



SCIENCE APTITUDE TEST

CLASS - 9

SOLUTIONS

TEST CODE - 05

WhatsApp Channel



Result will be Declared on 14th Oct. 2025

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PART - I : MENTAL ABILITY

1.
Sol. (c)
It is very hot today → lu jo ha ki oi
It might rain today → ho ki ja lu
Very hot weather today → ja oi ki ki
From these statements :
might → Either 'ho' or 'ju'
2.
Sol. (c)
Age of Manish = 20 yr
Age of Greece = $(20 \div 5) = 4$ yr
Let after x yr,
Manish will be thrice the age of Greece.
⇒ $20 + x = 3(4 + x)$
⇒ $20 + x = 12 + 3x$
⇒ $20 - 12 = 3x - x$
⇒ $x = 4$ yr
∴ Required age of Manish = $20 + 4 = 24$ yr
3.
Sol. (d) Charu, Sargan, Aarav, Falak, Karan, Vaibhav
Karan is sitting second from south end.
4.
Sol. (c) A B C D E E F G H I J K L M N O P Q R S T U
V W X Y Z
5.
Sol. (d) Total No. of triangles = 50
6.
Sol. (b) GIEY is odd one out according to their position of Alphabets
7.
Sol. (b) Logic :
Third Column $\div 5$ + Second Column
= First Column
 $25 \div 5 + 5 = 5 + 5 = 10$
 $30 \div 5 + 9 = 6 + 9 = 15$
 $25 \div 5 + 1 = 5 + 1 = 6$
8.
Sol. (c) $8:45 + 35 \text{ min} + 10 \text{ min} = 9:30 \text{ PM}$
9.
Sol. (c) $175^\circ - 140^\circ = 35^\circ$
South direction + 35° clockwise = South-West
10.
Sol. (c) Given word: TAXATION
 $T(20) + A(1) + X(24) + A(1) + T(20) + i(9) + O(15) + N(14)$
 $= 104 \rightarrow 1 + 0 + 4 = 5$.
The code for TAXATION is 5.
Similarly,
Given word : BUSINESS
 $B(2) + U(21) + S(19) + i(9) + N(14) + E(5) + S(19) + S(19) = 108 \rightarrow 1 + 0 + 8 = 9$.
The code for BUSINESS is 9.
11.
Sol.
Year 2019 is not a leap year so, there are 28 days in February.
So, February 2, 2019 will be a Saturday.
So, the number of days after 2nd February 2019 to 4th October 2019 are $26 + 31 + 30 + 31 + 30 + 31 + 31 + 30 + 4 = 244$
Number of odd days in 244 days
 $= 244/7 = 6$
Thus, on 4th October 2019 the day will be Saturday + 6 days = Friday.
12.
Sol. (c) Sister-in-law
13.
Sol. (d) Concept: Opposite letters
EDUCATION → VWFVXGRML
14.
Sol. (b) $9 \times 2 + 1 = 19$
 $19 \times 2 - 2 = 36$
 $36 \times 2 + 3 = 75$
 $75 \times 2 - 4 = 146$
 $146 \times 2 + 5 = 297$
15.
Sol. (a) KLTGB | KLTGB | KLTGB | KLTGB

PART - II : MATHEMATICS

1.

Sol. (d)

$$7^x - 16y = 0$$

$$16y = 7^x$$

$$y = \frac{7^x}{16}$$

Now, the next step is:

$$4x - 49y = 0$$

$$4^x - 49\left(\frac{7^x}{16}\right) = 0$$

$$4^x = 49\left(\frac{7^x}{16}\right)$$

$$16(4^x) = 49(7^x) = 0$$

$$4^2(4^x) = 7^2(7^x)$$

$$\frac{4^x}{7^x} = \left(\frac{7}{4}\right)^2$$

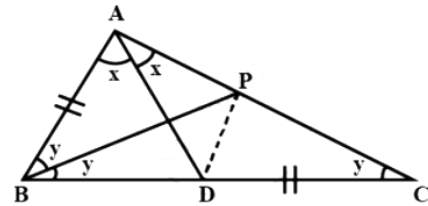
$$\left(\frac{4}{7}\right)^x = \left(\frac{4}{7}\right)^{-2}$$

