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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

CLASS - 10

Question Paper Code : 1O119

KEY

1. B	2. C	3. A	4. D	5. C	6. A	7. A	8. A	9. D	10. D
11. C	12. B	13. C	14. A	15. D	16. B	17. C	18. B	19. D	20. C
21. D	22. A	23. C	24. D	25. A	26. B	27. A	28. B	29. B	30. C
31. C	32. D	33. B	34. A	35. B	36. C	37. C	38. C	39. C	40. A
41. C	42. B	43. B	44. D	45. D	46. A	47. B	48. B	49. D	50. D
51. C	52. B	53. B	54. B	55. C	56. A	57. C	58. C	59. D	60. A

SOLUTIONS

MATHEMATICS

01. (B) Given $\sqrt{63} = 3\sqrt{7}$

$\sqrt{175} = 5\sqrt{7}$

$\therefore S_n = \sqrt{7} + 3\sqrt{7} + 5\sqrt{7} + ...$

$= \sqrt{7}(1 + 3 + ...)$

$= n^2\sqrt{7}$

02. (C) Given (–1) is the zero of $p(x) = x^3 + ax^2 + bx + c$

$p(-1) = (-1)^3 + a(-1)^2 + b(-1) + c = 0$

$-1 + a - b + c = 0$

$c = (b - a + 1)$

But $\alpha\beta\gamma = \frac{-c}{a}$

$\Rightarrow \quad -1 \times \beta r = \frac{-(b - a + 1)}{1}$

$\therefore \quad \beta r = (b - a + 1)$

03. (A) Given $\frac{x + y}{xy} = \frac{5}{6} \Rightarrow \frac{1}{y} + \frac{1}{x} = \frac{5}{6}$

$\Rightarrow a + b = \frac{5}{6} \rightarrow (1)$

where $\frac{1}{y}$ = a & $\frac{1}{x}$ = b

Given $\frac{x-y}{xy} = \frac{1}{6} \Rightarrow \frac{1}{y} - \frac{1}{x} = \frac{1}{6}$

$\Rightarrow$ a + b = $\frac{1}{6}$ $\rightarrow$ (2)

eq (1) + (2) $\Rightarrow$ 2a = 1

$\Rightarrow$ a = $\frac{1}{2}$ & b = $\frac{1}{3}$

$\therefore x = 2$ & $y = 3$

04. (D) 2 + 8 = – a $\Rightarrow$ a = –10

3 × 3 = b $\Rightarrow$ b = 9

$\therefore x^2 - 10x + 9 = 0$

x = 9 (or) 1

05. (C) Given 4P – 1, 4P + 1.5, 5P are in AP

$\therefore$ 4P + 1.5 – 4P + 1 = 5P – 4P – 1.5

2.5 = P – 1.5

P = 4

$\therefore$ 4P + 1.5 = 4 × 4 + 1.5 = 17.5

06. (A) $(2mc)^2 = 4(1 + m^2)(c^2 - a^2)$

$\cancel{4}\ m^2c^2 = \cancel{4}\ (1 + m^2)(c^2 - a^2)$

$\cancel{m^2c^2} = c^2 - a^2 + \cancel{m^2c^2} - m^2a^2$

$c^2 = a^2 + m^2a^2 = a^2(1 + m^2)$

07. (A) Breadth = radius = $\frac{14\text{ cm}}{2}$ = 7 cm

Area of $\Delta ABD = \frac{1}{2} \times 7\text{ cm} \times 14\text{ cm}$

= 49 cm^2

Area of unshaded part of $\Delta ABD = \frac{1}{2} \times$

$7 \times 7\ cm^2 - \frac{45°}{360°} \times \frac{22}{7} \times 7 \times 7\ cm^2$

