



UDAAN

A QUEST FOR SCIENCE ASPIRANTS

SCIENCE APTITUDE TEST

CLASS 7

ANSWER KEY WITH SOLUTIONS

DATE : 05.01.25

IIT Ashram
IIT JEE | NEET | GUJCET | FOUNDATION (6 to10)



Drs' Ashram
IIT JEE | NEET | GUJCET | FOUNDATION (6 to10)

HO : UG-1 & 2, Concorde Complex, Above PNB Bank, R. C. Dutt Road, Alkapuri, Vadodara - 390 007. M.: 90330 63029 / 98980 35772

MANJALPUR - SF-1 TO 12, Kabir Plaza, Beside Kabir Complex, Above IDBI Bank, Infront of Army Camp Manjalpur, Nr. Gupta Hospital, Bhavan's Makarpura Road, Manjalpur . **M : 9033063024 / 9033063027**

ANAND : 2nd Floor, HR Stone Building, Beside Croma Showroom, A.V. Road, Nr. Town Hall, Anand.

M: 9227777098, 8460009041.

Bhayli : Akshar pavilion, 3 rd floor, tower A, nilamber circle, main rd, Bhayli, Vadodara, Gujarat 391410.

M : 6358891896, 9081062221

PART - I : MENTAL ABILITY

1.

Sol. (c)

$$1 + 0 = 1$$

$$1 + 1 = 2$$

$$2 + 2 = 4$$

$$4 + 3 = 7$$

$$7 + 4 = 11$$

$$11 + 5 = 16 \text{ The next term would be:}$$

$$16 + 6 = 22$$

2.

Sol. (a)

$$27 + 7 = 34$$

$$34 + 6 = 40$$

$$40 + 5 = 45$$

$$45 + 4 = 49$$

$$49 + 3 = 52$$

(This is incorrect; it should have been +7) Answer: (a)

3.

Sol. (b)

The pattern follows the movement of the letters:

First letter moves to the second position

Second letter moves to the third position

Third letter moves to the fourth position The last sequence will be:

MAAL \rightarrow AALM \rightarrow ALMA \rightarrow LMAA \rightarrow MAAL

4.

Sol. (c)

The letters are increasing by a constant gap of 4 positions in the alphabet:

$$C + 4 = G$$

$$G + 4 = K$$

$$K + 4 = O$$

$$O + 4 = S \text{ The next letter will be:}$$

$$S + 4 = W \text{ Answer: (c) W}$$

5.

Sol. (d)

The pattern alternates between "ab" and "ba":

ab, ba, abab The next term should be "ab".

6.

Sol. (a)

$$9 + 25 = 34$$

$$26 + 13 = 39$$

$$11 + 24 = 35$$

So, $28 + 7 = 35$

7.

Sol. (c)

8.

Sol. (d)

Manish is 16th from the top and 29th from the bottom.

Total students = 16 (from top) + 29 (from bottom) - 1 (Manish) = 44.

Additionally, 6 boys did not participate, and 5 failed.

So, total boys in the class = 44 + 6 + 5 = 55.

9.

Sol. (a)

$$8 \times 2 \times 96 \div 48 = 8 \times 2 \times 2 = 32$$

10.

Sol. (b)

Number of triangles be 14.

11.

Sol. (a)

12.

Sol. (c)

13.

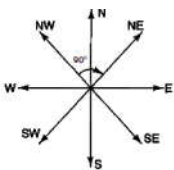
Sol. (c)

Family relation question:

A is the son of B, C is the wife of A, and E is the daughter of C. Therefore, E is the granddaughter of B. Answer: (c) Granddaughter

14.

Sol: (a)



15.

Sol: (b)

Raj finished before Mohit but behind Gaurav (Gaurav > Raj > Mohit)

Ashish finished before Sachin but behind Mohit (Mohit > Ashish > Sachin) Therefore, Gaurav won the race. Answer: (b) Gaurav

PART - I : MATHEMATICS

1.

Sol. (d)

2.

Sol. (b)

Let's check the hundreds place of each pair:

65343 (hundreds place is 3), 95442 (hundreds place is 4)

73445 (hundreds place is 3), 83451 (hundreds place is 3)

87635 (hundreds place is 7), 98934 (hundreds place is 8)

46543 (hundreds place is 6), 57933 (hundreds place is 7) The pair with the same hundreds place is 73445 and 83451.

3.

Sol. (a)

If 5 and 7 are factors of x , then x must be a multiple of both. The smallest multiple of 5 and 7 is 35.

4.