$$\therefore x = -2$$

$$y = \frac{7^x}{16} = \frac{7^{-2}}{16} = \frac{1}{19 \times 16} = \frac{1}{784}$$

$$\therefore y - x = \frac{1}{784} - (-2) = \frac{1}{784} + 2 = \frac{1569}{784}$$

2.

Sol. (b)Let $\angle C = Y$

$$\angle B = 2\angle C = 2Y$$

Ad bisects $\angle BAC \Rightarrow \angle BAD = \angle CAD = x$ let BP bisects $\angle ABC$ and join PDIn $\triangle BPC$, $\angle CBP = \angle BCP = y$

BP = PC (isosceles triangle)

In $\triangle ABP$ and $\triangle DCP$, (SAS-congruency)

$$\angle ABP = \angle DCP = Y$$

$$AB = DC$$

$$BP = PC$$

$$\triangle ABP \cong \triangle DCP \text{ (SAS - congruency)}$$

By CPCT,

$$\angle BAP = \angle CDP \text{ and } AP = DP$$

$$\angle CDP = 2x \text{ and}$$

$$\angle ADP = \angle DAP = x (\angle A = 2x)$$

In $\triangle ABD$,

$$\angle ADC = \angle ABD + \angle BAD \text{ (Exterior angles)}$$

$$\Rightarrow x + 2x = 2y + x$$

$$\Rightarrow x = y$$

In $\triangle ABC$,

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

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

$$2y + 3y = 180^\circ$$

$$y = \frac{180^\circ}{5} = 36^\circ$$

$$\therefore x = y = 36^\circ$$

$$\text{Hence } \angle A = 2x = 2 \times 36^\circ = 72^\circ$$

3.

Sol. (b)

By linear pair properly.

$$\angle BAC = 180^\circ - 140^\circ = 40^\circ$$

$$\angle ADC = 180^\circ - 70^\circ = 110^\circ$$

In ,

$$\angle DAE + \angle ADC + \angle DCE = 180^\circ$$

$$\Rightarrow 40^\circ + 110^\circ + \angle DCE = 180^\circ$$

$$\Rightarrow 150^\circ + \angle DCE = 180^\circ$$

$$\angle DCE = 180^\circ - 150^\circ = 30^\circ$$

4.

Sol. (a)

$$x^4 - y^4 = 15$$

By heat trail

put $x = 2, y = 1$

$$2^4 - 1^4 = 16 - 1 = 15$$

$$x = 2 \text{ and } y = 1$$

$$\text{Hence } x^4 + y^4 = 2^4 + 1^4 = 16 + 1 = 17$$

5.

Sol. (c)

$$= \frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \dots + \frac{1}{\sqrt{8}+\sqrt{9}}$$

$$\frac{1}{\sqrt{2}+1} \times \frac{\sqrt{2}-1}{\sqrt{2}-1} + \frac{1}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

$$+ \dots + \frac{1}{\sqrt{9}+\sqrt{8}} \times \frac{\sqrt{9}-\sqrt{8}}{\sqrt{9}-\sqrt{8}}$$

$$= \frac{1}{\sqrt{2}+1} \times \frac{\sqrt{2}-1}{\sqrt{2}-1} + \frac{1}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

$$= \sqrt{2}-1 + \sqrt{3}-\sqrt{2} + \dots + \sqrt{9}-\sqrt{8}$$

$$= -1 + \sqrt{9} = 1 + 3 = 2$$

6.

