KH(O)J-2025

Exam for
Young Scientists..!

SCIENCE APTITUDE TEST

CLASS - 8

SOLUTIONS

TEST CODE - 28S

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IIT JEE **I** NEET **I** GUJCET **I** FOUNDATION (6 to10)

10th CBSE Board Results 2025

SCI -100 | SS -100		MATH -100		
99.00%	**98.80%**	**98.50%**	**98.40%**	**98.66%**
Kushagrah	Devansh	Harshil	Jay D.	Rudra

				MATH -100
97.60%	**97.60%**	**97.40%**	**97.40%**	**97.40%**
Aryan	Khwahish	Naman	Rusha	Siddhant
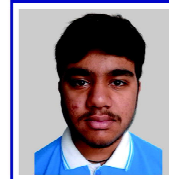
				ENG -100
96.60%	**96.50%**	**96.00%**	**96.00%**	**95.75%**
Diza	Kaushar	Harleen	Rakti	Swara

95.60%	**95.60%**	**95.50%**	**95.20%**	**95.05%**
Jayani	Parita	Shaurya	Krishiv	Shruja

And Many More....

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IIT JEE I NEET I GUJCET I FOUNDATION (6 to10)

10th GSEB Board Result 2025

|					
SCI 100 / SS 100	MATH 100 / SCI 100	SS 100	SCI 100		MATH 100
99.81% ile	99.60% ile	99.35% ile	99.22% ile	99.14% ile	99.00% ile
Naysa P.	Pahal B.	Khushi P.	Chirag R.	Rutvi S.	Darsh G.
	MATH 100				
98.62% ile	98.31% ile	98.20% ile	98.20% ile	98.20% ile	98.20% ile
Dhanesh B.	Darshil P.	Vihaan T.	Drashti S.	Aanya K.	Kshitij N.
		MATH 100 / SCI 100			MATH 100
97.99% ile	97.88% ile	97.76% ile	97.64% ile	97.50% ile	97.40% ile
Varada M.	Saksham U.	Nivedya J.	Dhyey P.	Maharsh B.	Shubh P.
		SCI 100			
97.27% ile	97.14% ile	97.02% ile	96.76% ile	96.68% ile	96.63% ile
Pankti P.	Devansh A.	Vihaan P.	Kathit S.	Nisarg S.	Dhwani P.
		MATH 100			
96.50% ile	96.36% ile	96.36% ile	96.22% ile	95.93% ile	95.93% ile
Evan C.	Disha S.	Samarth T.	Devanshi P.	Mahaveer V.	Abhinav P.

And Many More....

PART - I : MENTAL ABILITY

1.

Sol. (c)   The terms are:

2 (=1 × 2), 6 (= 2 × 3), 12 (= 3 × 4), 20 (= 4 × 5), 30 (= 5 × 6), next = 6 × 7 = 42

2.

Sol. (d)   Add letter positions:

CAT = 3+1+20=24, DOG=4+15+7=26, BAT=2+1+20=23 (Correction).

3.

Sol. (a)   Leaf is part of tree, Page is part of book.

4.

Sol. (d)

5.

Sol. (b)   4

$(8 \times 3) \div (2 \times 6) = 2$ $\Rightarrow$ $(4 \times 6) \div (3 \times 8) = 1$ $\Rightarrow$ $(12 \times 8) \div (6 \times 4) = 4$

6.

Sol. (b)   20

$(6 \times 3) - (4 \times 2) = 10$ $\Rightarrow$ $(9 \times 5) - (5 \times 3) = 30$ $\Rightarrow$ $(6 \times 5) - (2 \times 5) = 20$

7.

Sol. (d)

8.

Sol. (b)

9.

Sol. (c)

10.

