KHOJ-2025

Exam for Young Scientists..!

SCHOLARSHIPS up to ₹5 Crore

SCHOLARSHIP FOR HIGH ACHIEVERS AND NEEDY STUDENTS

SCIENCE APTITUDE TEST

CLASS - 10

SOLUTIONS

TEST CODE - 05

WhatsApp Channel

Result will be Declared on 14th Oct. 2025

Video Solutions will be available on
www.khoj.iitashram.com
They will also be available on the **IIT ASHRAM WhatsApp Channel.**
Just scan the QR codes below & never miss an update!

IIT Ashram
JEE MAIN | JEE ADVANCED | GUJCET | FOUNDATION

Drs' Ashram
NEET | GUJCET | FOUNDATION

ALKAPURI (H.O.) : UG – 1 to 2, Concorde Complex, Above PNB, R.C. Dutt Rd., Alkapuri, Vadodara.

M : 9081062221, 9033063029.

MANJALPUR - IIT ASHRAM : 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 : 9033063027 / 9033063028**

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. (c) 9 km
Net movement = 12 – 3 = 9 km south, and 4 – 4 = 0 km horizontally & displacement = 9 km.

2.

Sol. (c) 29
Sequence of prime numbers.

3.

Sol. (a) 7:25
Mirror tie = 11:60 – actual
11:60 – 4 : 35 = 7:25.

4.

Sol. (c)

5.

Sol. (c) 217
Pattern $n^3 - 1$: $2^3 - 1 = 7$, $3^3 - 1 = 26$, $4^3 - 1 = 63$, $5^3 - 1 = 124$, $6^3 - 1 = 215$
(not in option 217 misprint).

6.

Sol. (b) 110°
Minute hand = 20×6=120°.
Hour hand = 210 + 10 = 220°.
Difference = 100°.
(Correction 110° given option).

7.

Sol. (d)

8.

Sol. (b) NPPQ
Each letter +1.

9.

Sol. (c) 72
n = 3 $\rightarrow$ 3 × (3 + 3) = 18; n = 4
$\rightarrow$ 4 × 8 = 32; n = 5
$\rightarrow$ 5 × 10 = 50 $\rightarrow$ for 6 $\rightarrow$ 6 × 12 = 72.

10.

Sol. (b) Cousin.

11.

Sol. (c)

S + Q' and R + S means R is the grandfather of Q. Now P ÷ R means P is daughter of R. This clearly means P is aunt of Q

12.

Sol. (b)

13.

Sol. (a)
(i) 1, 4, 9, 16 [1^2, 1^3, 2^2, 2^3, 3^3.....]
(ii) 1, 8,, 64 mixed combination

14.

Sol. (b) Logic is in triangle the given number is sum of square root of outer numbers so answer is 11 + 9 + 10 = 30

15.

Sol. (d)

PART - II : MATHEMATICS

1.

Sol. (d) 12

$2520 = 2^3 \times 3^2 \times 5 \times 7$

on comparing a = 2 b = 5

So, $a + 2b = 2 + 2 \times 5 = 12$

2.

Sol. (b) $180a^3b^4$

$p = 18a^2b^4$

$q = 20a^3b^2$

p = 2 * 3 ^ 2 * a ^ 2 * b ^ 4

$q = 2^2 \times 5 \times a^3 \times b^2$

LCM (p, q) = $2^2 \times 3^2 \times 5a^3 \times b^4 = 180a^3b^4$

3.

Sol. (b)

$\alpha + \beta = -6$ and $\alpha\ \beta = 2$

$\therefore \quad \left(\frac{1}{\alpha}+\frac{1}{\beta}\right)=\frac{(\alpha+\beta)}{\alpha\beta}=\frac{-6}{2}=-3$

4.

Sol. (c) -36

p(-4) = 0 (since - 4 is root of p(x))

$(-4)^2 - 5(-4) + k = 0$

$\Rightarrow$ 16 + 20 + k = 0

$\Rightarrow$ 36 + k = 0

$\Rightarrow$ k = -36

5.

