil.

3.

Sol. (B) Amoeba

Amoeba is made of a single cell. Fish, earthworm, mango tree are multicellular.

4.

Sol. (c) Heart

The heart is the muscular organ that pumps blood through arteries to all parts of the body.

5.

Sol. (c) Vitamin D

Sunlight helps the skin produce Vitamin D, important for bone and teeth health.

6.

Sol. (b) Reproduction

Reproduction ensures the continuation of species by producing offspring.

7.

Sol. (b) White blood cells

WBCs (leukocytes) defend the body against infections and foreign substances.

8.

Sol. (b) Phloem

Phloem transports prepared food (sugar) from leaves to other plant parts.

9.

Sol. (b) Alveoli

Alveoli are tiny air sacs in lungs where oxygen enters the blood and carbon dioxide is removed.

10.

Sol. (b) Digestion

Digestion breaks complex food into simpler, soluble forms that can be absorbed by the body.