Sol. (d)
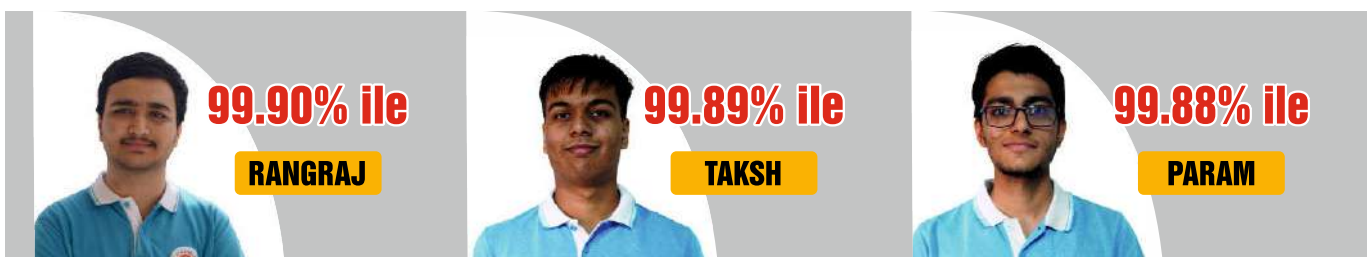
11.

Sol. (c)

12

Sol. (b)   Rule: a @ b = a² + b².

3² + 2² = 9 + 4 =13, 4² + 3² = 16 + 9 = 25,

so   5² + 4² = 25 + 16 = 41.

13.

Sol. (b)   8.45 a.m.

14.

Sol. (b)

15.

Sol. (a)

PART - II : MATHEMATICS

1.

Sol. (b)

$|4 - [1 + 5 \{12 \div 4 - 2(1 - \overline{4 - 3})\}]|$

$= |4 - [1 + 5 \{12 \div 4 - 2 (1 - 1)\}]|$

$= |4 - [1 + 5 \{12 \div 4 - 0\}]| = |4 - [1 + 5 \times 3]| = |4 - 16| = |-12| = 12$

2.

Sol. (a) $\dfrac{25}{36}$

Given , a = 2 , b = 3

so, $\Rightarrow \left(\dfrac{1}{a} + \dfrac{1}{b}\right)^a = \left(\dfrac{1}{2} + \dfrac{1}{3}\right)^2 = \left(\dfrac{3+2}{6}\right)^2 = \left(\dfrac{5}{6}\right)^2 = \dfrac{25}{36}$

3.

Sol. (d) Option (ii)

Every rational is not a fraction eg: $\dfrac{-3}{4}$ is not a fraction

4.

Sol. (c) pqr

$\dfrac{x}{pq} + \dfrac{x}{qr} + \dfrac{x}{pr} = p + q + r$ $\Rightarrow \dfrac{rx + px + qx}{pqr} = p + q + r$ $\Rightarrow x = \dfrac{(p + q + r) \times pqr}{(p + q + r)} = pqr$

5.

Sol. (a) **48**

let the number of boys and girls = x

$\Rightarrow$ ratio = 7 : 5 $\Rightarrow$ boys =7x $\Rightarrow$ girls = 5x $\Rightarrow$ According to question,

$\Rightarrow$ 7x = 5x + 8 $\Rightarrow$ By transposing $\Rightarrow$ 7x - 5x = 8

$\Rightarrow$ 2x = 8 $\Rightarrow$ $x = \dfrac{8}{2}$ $\Rightarrow$ x = 4

$\Rightarrow$ now the number of boys = 7x = 28 $\Rightarrow$ the number of girls = 5x = 20

$\Rightarrow$ total students = 28 + 20 = 48

6.

Sol. (d) 60^0

Given, $\angle COD = 105^0$ and $\angle OCX = 45^0$

$\Rightarrow \angle COD + \angle COX = 180^0$ $\Rightarrow$ $\angle COX = 180^0 - \angle COD$

$\Rightarrow 180^0 - 105^0 = 75^0$ $\Rightarrow$ $\Delta OCX, \angle OCX + \angle COX + \angle OXC = 180^0$

$\Rightarrow 45^0 + 75^0 + x = 180^0$ $\Rightarrow$ $x = 180^0 - 120^0 = 60^0$

7.

Sol. (d)

Since, $\angle A + \angle B + \angle C + \angle D = 360^0$

$\angle A + \angle B = 360^0 - \left(130^0 + 70^0\right)$ $\Rightarrow$ $360^0 - 200^0 = 160^0$

$= \dfrac{1}{2}(\angle A + \angle B) = 80^0$

So, $= \angle OAB + \angle ABO = 80^0$

In $\Delta AOB, = \angle AOB = 180^0 - (\angle OAB + \angle ABO)$ $\Rightarrow$ $180^0 - 80^0 = 100^0$

8.