Sol. (c) 40 years

Let us assume the present age of men be x years

Also, the present age of his son be y years

According to question, after 5 years:

(x + 5) = 3 (y + 5)

x + 5 = 3y + 15

x - 3y = 10 ...(i)

Also, five years ago:

(x - 5) = 7 (y - 5)

x - 5 = 7y - 35

x - 7y = - 30 ...(ii)

Now, on subtracting (i) from (ii) we get:

- 4y = - 40

y = 10

Putting the value of y in (i), we get

$x - 3 \times 10 = 10$

x - 30 = 10

x = 10 + 30

x = 40

The present age of men is 40 years

6.

Sol. (a) 4, 8

Given equations are

2x + 3y = 7 and 2ax + (a + b)y = 28

For infinitely many solutions, we have

$\frac{2}{2a}=\frac{3}{a+b}=\frac{7}{28}$

$\Rightarrow$ 2a + 2b = 6a

$\Rightarrow$ 4a = 2b $\Rightarrow$ 2a = b ...(i)

Also, $\frac{2}{2a}=\frac{7}{28} \Rightarrow$ a = 4 ...(ii)

From (i) and (ii), we have

2(4) = b $\Rightarrow$ b = 8

7.

Sol. (a) 26

Let the digit at the units place be x.

The digit at the tens place is $\frac{12}{x}$

Original Number = $=10x\frac{12}{x}+x=\frac{120}{x}+x$

Reverse Number = $10 \times x + \frac{12}{x} = 10x + \frac{12}{x}$

Now, Reverse Number = Original Number + 36

$\Rightarrow \quad 10x+\frac{12}{x}=\frac{120}{x}+x+36$

$\Rightarrow \quad 9x+\frac{12}{x}=\frac{120}{x}-36=0$

$\Rightarrow \quad \frac{9x^2-108-36x}{x}=0$

$\Rightarrow$ $9x^2 - 36x - 108 = 0$

$\Rightarrow$ $x^2 - 4x - 12 = 0$

$\Rightarrow$ $x^2 - 6x + 2x - 12 = 0$

$\Rightarrow$ $x(x - 6) + 2(x - 6) = 0$

$\Rightarrow$ $(x - 6)(x + 2) = 0$

$\Rightarrow$ $x - 6 = 0$ or $x + 2 = 0$

$\Rightarrow$ $x = 6$ or $x = -2$ (But x cannot be -2)

Digit at the units place = 6

Digit at the tens place $= \frac{12}{6} = 2$

Thus, the original number = 26

8.

Sol. (a) pq

Let the roots of given quadratic equation be α and β.

On comparing equation $x^2 - (p - q)x + k = 0$ with $ax^2 + bx + c = 0$, we have

$a = 1, b = -(p + q), c = k$

We know that

$\Rightarrow \alpha + \beta = \frac{-b}{a}$

Put the value a and b

$\Rightarrow \alpha + \beta = \frac{p+q}{1}$

$\Rightarrow \alpha + \beta = p + q$ .....(i)

Given $\alpha = p$

Put the value of in equation (i),

$\Rightarrow$ $p + \beta = p + q$

$\Rightarrow \beta = q$

But we know that $\alpha.\beta = \frac{c}{a}$

Put the values $p.q = \frac{k}{1}$

Then, k = pq

9.

Sol. (c) 4

According to question, $a_3 = 16$

$a + 2d = 16$ ... (i)

$\Rightarrow$ And $a_7 = a_5 + 12$

$\Rightarrow$ $a + 6d = a + 4d + 12$

$\Rightarrow$ $a + 6d - a - 4d = 12$

$\Rightarrow$ $2d = 12$

$\Rightarrow$ $d = 6$

Putting value of d in eq. (i),

we get $a + 2 \times 6 = 16$

$\Rightarrow$ $a = 4$

10.

Sol. (c) 3

$\Rightarrow$ $a^2 = (3x^2 + 7) = 13$

$\Rightarrow$ $a^1 = (3x^1 + 7) = 10$

Common difference = $a_2 - a_1 = 13 - 10 = 3$

11.

Sol. (b) Similar but not congruent

$\angle L = \angle P$ (given)

$\angle N = \angle R$ (given)

$\Rightarrow$ $\Delta LMN \sim \Delta PQR$ (by AA Sim. rule)

But Not Congurent because given MN = 2QR i.e. Sides are proportional Not equal.

12.