Sol: (d)

One-fourth of a circle is called a quadrant.

5.

Sol. (b)

Let's check the inequalities:

$5 > 0$ (true)

$6 < -8$ (false, 6 is greater than -8)

$7 > -13$ (true)

$5 < 9$ (true) The incorrect statement is $6 < -8$. Answer: (b) $6 < -8$

6.

Sol. (a)

$$\frac{5}{12} = \frac{x}{3} \Rightarrow \frac{5 \times 3}{12} = x \Rightarrow \frac{5}{4} = x \quad \text{So, } x = \frac{5}{4}$$

7.

Sol. (d)

$$20 > 12 > 9 > 8 \quad \Rightarrow \quad \frac{20}{24} > \frac{12}{24} > \frac{9}{24} > \frac{8}{24}$$

So greater value is $\frac{20}{24}$

8.

Sol. (d)

$$\frac{3}{5} = \frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$$

9.

Sol: (d)

$$\frac{7}{9} - \frac{4}{9} + 3\frac{1}{3} \Rightarrow = \frac{7}{9} - \frac{4}{9} + \frac{10}{3} \Rightarrow = \frac{7}{9} - \frac{4}{9} + \frac{30}{9} \Rightarrow = \frac{7-4+30}{9} = \frac{33}{9} \Rightarrow = \frac{11}{3} = 3\frac{2}{3}$$

10.

Sol: (b)

$$1 \text{ cm} = 0.01 \text{ m}$$

11.

$$\text{Sol: (c)} \quad 3\frac{5}{1000} = \frac{3005}{1000} = 3.005$$

12.

Sol: (d)

$$2.1 > 0.68$$

$$0.7 > 0.68$$

$$0.91 > 0.68$$

$$\text{So, } 0.579 < 0.68$$

13.

Sol: (c)

To convert cm to meters, divide by 100:

$$135 \text{ cm} = 1.35 \text{ m}$$

$$135\text{cm}=1.35\text{m}$$

14.

Sol: (c)

Convert 0.12 kg to grams:

$$0.12 \text{ kg} = 120 \text{ g}$$

$$\text{The ratio is } \frac{120}{180} = \frac{2}{3}$$

15.

Sol: (c)

Cross-multiply to find x:

$$12 \times 1 = 3 \times x \Rightarrow x = \frac{12}{3} = 4$$

16.

Sol: (c)

Using the rule of proportion $\frac{5}{120} = \frac{40}{x}$, cross-multiply: $5 \times x = 120 \times 40 \Rightarrow x = \frac{120 \times 40}{5} = 960$

17.

Sol: (c)

Convert 120 mm to cm:

$$120 \text{ mm} = 12 \text{ cm}$$

$$\text{Area} = \text{length} \times \text{breadth} = 28 \times 12 = 336 \text{ cm}^2$$

18.

Sol. (a) The area of 5 tiles = $5 \times 10 = 50 \text{ m}^2$

19.

Sol. (d) The perimeter of a regular hexagon = $6 \times \text{side} = 6 \times 8 = 48 \text{ cm}$

20.

Sol. (a)

21.

Sol. (d)

$$91 - 10 = 9$$

$$29 - 20 = 9$$

$$18 - 10 = 8$$

So, option (d) is correct.

22.

Sol. (b) Expanded form of 87.095 is : $80 + 7 + 0.09 + 0.005$

23.

Sol. (c) The place value of 4 in 5.486 is 0.4.

24.

Sol. (a) Only Rhombus has all sides equal.

25.

Sol. (a) Let Angle = x , then supplement angle = $180^\circ - x$

$$\text{So, } x = 2(180^\circ - x)$$

$$x = 120^\circ$$

26.

Sol. (b) A brick is a cuboid.

27.

Sol. (b) A cuboid has 6 faces.

28.

Sol. (d) A football is a curved surface, not a plane.

29.

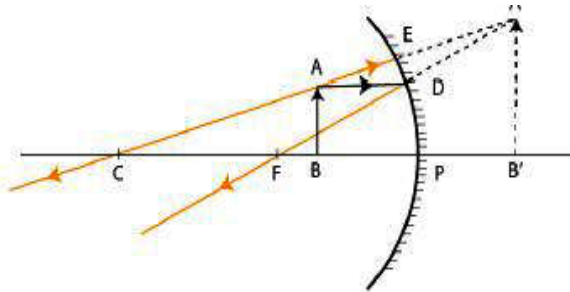
Sol. (d) A prime number has exactly two factors: 1 and itself.

30.