Sol. (c) $\dfrac{1}{2}$

Total number of outcomes = 1,2,3,4,5,6 i.e 6
Even number = 2,4,6 i.e. 3
Probability of getting an even number $= \dfrac{3}{6} = \dfrac{1}{2}$

9.

Sol. (c)

Total number of alphabets = 26 Total number of vowels =5

$\Rightarrow$ Probability of choosing a vowel from the alphabets $= \dfrac{\text{Total number of vowels}}{\text{Total number of alphabets}} = \dfrac{5}{26}$

10.

Sol. (d)

Total number of balls = 3 + 2 = 5 balls

$\Rightarrow$ Number of favourable outcomes = Number of red balls = 2

$\Rightarrow$ Probability of getting a red ball $= \dfrac{2}{5}$

11.

Sol. (a) $\sqrt{\dfrac{0.081}{0.0064} \times \dfrac{0.484}{6.25} \times \dfrac{2.5}{12.1}} = \sqrt{\dfrac{81}{64} \times \dfrac{484}{625} \times \dfrac{25}{121}} = \dfrac{9}{8} \times \dfrac{22}{25} \times \dfrac{5}{11} = \dfrac{9}{20} = 0.45$

12.

Sol. (c) A

The answer is 2025 as the other numbers are 2577, 2568 and 2543 which cannot be perfect squares as a number cannot be a

perfect square if it ends with 2, 3, 7, 8

13.

Sol. (a) 4

$\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}$ $\Rightarrow$ $\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + 15}}}}$

$\Rightarrow$ $\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{169}}}}$ $\Rightarrow$ $\sqrt{10 + \sqrt{25 + \sqrt{108 + 13}}}$

$\Rightarrow$ $\sqrt{10 + \sqrt{25 + \sqrt{121}}}$ $\Rightarrow$ $\sqrt{10 + \sqrt{25 + 11}}$

$\Rightarrow$ $\sqrt{10 + \sqrt{36}} = \sqrt{10 + 6} = \sqrt{16} = 4$

14.

Sol. (c)

Writing 3087 as a product of a prime factors, we have

3	3087
3	1029
7	343
7	49
7	7
	1

$\therefore$ $3087 = 3 \times 3 \times \underline{7} \times \underline{7} \times \underline{7}$

Clearly, to make it a perfect cube it must be multiplied by 3.

15.

Sol. (d)

Volume of a cube = (side)^3

(side)^3 = 35.937

$\Rightarrow$ Side = $\sqrt[3]{35.937} = \sqrt[3]{\dfrac{35937}{1000}} = \sqrt[3]{\dfrac{3 \times 3 \times 3 \times 11 \times 11 \times 11}{10 \times 10 \times 10}}$ $\Rightarrow$ Side = $\dfrac{3 \times 11}{10} = \dfrac{33}{10} = 3.3m$

16.

Sol. (d)

Let the total amount be = x

Shilpa spend = 75%

$\Rightarrow$ She saves = (100 - 75)% = 25% $\Rightarrow$ 25% of x = Rs 600 $\Rightarrow$ $\dfrac{25}{100} \times x = 600$ $\Rightarrow$ x = $\left(\dfrac{600 \times 100}{25}\right)$

Total amount = Rs 2,,400

17.

Sol. (c) 12%

Let the increasing % of population (x) = +10%

The Decreasing % of population (y) = -20%

Average percent = $\pm x \pm y \pm \dfrac{xy}{100}$ $= +10 - 20 - \dfrac{10 \times 20}{100} = -10 - 2 = -12\%$

So it is -ve then decreasing percent is 12%

18.

Sol. (d)

Marked price = Rs 250

Discount = 20% of 250

Discount = $\dfrac{250 \times 20}{100}$ = Rs 50

Selling price = MRP - Discount

Selling price = 250 -50 = Rs 200

19.

Sol. (c) $2x^2 - 4x$

Other binomial = $5x^2 - 6x - (3x^2 - 2x) = 5x^2 - 6x - 3x^2 + 2x = 2x^2 - 4x$

20.

Sol. (c) 22xy

Area of rectangle ABCD = (6x) (4y) = 24xy

$\Rightarrow$ Area of smaller rectangle = (2x)(y) = 2xy

$\Rightarrow$ Area of unshaded region = 24xy - 2xy = 22xy

21.