Sol. (c) In ΔABC, $DE \| BC$

$\therefore \frac{AD}{DB} = \frac{AE}{EC}$

$\Rightarrow \frac{x+4}{x+3} = \frac{2x-1}{x+1}$

$\Rightarrow$ $(2x - 1)(x + 3) = (x + 4)(x + 1)$

$\Rightarrow$ $2x^2 + 6x - x - 3 = x^2 + x + 4x + 4$

$\Rightarrow$ $2x^2 + 5x - 3 = x^2 + 5x + 4$

$\Rightarrow$ $x^2 = 7 \Rightarrow x = \sqrt{7}$ $\left(\because x \neq \sqrt{7}\right)$

13.

Sol. (a) Distance between $(\cos\theta, \sin\theta)$ and $(\sin\theta, -\cos\theta)$

$= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(-\cos\theta - \sin\theta) + (\sin\theta - \cos\theta)}$

$= \sqrt{1+1} = \sqrt{2}$ $\{\sin^2\theta + \cos^2\theta = 1\}$

$\{\because \sin^2\theta + \cos^2\theta = 1\}$

14.

Sol. (b) 2 : 1

The centroid of a triangle is the centre of the triangle which is the point of intersection of all the three medians of the triangle and divides the median in the ratio 2 : 1 The median is a line drawn from the mid-point of a side to the opposite vertex.

15.

Sol. (a) $\frac{1}{2}\left(x+\frac{1}{x}\right)$

Given $\sec\theta + \tan\theta = x$ ...(i)

From identity $\sec^2\theta - \tan^2\theta = 1$

$\Rightarrow$ $(\sec\theta - \tan\theta)(\sec\theta + \tan\theta) = 1$

$\Rightarrow$ $(\sec\theta - \tan\theta)\, x = 1$

$\Rightarrow$ $\sec\theta - \tan\theta = \frac{1}{x}$.....(ii)

By adding (i) and (ii), we get

$2\sec\theta = x + \frac{1}{x} \Rightarrow \sec\theta = \frac{1}{2}\left(x+\frac{1}{x}\right)$

16.

Sol. (c)

Given: $9\sec^2A - 9\tan^2A$

$= 9(\sec^2A - \tan^2A)$

$= 9\times 1 = 9$ ... $[\sec^2\theta - \tan^2\theta = 1]$

17.

Sol. (c) Area of the sector $= \frac{\theta}{360^0}\times\pi r^2$

$5\pi = \frac{\theta}{360^0}\times\pi\times 5\times 5$

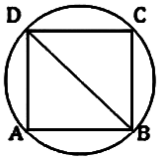
$\Rightarrow$ $\theta = \frac{5\pi}{\pi}\times\frac{360^0}{5\times 5}$

$\Rightarrow$ $\theta = 72^0$

Hence, sector angle = 72^0

18.

Sol. (c) 288 sq. cm



According to question, Diameter (BD) =

$2\times\text{radius} = 2\times 12 = 24$ cm

$\therefore$ Area of square

$= \frac{1}{2}\times d^2 = \frac{1}{2}\times 24\times 24 = 288$ sq.cm

19.

Sol. (c) 6 m

Curved surface area = 264 m^2

Volume = 924 m^3

Let r m be the radius and h m be the height of the cylinder.

Then we have:

$\Rightarrow$ $2\pi rh = 264$ and $\pi r^2h = 924$

$\Rightarrow$ $rh\frac{264}{2\pi}$

$\Rightarrow$ $h\frac{264}{2r\pi}$

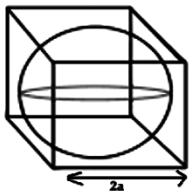
Now $\pi r^2h = \pi\times r^2\times\frac{264}{2r\times\pi} = 924$

$\Rightarrow$ $r = \frac{924\times 2}{264} = 7m$ $\therefore$

$h = \frac{264\times 7}{2\times 7\times 22} = 6m$

20.

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



$\therefore$ Spherical ball is inside the cubical box.

$\therefore$ diameter = 2

radius = a

Volume of sphere $= \frac{4}{3}\pi r^3$

Volume of sphere $= \frac{4}{3}\pi r^3$ cubic units.

21.

Sol. (d) 13

We know that

3 Median= Mode + 2 Mean

$3 \times 11 = \text{Mode} + 2 \times 10$

33 - 20 = Mode

Mode = 13

22.