Sol. (d) The greatest common factor of 120 and 192 is 24. Answer:

PART - III : PHYSICS & CHEMISTRY

1.



Sol. (c)

1. Concave mirrors converges the light entering to it and form a image which is real and inverted, and also virtual and erect.
2. Depending on the position of the object, the position of the image varies i.e., the image size increases in some cases when the object is too nearer to the mirror.
3. Concave mirror forms virtual and erect image when object is placed between pole and focus of the mirror.
4. While in a plane mirror, there is no change in the size or position of the image respective of the object as it is a reflecting surface. It means the light entering into it, strikes back.

2.

Sol. (b)

Boiling occurs in the whole volume of a liquid whereas evaporation occurs only at the surface of a liquid. Boiling takes place at a temperature where the vapor pressure of the liquid is equal to the local atmospheric pressure. In evaporation, the molecules on the surface gain energy from the lower molecules and escape out. It occurs at all the temperatures as the molecules on the surface keeps escaping out of the surface by gaining energy from the environment. During boiling, all the molecules of the liquid are involved in the process. Hence, boiling occurs throughout the whole volume of the liquid. Whereas evaporation is a surface phenomenon and thus, it takes place only at the surface of the liquid. When a liquid is exposed to the outside atmosphere, the molecules near the surface of the liquid attain sufficient kinetic energy and escapes forming water vapour.

3.

Sol. (b)

When the switch of a circuit is in off position, the circuit will remain open and in this condition, the current does not flow through the circuit.

4.

Sol. (a)

When air is heated, the kinetic energy of its molecules increases, causing the molecules to move apart and the air to expand. This expansion makes the air less dense than the surrounding air, and therefore lighter. As a result, warm air rises, while cold air sinks.

5.

Sol. (a)

Although water can evaporate at low temperatures, the rate of evaporation increases as the temperature increases. This makes sense because at higher temperatures, more molecules are moving faster; therefore, it is more likely for a molecule to have enough energy to break away from the liquid to become a gas. After a hot shower, the bathroom mirror fogs up because warm water vapour suspended in the air, it transforms back into water droplets as it cools. Some hot water from the shower evaporates, so the air in the bathroom contains a lot of water vapour. When the water vapour contacts cooler surfaces, such as the mirror, it cools and loses energy.

6.

Sol. (a)

A good absorber of radiation will also be a good emitter of radiation at the same wavelength. This means a surface that readily absorbs heat will also readily radiate heat.

7.

Sol. (c)

When a bulb is placed at focus of converging lens then the light rays of bulb from focus will get refracted from the convex lens and become to parallel to principal. They produce a parallel beam of light after refraction from convex lens.

8.

Sol. (d)

Correct option is D. Velocity of a moving body is its speed in a given direction? Speed of a moving body is always higher than velocity. Speed of a moving body is its velocity in a given direction. Velocity of a moving body is its speed in a given direction.

9.

Sol. (a)

Let the number of required cells be N. The total voltage is equal to 9 volt.

Therefore,

$$1.5 \times N = 9$$

$$N = 9/1.5$$

$$N = 6$$

10.

Sol. (b) The melting point of ice on Kelvin scale is 273 K.