Sol. (a) 35 m

The breadth of Room (b) = 10m, Height (h) = 6m

The CSA of cuboidal Room = 540 m²

$\Rightarrow$ 2h (l + b) = 540 $\Rightarrow$ $2 \times 6(\ell + 10) = 540$ $\Rightarrow$ $\ell + 10 = \dfrac{540}{12} = 45$ $\Rightarrow l$ = 45 - 10 = 35

22.

Sol. (a) 0.2 m

Volume of water = 160m^3

⇒ Area of rectangular field = 800m^2

⇒ Area of base = 800

⇒ Let h be the height of water level in the field.

⇒ Now, volume of water volume of cuboid formed on the field by water.

⇒ Area of base × height = 160   ⇒ $800 \times h = 160$

⇒ $h = \dfrac{160}{800} = 0.2$ So,   required height = 0.2m

23.

Sol. (d) l = 10m, b = 6m, h = 4 m

Diagonal of cuboid = $\sqrt{\ell^2 + b^2 + h^2}$

Required length of the rod $= \sqrt{10^2 + 6^2 + 4^2} = \sqrt{100 + 36 + 16} = \sqrt{152} = \sqrt{2 \times 2 \times 38} = 2\sqrt{38}\text{m}$

24.

Sol. (b) $\dfrac{x^{-4}}{y^4}$

$\left(x^{-3} \times y^{-3}\right)^{\frac{2}{3}} \left(x^3 \times y^3\right)^{\frac{-2}{3}}$ $\Rightarrow x^{-3 \times \frac{2}{3}} \times y^{-3 \times \frac{2}{3}} \times x^{3 \times \frac{-2}{3}} \times y^{3 \times \frac{-2}{3}}$

$= x^{-2} \times y^{-2} \times x^{-2} \times y^{-2} = x^{-4} \times y^{-4} = \dfrac{x^{-4}}{y^4}$

25.

Sol. (d)

$3^x = \dfrac{1}{9} \Rightarrow 3^x = \left(\dfrac{1}{3}\right)^2$

or $3^x = 3^{-2}$

On comparing both sides, we get x = -2

26.

Sol. (c)

Because, in a fixed time interval, as the speed of a vehicle increases, the distance travelled by it also increases in the same ratio.

27.

Sol. (a)

If two quantities x and y vary directly with each other,

$\Rightarrow$ $x \propto y$, $x = k.y$ then $\dfrac{x}{y} = k =$ constant.

$\Rightarrow$ Since, in direct proportion, both x and y increases or decreases together such a manner that the ratio of their corresponding value remains constant.

28.

Sol. (c)

$$\frac{1}{5} : \frac{1}{x} = \frac{1}{x} : \frac{1}{125} \quad \Rightarrow \quad \frac{1}{x} \times \frac{1}{x} = \frac{1}{5} \times \frac{1}{125} \quad \Rightarrow \quad \frac{1}{x^2} = \frac{1}{625} \Rightarrow x^2 = 625 \Rightarrow x = 25$$

29.

Sol. (d) $(a - b - c)(a - b + c)$

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

$\Rightarrow$ $(a - b)^2 - c^2$ by using property $a^2 - b^2$

$\Rightarrow$ $(a - b - c)(a - b + c)$

30.

Sol. (b) $(3x + 4)(x + 2)$

$3x^2 + 10x + 8 = 3x^2 + 6x + 4x + 8 \qquad \Rightarrow 3x(x + 2) + 4(x + 2) = (x + 2)(3x + 4)$

PART - III : PHYSICS & CHEMISTRY

1.

Sol. (b) Statement I is true: Muscular force refers to the force generated by muscles, and when a batsman hits the ball, they are using their muscles to exert that force.

Statement II is false: In an electric bell, the hammer strikes the gong due to an electromagnetic force. This is not electrostatic force (which involves the attraction between charged particles).

Statement III is false: The attraction between hair and a comb during dry weather is due to static electricity, not magnetism.

Statement IV is True : The frictional force on ice is less due to smaller coefficient of friction.

2.

Sol. (c) When the pith ball makes contact with the highly charged sphere, it acquires the same type of charge as the sphere (positive in this case) and is thus repelled. When an earthed metal plate is brought close to the pith ball, the negative charges from the earth will be attracted to the plate, causing the plate to become negatively charged. The positively charged pith ball will be attracted to the negatively charged plate. Upon contact, the pith ball will be neutralized as the negative charges from the plate will flow into the pith ball.