= 24.5 cm^2 – 19.25 cm^2

= 5.25 cm^2

Area of shaded region = Area of ΔABD – Area of unshaded part of ΔABD

= 49 cm^2 – 5.25 cm^2

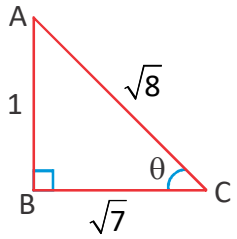
= 43.75 cm^2

08. (A) In ΔABC, $\angle B = 90°$

$AC^2 = AB^2 + BC^2 = 1 + 7 = 8$

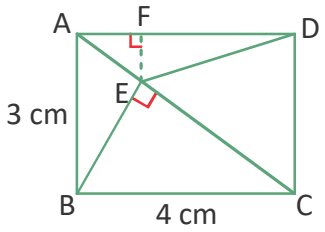
$\Rightarrow$ AC = $\sqrt{8}$

$\therefore \frac{\text{cosec}^2\theta - \sec^2\theta}{\text{cosec}^2\theta + \sec^2\theta} = \frac{8 - \frac{8}{7}}{8 + \frac{8}{7}} = \frac{8 \times 6}{8 \times 8} = \frac{3}{4}$



09. (D) Const:- EF $\perp$ AD

Proof :- $\Delta ABE \sim \Delta ACB$ [$\because$ A.A.A similarity]



$\therefore \frac{AB}{AC} = \frac{BE}{BC} = \frac{AE}{AB}$

$\frac{3\text{ cm}}{5\text{ cm}} = \frac{BE}{4\text{ cm}} = \frac{AE}{3\text{ cm}}$

AE = $\frac{9}{5}$ cm

$\Delta AEF \sim \Delta ACD$ [$\because$ A. A. A similarity]

$\therefore \frac{AE}{AC} = \frac{EF}{CD}$

$\frac{\frac{9}{5}\text{ cm}}{5\text{ cm}} = \frac{EF}{3\text{ cm}}$

EF = $\frac{27}{25}$ cm

Area of $\Delta AED = \frac{1}{2} \times AD \times EF$

$= \frac{1}{2} \times 4 \times \frac{27}{25}\ cm^2 = \frac{54}{25}\ cm^2$

10. (D) Given $a_p = a + (p-1)d = q$

$\Rightarrow a + pd - d = q \rightarrow 1$

Given $a_q = a + qd - d$

$= p \rightarrow 2$

eq (1) – eq (2)

$\Rightarrow (a + pd - d) - (a + qd - d) = q - p$

$\Rightarrow \cancel{a} + pd - \cancel{d} - \cancel{a} - qd + \cancel{d} = -p + q$

$d(p - q) = -(p - q)$

$d = -1$

$a + (p-1)(-1) = q \rightarrow 1$

$a - p + 1 = q$

$\therefore a = (p + q - 1)$

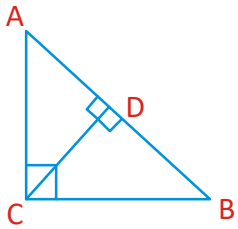
$\therefore a_{pq} = a + (pq - 1)d$

$= (p + q - 1) + (pq - 1)(-1)$

$= p + q - \cancel{1} - pq + \cancel{1}$

$= p + q - pq$

11. (C) $\Delta ADC \sim \Delta CDB \sim \Delta ACB$



[A. A similarity]

$\therefore \Delta ADC \sim \Delta ACB \Rightarrow \frac{AD}{AC} = \frac{AC}{AB}$

$\Rightarrow AC^2 = AB \times AD \rightarrow 1$

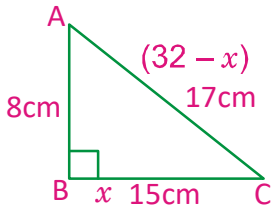
$\therefore \Delta CDB \sim \Delta ACB \Rightarrow \frac{CD}{AC} = \frac{BD}{BC} = \frac{BC}{AB}$

$\Rightarrow BC^2 = AB \times BD \rightarrow 2$

$\therefore \frac{BC^2}{AC^2} = \frac{\cancel{AB} \times DB}{\cancel{AB} \times AD} = \frac{DB}{AD}$

12. (B) Let BC be x cm

$\Rightarrow AC = (32 - x)$ cm



Given $\angle B = 90° \Rightarrow AC^2 = AB^2 + BC^2$

$\Rightarrow (32 - x)^2 = 8^2 + x^2$

$\Rightarrow 1024 + x^2 - 64x = 64 + x^2$

$1024 + \cancel{x^2} - 64x = 64 + \cancel{x^2}$

$1024 - 64 = 64x$

$64x = 960$

$x = \frac{\cancel{960}^{\cancel{120}^{15\ cm}}}{\cancel{64}_{\cancel{8}_1}} = 15$ cm