Sol. (b)

Total no. of two digit = 90

No. multiple of 3 but not multiple of 5 = 24

$$\text{Probability} = \frac{n(E)}{n(S)} = \frac{24}{90} = \frac{4}{15}$$

7.

Sol. (b)

$$\left(1 - \frac{1}{2}\right) \left(1 - \frac{1}{3}\right) \dots \left(1 - \frac{1}{9}\right) \left(1 - \frac{1}{10}\right)$$

$$= \frac{1}{3} \times \frac{2}{3} \times \dots \times \frac{8}{9} \times \frac{9}{10} = \frac{1}{10}$$

8.

Sol. (b)

$$a + b + c = 16$$

$$(a + b + c)^2 = 16^2$$

$$a^2 + b^2 + c^2 + 2ab + 2bc + 2ca = 256$$

$$90 + 2(ab + bc + ca) = 256$$

$$2(ab + bc + ca) = 256 - 90 = 166$$

$$ab + bc + ca = \frac{166}{2} = 83$$

9.

Sol. (a)

$$\left(\frac{9}{8} + \frac{8}{9}\right)^2 - \left(\frac{9}{8} - \frac{8}{9}\right)^2$$

$$\Rightarrow (a+b)^2 - (a-b)^2, \text{ Let } a = \frac{9}{8}, b = \frac{8}{9}$$

$$= a^2 + 2ab + b^2 - (a^2 - 2ab + b^2)$$

$$= a^2 + 2ab + b^2 - a^2 + 2ab + b^2 = 4ab$$

$$= 4 \times \frac{9}{8} \times \frac{8}{9} = 4$$

$$\begin{aligned}\text{Sum of incomes} &= 5x + 7x = 12x \\ &= 12 \times 7000 = 84000\end{aligned}$$

16.

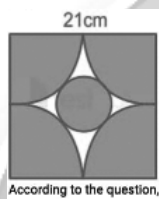
Sol. (d)

Four cows are tethered at four corners of a square plot of side 21 meters such that the adjacent cows can just reach one another. There is a small circular pond of area 45 sq.m at the centre.

Formula Used:

$$\text{Area of Circle} = \pi r^2$$

$$\text{Area of square} = \text{Side}^2$$

Calculation:

21cm

According to the question,

Adding 4 corner grazing area is equal to the one full circle

Radius = $21/2$ Area of grazing four corner

$$= \pi r^2$$

$$\Rightarrow 22/7 \times 21/2 \times 21/2$$

$$\Rightarrow 346.5\text{m}^2$$

There is a small circular pond of area 45 sq.m at the centre

Ungrazed area = Area of square - Area of Grazing area Area of pond

$$\Rightarrow 21^2 - 346.5 - 45$$

$$\Rightarrow 441 - 391.5$$

$$\Rightarrow 49.5\text{m}^2$$

$$\Rightarrow \text{The area left ungrazed is } 49.5\text{m}^2$$

17.

Sol. (a)

For sheme A,

Effective discount

$$= 25 + 32 - \frac{25 \times 32}{100} = 57 - 8 = 49\%$$

For shceme B,

Total items = 10

Paid item = 8

$$\text{Discount} = \frac{2}{10} \times 100\% = 20\%$$

For scheme C,

Total items = 10

Paid items = 8

Discount = 20%

$\therefore$ Scheme B and C fetches the minimum discount %

18.

Sol. (a)

$$\frac{1}{4} + \left[\frac{[(20.35)^2 - (8.35)^2] \times 0.0175}{(1.05)^2 + (1.05)(27.65)} \right]$$

$$= \frac{1}{4} + \frac{[(20.35 + 8.35)(20.35 - 8.35)] \times 0.0175}{1.05(1.05 + 27.65)}$$

$$= \frac{1}{4} + \frac{[(28.70)(12)] \times 0.0175}{1.05(28.70)}$$

$$= \frac{1}{4} + \frac{12 \times 0.0175}{1.05} = \frac{1}{4} + \frac{12 \times 175}{105 \times 100}$$

$$= \frac{1}{4} + \frac{1}{5} = \frac{5+4}{20} = \frac{9}{20}$$

19.