3.

Sol. (a) A new planet orbiting between Saturn and Uranus would have a time period between the ~30 years of Saturn and the ~84 years of Uranus, meaning its time period would be greater than 30 years but less than 84 years. This is because the further a planet is from the Sun, the longer its orbital period (year) will be.

4.

Sol. (c) Statement 1 is true because a lighter pluck produces weaker vibrations, which create a feeble sound, while Statement 2 is false because the loudness of a sound is directly dependent on the amplitude of the vibrations. Therefore, the correct option is C. Statement 1 is true but statement 2 is false

5.

Sol. (b) The frequency of a sound wave is determined by its source only. As the wave propagates through different media, the frequency remains unchanged.

Velocity: The velocity of sound is dependent on the properties of the medium through which it travels.

Since the velocity changes and the frequency remains constant, the wavelength must also change to maintain the relationship $V = \lambda f$, where V = speed, λ = wavelength, f = frequency

Amplitude: The amplitude of a sound wave when a sound wave passes from one medium to another, can change as it enters the new medium due to partial absorption of energy.

6.

Sol. (d) The angle of incidence is defined as the angle between the incident ray and the normal to the mirror's surface. Therefore the angle of incidence = $90^0 - 20^0 = 70^0$

From the laws of reflection the angle of incidence is equal to the angle of reflection.

7.

Sol. (d) Mercury barometers measure air pressure by the height of the mercury column they support. A higher mercury column means the air pressure pushing down on the mercury in the tub is greater thus pushing the mercury higher in the column

8.

Sol. (a)   The maximum value of static friction is called limiting friction.

9.

Sol. (b)   To convert Fahrenheit to Celsius, we can use the formula:

$°C = (°F - 32) \times 5/9$

Putting in the given temperature of 77 degrees Fahrenheit:

$°C = (77 - 32) \times 5/9 °C = 45 \times 5/9) = 25°C$

Therefore, the equivalent temperature in Celsius is 25°C.

10.

Sol. (d)   Statement 1 is false because regular reflection occurs when parallel incident rays reflect off a smooth surface, parallel.

Statement 2 is false because diffused reflection (or irregular reflection) happens due to the irregularities of the surface, not due to the failure of the laws of reflection.

11.

Sol. (c)   Petroleum is separated by fractional distillation because its parts (like petrol, kerosene, and diesel) have different boiling points.

12.

Sol. (b)   The luminous zone contains unburnt carbon particles called soot, due to incomplete combustion. These deposit on the glass slide, forming a blackish ring.

13.

Sol. (c)   Heat produced per kg of fuel:

W : $110000 \div 2 = 55000$ kJ/kg

X : $100000 \div 4 = 25000$ kJ/kg

Y : $72000 \div 1.2 = 60000$ kJ/kg

Z : $12800 \div 3.2 = 4000$ kJ/kg

Maximum heat per kg is from Y, so maximum evaporation occurs in beaker III..

14.

Sol. (b) OH^- ions are negatively charged, so they move to the anode where they lose electrons and form O_2 gas.

15.

Sol. (b) Coal gas mainly contains hydrogen, methane, and carbon monoxide, not nitrogen. Nitrogen is present only in trace amounts and isn't a major component of coal gas.

16.

Sol. (a) Magnesium is more reactive than Zn, Al and Fe, so it reacts in all three test tubes. Only $FeSO_4$ solution shows a colour change because its green colour disappears

17.