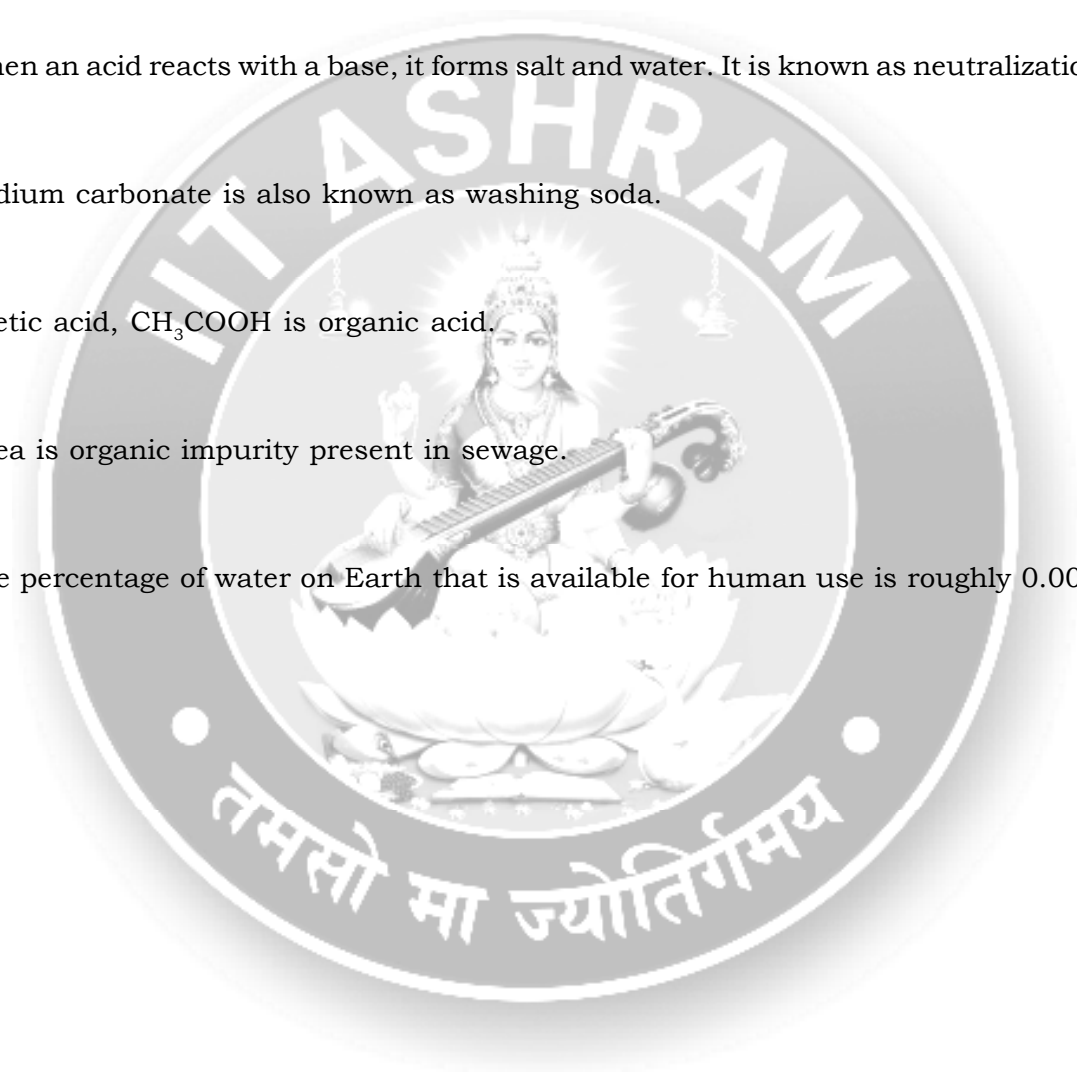
11.

Sol. (c) X is metal so it forms a basic oxide, which turns red litmus into blue.

12.

Sol. (c) Original substances participating in a chemical reaction are reactants and the new substances formed are known as the products.

13.
Sol. (b) Carbon dioxide gas is evolved when acetic acid is reacted with baking soda.
14.
Sol. (c) China rose indicator gives Magenta or dark pink colour in acidic sol.
15.
Sol. (d) Insoluble product formed when two compounds react in their aqueous sol, is known as precipitate.
16.
Sol. (c) When an acid reacts with a base, it forms salt and water. It is known as neutralization reaction.
17.
Sol. (a) Sodium carbonate is also known as washing soda.
18.
Sol. (a) Acetic acid, CH_3COOH is organic acid.
19.
Sol. (c) Urea is organic impurity present in sewage.
20.
Sol. (a) The percentage of water on Earth that is available for human use is roughly 0.006%.



PART - IV : BIOLOGY

1.
Sol. (c) Cell
The cell is the smallest unit of life and forms the basis of all living organisms.
2.
Sol. (b) Leaf
The leaf is the site of photosynthesis in plants, where sunlight is used to produce food.
3.
Sol. (b) Chest
The heart is located in the chest, slightly to the left of the center.
4.
Sol. (a) To carry oxygen
Red blood cells transport oxygen from the lungs to all parts of the body via hemoglobin.
5.
Sol. (c) Mushroom
Mushrooms are decomposers, breaking down dead organisms and recycling nutrients in the ecosystem.
6.
Sol. (b) Respiration
Respiration is the process of taking in oxygen and releasing carbon dioxide, essential for energy production in cells.
7.
Sol. (b) Lungs
The lungs are part of the respiratory system, not the digestive system.
8.
Sol. (b) Nephron
Nephrons are the functional units of the kidney, responsible for filtering blood and forming urine.
9.
Sol. (b) Ovary
The ovary of the flower develops into fruit after fertilization.
10.
Sol. (c) Plants
Plants are living organisms and part of the biotic (living) components of an ecosystem, unlike abiotic components like water and air.