Sol. (a)

80% of workers are men while 20% are women

The average age of the men is 30

The average age of the women is 40

$$\text{Formula Used: Average} = \frac{\text{Sum of Ages}}{\text{Total Worker}}$$

Calculations:

Let the total number of workers be 100

$\rightarrow$ Number of men's workers = 80% of total worker = 80 men

$\rightarrow$ Number of women workers = 20% of total worker = 20 women

According to the formula,

$$\Rightarrow \text{Average} = \frac{\text{Sum of Ages}}{\text{Total Worker}}$$

$$\Rightarrow 30 = \frac{\text{Sum of Ages}}{80}$$

⇒ Sum of ages of men $30 \times 80 = 2400$

Similarly,

$$\Rightarrow \text{Average} = \frac{\text{Sum of Ages}}{\text{Total Worker}}$$

$$\Rightarrow 40 = \frac{\text{Sum of Ages}}{20}$$

⇒ Sum of ages of women $40 \times 20 = 800$

⇒ The average age of total workers =

$$\frac{\text{Sum of Ages}}{\text{Total Worker}} = \frac{2400 + 800}{100} = \frac{3200}{100} = 32$$

Hence, The average age of total worker is 32

20.

$$x + y + z = 70$$

check from options

$$z = 37$$

$$\therefore x < y < z$$

$$\therefore x = 2, y = 31 \text{ \& } z = 37$$

21.

Sol. (b)

Five-digit number = 58828 Divisor = 77

⇒ By doing twice of 11 and adding 5 to it, we get

$$\Rightarrow \text{New number} = 58828 + 11 \times 2 + 5 = 58828 + 22 + 5 = 58855$$

⇒ So, the last digit is 5, hence it is divisible by 5.

Therefore, the resultant number will be divisible by 5.

22.

Sol. (c)

$$\text{Blood group B has } \frac{120^0}{360^0} \times 240 = 80$$

Blood group of A, O and AB has

$$= \frac{90 + 80 + 70}{360} \times 240 = 160$$

$$\therefore \text{Average of A, O and AB} = \frac{160}{3}$$

$$\text{Hence Required ratio} = \frac{160 \div 3}{80} = \frac{2}{3} = 2:3$$

23.

Sol. (a)

If two straight lines are coinciding with each other then number of point of intersection are infinite.

24.

Sol. (d)

In $\triangle ABC$,

$$\Rightarrow \angle A + \angle B + \angle C = 180^0$$

$$\Rightarrow \frac{\angle A}{2} = 180^0 - 120^0$$

$$\Rightarrow \frac{\angle A}{2} = 60^0$$

$$\therefore \angle A = 2 \times 60^0 = 120^0$$

$$\text{Hence } \frac{1}{4} \angle A = \frac{1}{4} \times 120^0 = 30^0$$

25.

Sol. (c)

$$\frac{a}{b} = \frac{5}{3}$$

$$= \frac{a^3 - b^3}{a^3 + b^3} = \frac{5^3 - 3^3}{5^3 + 3^3} = \frac{125 - 27}{125 + 27} = \frac{98}{152}$$

$$= \frac{49}{76} = 49:76$$

26.

Sol. (b)

$$P = \frac{x^2 - 100}{x^2 - 16}$$

$$Q = \frac{x + 10}{x - 4}$$

$$= \frac{(x + 10)(x - 10)}{(x + 4)(x - 4)}$$

$$\therefore \frac{P}{Q} = \frac{(x + 10)(x - 10)}{(x + 4)(x - 4)} \div \frac{x + 10}{x - 4} = \frac{x - 10}{x + 4}$$

27.