Sol. (b) Mode = 3 Median - 2 mean

In case of a moderately skewed distribution, the difference between mean and mode is almost equal to three times the difference between the mean and median. Thus, the empirical mean median mode relation is given as:

Mean – Mode = 3 (Mean – Median)

i.e, Mode = 3 Median - 2 Mean

23.

Sol. (a)

$$\text{Probability} = \frac{\text{Number of favorable outcomes}}{\text{Total number of possible outcomes}}$$

Number of favorable outcomes = 2 (red kings)

Total number of possible outcomes = 52 (total cards in the deck)

$$\text{Probability} = \frac{2}{52} = \frac{1}{26}$$

Therefore, the probability of drawing a red king is $= \frac{1}{26}$.

24.

Sol. (c) 14

Probability of getting bad eggs

$$= \frac{\text{No. of bad eggs}}{\text{Total no. of eggs}}$$

$\Rightarrow 0.035 = \frac{\text{No. of bad eggs}}{400}$

$\Rightarrow$ No. of bad eggs $= 0.035 \times 400 = 14$

25.

Sol. (d)

Since, PA and PB are tangents.

Also, tangent is perpendicular to radius at the point of contact.

$\Rightarrow \angle PAO = 90^0$ and $\angle PBO = 90^0$

In quadrilateral APBO;

$\Rightarrow \angle APB + \angle PAO + \angle PBO + \angle AOB = 360^0$

$\Rightarrow 80^0 + 90^0 + 90^0 + \angle AOB = 360^0$

$\Rightarrow \angle AOB = 100^0 \Rightarrow \angle AQB = \frac{1}{2}\angle AOB = 50^0$

26.

Sol. (b)

$S_{10}=100$

$S_{20} - S_{10} = 300 \Rightarrow S_{20} = 400$

Formula: $S_n = \frac{n}{2}[2a+(n-1)d]$

1. $S_{10} = \frac{10}{2}[2a+9d] = 5(2a+9d) = 100$

$\Rightarrow$ 2a + 9d = 20 (1)

2. $S_{20} = \frac{20}{2}[2a+19d] = 10(2a+19d) = 400$

$\Rightarrow$ [2a + 9d] = 5(2a + 9d) = 100

Subtract (2) – (1):

(2a + 19d) - (2a + 9d) = 40 - 20

$\Rightarrow$ 10d = 20 $\Rightarrow$ d = 2

27.

Sol. (d)

Square both sides

$(\sin\theta + \cos\theta)^2 = (\sqrt{2})^2$

$\sin\theta^2 + \cos\theta^2 + 2\sin\theta\cos\theta = 2$

$1+2\sin\theta + \cos\theta = 2$

$2\sin\theta\ \cos\theta = 1$

$\sin\theta\ \cos\theta = \frac{1}{2}$

Step 2: Use identity of $\tan\theta + \cos\theta$

$\tan\theta + \cos\theta = \frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}$

$= \frac{\sin^2\theta+\cos^2\theta}{\sin\theta\cos\theta} = \frac{1}{\sin\theta\cos\theta} = \frac{1}{\frac{1}{2}} = 2$

Step 3: Square root $\sqrt{\tan\theta + \cos\theta} = \sqrt{2}$

28.

Sol. (a)

Let 'a' be the first term and d be the common difference of A.P.

Using the given information, we have

$\frac{S_m}{S_n} = \frac{m^2}{n^2}$

$\therefore \frac{\frac{m}{2}[2a+(m-1)d]}{\frac{n}{2}[2a+(n-1)d]} = \frac{m^2}{n^2}$

$\Rightarrow \frac{2a + (m-1)d}{2a + (n-1)d} = \frac{m}{n}$

$\Rightarrow$ 2an + (mn - n)d = 2am + (mn - m)d

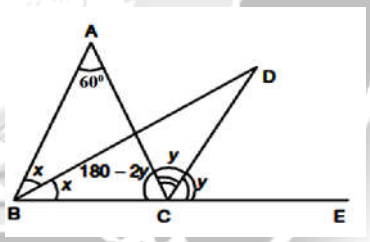
$\Rightarrow$ 2an-2am = (mn-m-mn + n)d

$\Rightarrow$ 2a(n - m) =(n-m)d $\Rightarrow$ d=2a,

[n -m $\neq$ 0, as n $\neq$ m]

29.