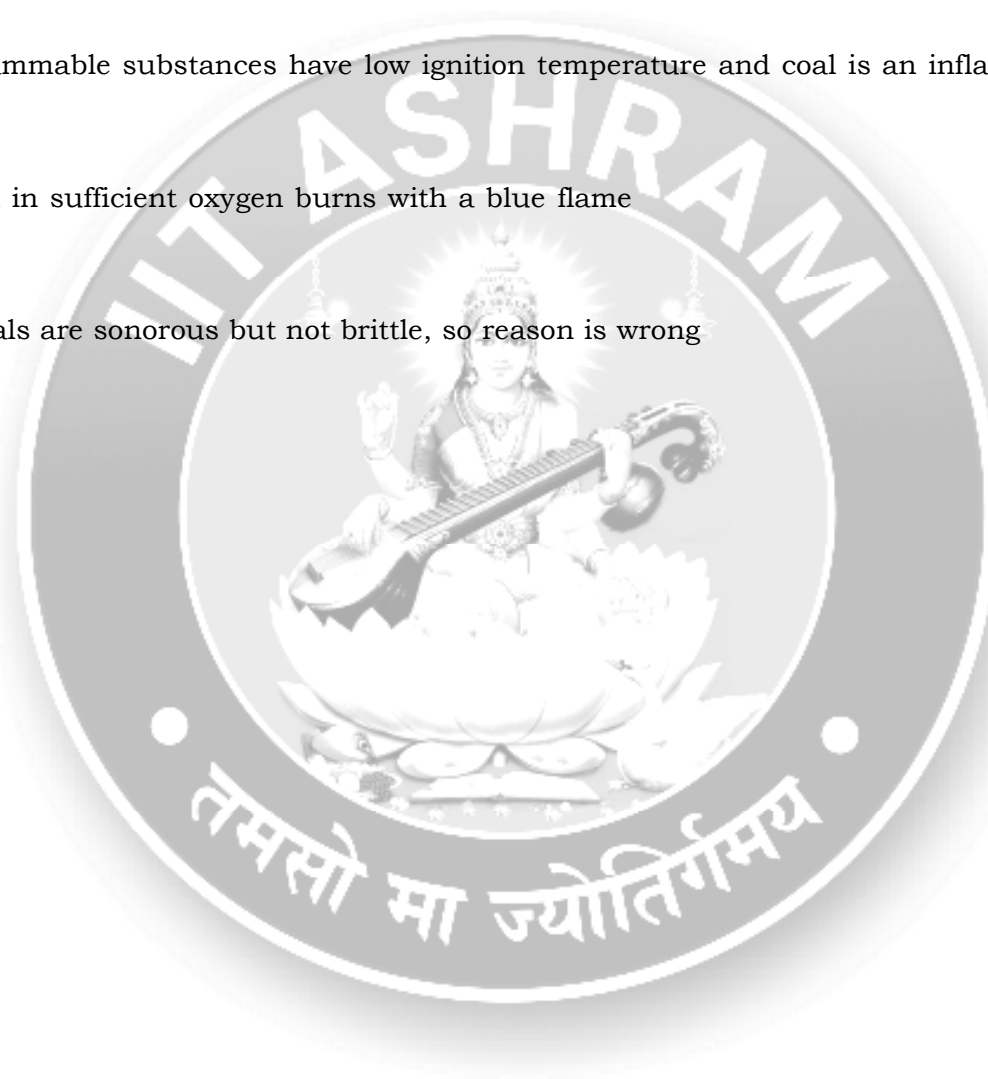**Sol. (d)** Nylon fibres are strong, absorb very little water, and are fairly elastic

18.

Sol. (c) Inflammable substances have low ignition temperature and coal is an inflammable

19.

Sol. (d) Fuel in sufficient oxygen burns with a blue flame

20.

Sol. (c) Metals are sonorous but not brittle, so reason is wrong

PART - IV : BIOLOGY

1.

Sol. (b)   More resistant to diseases

Hybrid crops are often bred to combine desirable traits such as higher yield, disease resistance, and better adaptability.

2.

Sol. (c)   Influenza

Influenza is a viral infection. Tuberculosis is caused by bacteria, malaria by protozoa, and ringworm by fungi.

3.

Sol. (c)   Ploughing

Ploughing loosens the soil and uproots weeds, preparing the field for sowing.

4.

Sol. (b)   Sperm

In humans, the male gamete is called sperm, and the female gamete is ovum.

5.

Sol. (a)   Adding neem leaves

Neem leaves have insect-repelling properties and help preserve grains from pest infestation.

6.

Sol. (b)   Yeast

Yeast (e.g. Saccharomyces cerevisiae) ferments the sugars in grapes to produce alcohol (wine).

7.

Sol. (b)   Fish

Fish release eggs and sperm into water, and fertilization occurs outside the body.

8.

Sol. (b)   Give birth to live young

Viviparous animals give birth to live offspring instead of laying eggs.

9.

Sol. (b)   Polyploidy involving different species

Allopolyploidy occurs when two different species interbreed and combine their chromosome sets.

10.

Sol. (c)   Pollination

Pollination is part of sexual reproduction in plants, while fragmentation, budding, and spore formation are asexual methods.