Sol. (d) In $\triangle ABC$ and $\triangle DEF$,

$$AB = FD$$

$$\angle A = \angle D$$

$$AC = DE$$

$$\therefore \triangle ABC \cong \triangle DFE \text{ (SAS-Congruency)}$$

Hence option (d) is right answer.

28.

Sol. (b)

$$(x + 1)^2 = x^2 + (x - 7)^2 \text{ (Pythagoras theorem)}$$

$$\Rightarrow x^2 + 2x + 1 = x^2 + x^2 + 14x + 49$$

$$\Rightarrow 2x + 1 = x^2 - 14x + 49$$

$$\Rightarrow x^2 - 16x + 48 = 0$$

$$\Rightarrow x^2 - 12x - 4x + 48 = 8$$

$$\Rightarrow (x - 12)(x - 4) = 0$$

$$\therefore x = 12 \quad [\because x \neq 4]$$

$$\begin{aligned} \text{Hence Perimeter : } 2(l + b) &= 2(x + x - 7) \\ &= 2(12 + 12 - 7) = 34 \text{ cm} \end{aligned}$$

29.

Sol. (a)

Given:

$$\text{Diameter of fountain} = 14\text{m}$$

$$\text{Radius of pond} = 14\text{m}$$

 $\Rightarrow$ Formula Used:

$$\Rightarrow \text{Area of ring in concentric circle} = \pi \times (r_1^2 - r_2^2)$$

$$\Rightarrow \text{Radius of pond} = r_1 = 14\text{m}$$

$$\Rightarrow \text{Radius of fountain } r_2 = \frac{14}{2} = 7\text{m}$$

$$\Rightarrow \text{Area of pond excluding fountain}$$

$$= \pi \times (14^2 - 7^2) = \frac{22}{7} \times (196 - 49) = 462\text{m}^2$$

30.

Sol. (d)

$$x + 2y + 3z = 19$$

$$2x + 3y + 4z = 30$$

By adding

$$3x + 5y + 7z = 49$$

$$7(3x + 5y + 7z) = 49 \times 7$$

$$21x + 35y + 49z = 343$$

PART - III : PHYSICS & CHEMISTRY

1.

Sol. (c) According to Newton's First Law of Motion, an object moving at a constant velocity has zero net force acting on it.

2.

Sol. (c) The density of the liquid
The formula for pressure in a fluid is $P = h\rho g$. Thus, pressure depends on depth (h) and the density of the liquid (ρ).

3.

Sol. (c) -2 m/s

By conservation of momentum :

$$m_{\text{bullet}} v_{\text{bullet}} + m_{\text{pistol}} v_{\text{pistol}} = 0.$$

$$(0.025 \text{ kg} \times 200 \text{ m/s}) + (2.5 \text{ kg} \times v_{\text{pistol}}) = 0$$

$$\Rightarrow 5 + 2.5v_{\text{pistol}} = 0$$

$$\Rightarrow v_{\text{pistol}} = -2 \text{ m/s}.$$

4.

Sol. (b) 2 s

First, find the speed of the wave: $v = f\lambda = (2000 \text{ Hz}) \times (0.35 \text{ m}) = 700 \text{ m/s}$.

Then, find the time: $t = \text{Distance/Speed} = 1400 \text{ m}/700 \text{ m/s} = 2 \text{ s}$

5.

Sol. (c) 125%

Let initial momentum be p and initial KE be $KE = p^2/(2m)$.

The new momentum is $p' = 1.5p$.

The new kinetic energy is

$$KE' = (1.5p)^2/(2m) = 2.25(p^2/2m) = 2.25 \times KE.$$

The percentage increase is $(2.25 - 1) \times 100\% = 125\%$.

6.

Sol. (b) 4 s

Use the equation of motion $s = ut + \frac{1}{2}gt^2$.

$$80 = 0 \times t + \frac{1}{2}(10)t^2$$

$$\Rightarrow 80 = 5t^2 \quad \Rightarrow t^2 = 16 \quad \Rightarrow t = 4 \text{ s}.$$

7.