Sol. (a)



Given, $\angle BAC = 60^0$

Let $\angle ABC = 2x$ and $\angle ACE = 2y$

Therefore

$\angle DBC = x$, $\angle ACD = y$ and

$\angle ACB = 180^0 - 2y^0$

In ΔABC

$\angle ABC + \angle BCA + \angle CAB = 180^0$

$2x + (180^0 - 2y) + 60^0 = 180^0$

$2x - 2y = -60 \Rightarrow y - x = 30$

In ΔBCD

$\angle BDC + \angle DCB + \angle CBD = 180^0$

$\angle BDC + (180 - y) + x = 180^0$

$\angle BDC = y - x$

$\angle BDC = 30^0$

30.

Sol. (d)

Suppose the coordinates of parallelogram ABCD are A(1, 2) B(4, y) C(x,6) and D(3, 5) respectively. Then by the properties of parallelogram, diagonals AC and BD intersect at point O. Let's bifurcate.

$\Rightarrow$ Therefore, O is the mid-point of AC and BD.

$\Rightarrow$ Coordinates of mid-point of AC = Coordinates of mid-point of BD

$\Rightarrow$ $x = \frac{x+1}{2} = \frac{4+3}{2}$

$\Rightarrow$ $x + 1 = 7$

If O is the mid-point of BD, then the coordinates of O are

$\Rightarrow$ $y = \frac{y+5}{2} = \frac{6+2}{2} \Rightarrow y + 5 = 6 \Rightarrow y = 3$

Since both the coordinates are of the same point O,

$\Rightarrow$ $x = 6$ and $y = 3$

PART - III : PHYSICS & CHEMISTRY

1.

Sol. (a) 45 m s^{-1}

area of speed time graph gives distance covered

v–t graph is a triangle of base 140 s and height 90 m s^{-1}.

Area = ½ × 140 × 90 = 6300 m (distance).

Average speed = total distance / total time = 6300 / 140 = 45 m s^{-1}.

2.

Sol. (d) 1 : 6

$$R \propto \frac{1}{A} \Rightarrow \frac{l^2}{lA} \Rightarrow R \propto \frac{l^2}{V}$$

Ratio of length is 1 : 3

$\therefore$ ratio of l^2 is $(1 : 3)^2$

ratio of volume is 2 : 3

$\therefore$ ratio of R = $\frac{\frac{1}{9}}{\frac{2}{3}} = \frac{1}{6}$

3.

Sol. (d) 15 cm

If object and mirror move 5 cm towards each other (each), separation between mirror and object reduces by 10 cm. As mirror also moves 5 cm towards the object hence the image shifts by 15 cm from its original position.

4.

Sol. (b) 0.33 D (H ≈ 1/3 D)

Far point = 3 m (myopia).

Required concave lens power

P ≈ –1/(far point in m)

P = –1/3 H – 0.33 D.

5. (c) $f_v < f_g < f_y$

Shorter wavelengths (violet) refract more (higher n) and converge at a shorter distance from the optical centre of the length larger wavelengths (yellow) refract less and converge at a greater distance from the optical centre of the length

So $f_v < f_g < f_y$.

6. (c) Hz

Unit of Frequency is hertz (Hz) = s^{-1}.

7. (a) 0 (Zero)

For normal incidence

$\Rightarrow$ angle of incidence = 0

$\Rightarrow$ when ray of light is incident normal to the surface, there is no refraction (bending of light) therefore angle of refraction = 0.

8.

Sol. (c) violet and blue lights get scattered more than lights of all other colours by the atmosphere.

Rayleigh scattering $\propto 1/\lambda^4$ so shorter wavelengths (blue/violet) scatter more and our eyes are more sensitive to blue colour.

$\Rightarrow$ sky appears blue.

9.

Sol. (a) R/4

Original R = ρL/A. New length = L/2,

volume constant LA = L ′A′ or $LA = \frac{L}{2} \times A'$

$\Rightarrow$ A’ = 2A.

R’ = ρ(L/2)/(2A) = ρL/(4A) = R/4.

10.

Sol. (b) 14 Ω

20 , 30 and 60 are in parallel which gives equivalent resistance of 10 Ω

The 24 Ω and 8 Ω resistance are shorted and hence donot effect the overall resistance of the circuit.