Sol. (b) 10 N

Using second equation of motion

$$s = ut + \frac{1}{2}gt^2$$

$$\Rightarrow 0 + \frac{1}{2}a(10)^2 \Rightarrow 100 = 50a$$

$$\Rightarrow a = 2 \text{ m/s}^2.$$

Then find force:

$$F = ma = 5 \text{ kg} \times 2 \text{ m/s}^2 = 10 \text{ N}.$$

8.

Sol. (b) The mean position

At the mean (lowest) position, the pendulum's speed is maximum, so its kinetic energy is maximum. At the extreme positions, its speed is momentarily zero.

9.

Sol. (c) 37.5 m

By the Work-Energy Theorem, Work done = Change in KE.

$$F \times s = \frac{1}{2}mv^2.$$

Since F and v are the same for both vehicles, the stopping distance s is directly proportional to the mass m .

$$\frac{s_{\text{truck}}}{s_{\text{car}}} = \frac{m_{\text{truck}}}{m_{\text{car}}} \Rightarrow \frac{s_{\text{truck}}}{15} = \frac{3000}{1200} = 2.5.$$

$$s_{\text{truck}} = 15 \times 2.5 = 37.5 \text{ m}.$$

10.

Sol. (d) From law of conservation of linear momentum.

momentum of boat = momentum of dog

$$m_1 v_1 = m_2 v_2$$

$$40 \times v_1 = 4 \times 10$$

$$v_1 = \frac{4 \times 10}{40} = 1 \text{ ms}^{-1}$$

11.

Sol. (a)

$$\frac{\text{mass of solute}}{\text{Volume of solution}} \times 100$$

Given:

Mass of solute = 20g

Mass of water = 180g

Total mass = 200g

Density = 1.25 g/cm

$$V = \frac{M}{d} = \frac{200}{1.25} = 160 \text{ ml}$$

$$w/v\% = \frac{20}{160} \times 100 = 12.5\%$$

12.

Sol. (d) $T = 273 + 37 = 310 \text{ K}$

13.

Sol. (c) Charge of i. e = 1.6×10^{-19}

14.

Sol. (c) Latent heat of vaporization of water
 $= 22.5 \times 10^5 \text{ J/kg}$

15.

Sol. (c) $n = \frac{10}{58.5} \times 6.02 \times 10^{23}$
 $= 1.029 \times 10^{23} \text{ Na}^+ \text{ ions}$

16.

Sol. (d) Same in chemical and same in number of electrons

17.

Sol. (d) Caesium is the most reactive metal

18.

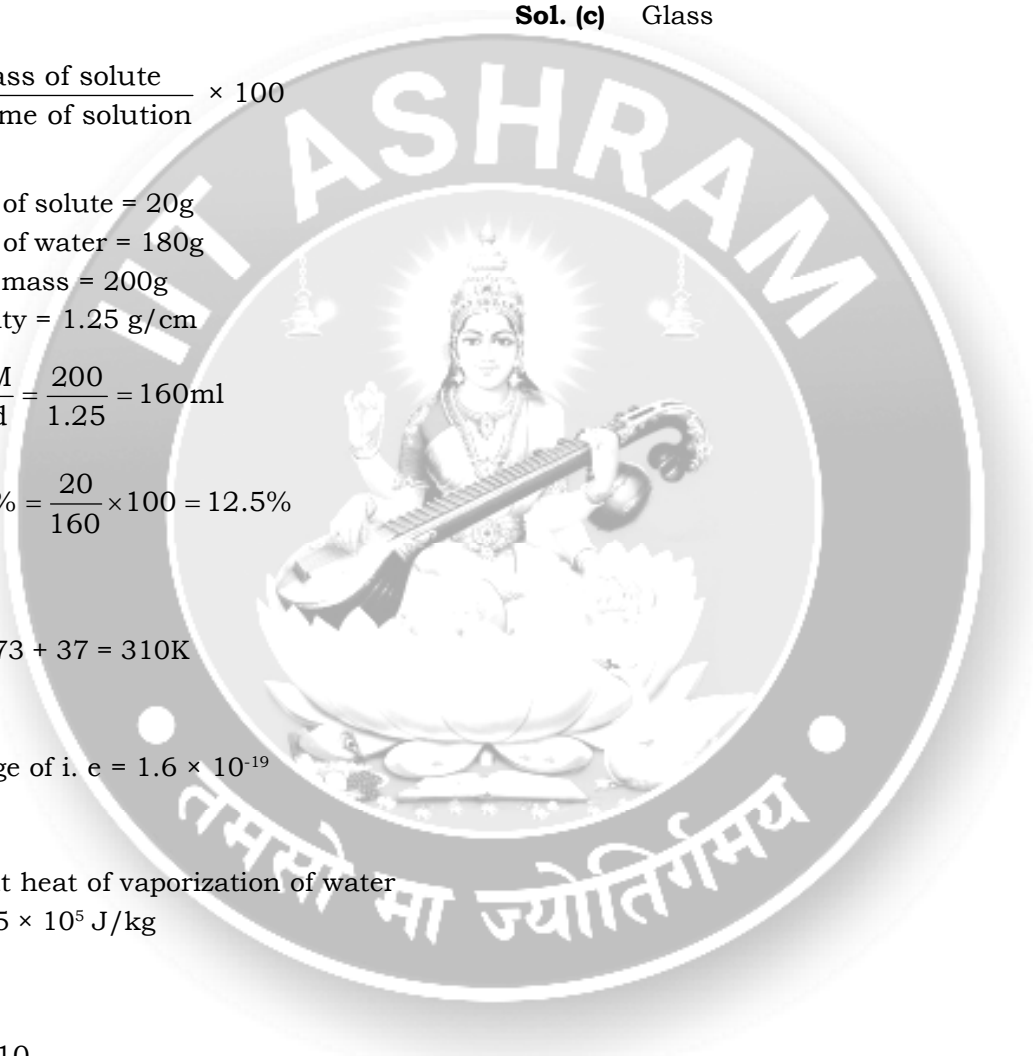
Sol. (d) Calorific value of hydrogen gas is 150,000 KJ/kg

19.

Sol. (d)

20.

Sol. (c) Glass



PART - IV : BIOLOGY

1.
Sol. (c) Grazing is not allowed in national parks.
2.
Sol. (d) Vaccines stimulate the body to produce immunity against diseases
Vaccines contain weakened or dead microbes (or their parts). They do not kill germs directly, but they trigger the immune system to produce antibodies. This helps the body "remember" the pathogen and fight it quickly if it enters again.
3.
Sol. (b) Prokaryotic cell
Prokaryotic cells are simple cells without a true nucleus; instead, DNA lies in a nucleoid region.
4.
Sol. (b) Oestrogen is a female sex hormone, not a male hormone.
It is secreted by the ovaries, not pituitary gland.
5.
Sol. (c) Lysosome
Lysosomes contain digestive enzymes. Which can digest cell.
6.
Sol. (b) Axon
Axon is a long fiber that carries nerve impulses away from the cell body to other neurons or effectors.
7.
Sol. (b) Alternating crops with different nutrient requirements
Crop rotation works on the principle of alternating crops with different nutrient needs so that soil fertility is maintained and depletion of the same nutrient is avoided.
8.
Sol. (a) 1,2, 3
Puberty hormone levels increase, not decline.
9.
Sol. (b) Bacteria
TB is caused by Mycobacterium tuberculosis bacteria
10.
Sol. (d) A is false, but R is true
In asexual reproduction, offspring are genetically identical, not different, so Assertion is false. But the Reason is true because only one parent is involved and no gamete fusion occurs.