Now 3 Ω, 10 Ω and 1 Ω are in series connection and Rnet = 14 Ω.

11.

Sol. (c) Oxidation state of Iodine is +5

12.

Sol. (c) Haemetite is an ore of Fe

13.

Sol. (b) The atomic mass of proton is 1.6×10^{24} g

14.

Sol. (d) $\rightarrow$ A = n + P, n = A – P = 37 – 17 = 20

15.

Sol. (b)

$$\text{Arg At. mass} = \frac{60\times69+71\times40}{60+40} = \frac{6980}{100} = 69.8\ \text{u}$$

16.

Sol. (a) K.U.E = 1×10^{-14}

17.

Sol. (b)

$Zn + 2NaOH \rightarrow Na_2ZnO_2 + H_2$

Conc. So.Zincate Hydrogen

18.

Sol. (b)

$[OH^-] = 0.00001\ M = 1 \times 10^{-5}\ M$

$\Rightarrow$ $pOH = -\log[1 \times 10^{-5}] = 5$

$\Rightarrow$ $pH + pOH = 14$

$\Rightarrow$ $pH = 14 - 5 = 9$

19.

Sol. (c)

$$n = \frac{w}{M} = \frac{10}{100} = 0.1\text{mole}$$

No. of formula units = mole $\times N_A$

$= 0.1 \times 6.022 \times 10^{23} = 6.022 \times 10^{22}$

20.

Sol. (b)

The arrangement of reactivity of metals in decreasing order:

Al > Zn > Pb > Cu > Ag

PART - IV : BIOLOGY

1.

Sol. (a) 1-D, 2-C, 3-A, 4-B
Auxins are key for cell elongation and tropisms (D). Gibberellins promote stem elongation and seed germination (C). Cytokinins promote cell division (A). Abscisic acid is a growth inhibitor (B).

2.

Sol. (a) 1-D, 2-A, 3-C, 4-B
Aorta is the main artery that distributes oxygenated blood from the heart to the body (D). The Vena Cava is the large vein that collects deoxygenated blood and returns it to the heart (A). The Left Ventricle pumps oxygenated blood to the body (C). The Right Ventricle pumps deoxygenated blood to the lungs (B).

3.

Sol. (a) The testes are located in the scrotum, outside the body cavity, to maintain a temperature about 2-3°C lower than the body temperature, which is optimal for sperm production (A). Fertilization typically occurs in the fallopian tubes after the egg is released (B). Ovulation occurs mid-cycle, not at the end (C). The amniotic sac, not the placenta, contains amniotic fluid (D).

4.

Sol. (d) In light, photosynthesis > respiration, so oxygen released compensates both plant's and mouse's needs.
At night, photosynthesis stops but plant + mouse continue respiration oxygen decreases quickly.
Hence, survival is possible in the day but not at night.

5.

Sol. (a) The assertion is correct; the nucleoid is not a true nucleus. The reason correctly explains why: it's a region of genetic material that lacks a surrounding membrane, which is the defining characteristic of a true nucleus.

6.

Sol. (a) The assertion is correct. The reason is a direct and accurate explanation of the assertion. The thin, moist walls of the alveoli and their immense number create a very large surface area for rapid gas exchange, which is the core function of the lungs.

7.

Sol. (d) Guard cells control the opening and closing of the stomata. Stomata are the pores on the leaf surface responsible for the exchange of gases like carbon dioxide and oxygen. If the guard cells were permanently flaccid (closed), gaseous exchange would be severely limited, affecting photosynthesis.

8.

Sol. (d) The seminiferous tubules produce sperm, but the epididymis is a highly coiled tube attached to the testes where sperm are stored and mature.

9.

Sol. (d) Hand withdrawal $\rightarrow$ spinal reflex (fast, involuntary).
Heartbeat increase $\rightarrow$ adrenaline release (hormonal) + nervous stimulation.
Sweating $\rightarrow$ controlled by hypothalamus + sweat glands (hormonal).
Flushing/redness $\rightarrow$ due to vasodilation (adrenaline effect, hormonal).

10.

Sol. (a) Statements I, III, and IV are all correct. Statement II is incorrect; the primary function of stomata is gaseous exchange for photosynthesis and transpiration, not water absorption. Plants absorb water through their roots.