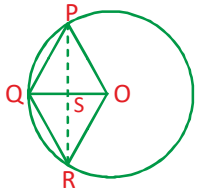
$\therefore$ AC = 32cm – 15cm = 17cm

$\therefore \sin A + \cos C = \frac{BC}{AC} + \frac{BC}{AC} = \frac{2BC}{AC}$

$= \frac{2 \times 15cm}{17cm} = \frac{30}{17}$

13. (C) In ΔPOQ, PO = OQ = r cm

and OP = PQ $\Rightarrow \Delta$ POQ is an equilateral triangle.



Area of Δ POQ = $\frac{1}{2}$ area of rhombus

$= \frac{1}{2} \times 32\sqrt{3}\ cm^2$

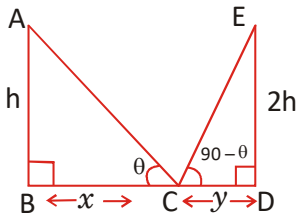
$\frac{\sqrt{3}}{4}$ $r^2 = 16\sqrt{3}$ cm^2

$r^2 = 16\sqrt{3} \times \frac{4}{\sqrt{3}}$ cm^2

$r = \sqrt{64}$

r = 8 cm

14. (A) Given $\angle ACB + \angle DCE = 90°$



Let $\angle ACB = \theta \Rightarrow \angle DCE = (90° - \theta)$

$\therefore \tan\theta = \frac{h}{x} \to 1$

$\tan(90 - \theta) = \frac{2h}{y}$

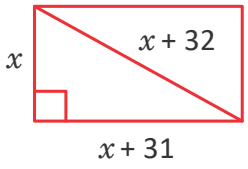
$\therefore \cot\theta = \frac{2h}{y} \to 2$

eq 1 × 2 $\Rightarrow \tan\theta \times \cot\theta = \frac{h}{x} \times \frac{2h}{y}$

$1 = \frac{2h^2}{xy}$

$2h^2 = xy$

15. (D) Let the breadth be x metres



Given $l = (x + 31)$m & $\sqrt{l^2 + b^2}$

$= (x + 32)$m

$\therefore x^2 + (x + 31)^2 = (x + 32)^2$

$x^2 + x^2 + 62x + 961 = x^2 + 64x + 1024$

$x^2 - 2x - 63 = 0$

$x^2 - 9x + 7x - 63 = 0$

$x(x - 9) + 7(x - 9) = 0$

$x = 9$ (or) $x = -7$

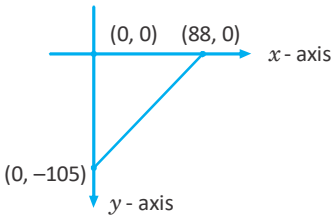
$\therefore$ breadth = 9m & length = x + 31

= 40m

Area = 9 × 40 m^2 = 360 m^2

16. (B) If x = 0 then 105(0) – 88y = 9240

$\therefore y = \frac{9240}{-88} = -105$



$\therefore$ x = 0 line and $105x - 88y = 9240$ line intersects at (0, –105)

If y = 0 then $105x - 88(0) = 9240$

$x = \frac{9240}{105} = 88$

$\therefore y = 0$ line and $105x - 88y = 9240$ intersects at (88, 0)

$x = 0$ line and $y = 0$ line intersects at (0, 0)

$\therefore$ Area of the triangle with vertices

(88, 0), (0, 0) and (0, –105)

$= \frac{1}{2}\left|88(0+105) + 0(-105-0) + 0(0-0)\right|$

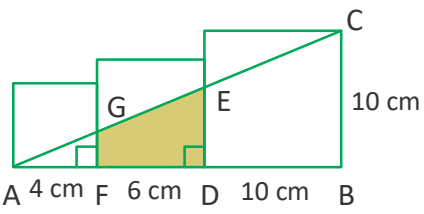
$= \frac{1}{2} \times 88 \times 105 = 4620$ unit^2

17. (C)

$$\begin{array}{r} 0.75 \overline{)\,2.25\,(\,3} \\ \underline{2.25} \\ (0) \end{array}$$

$$\begin{array}{r} 0.75 \overline{)\,3.15\,(\,4} \\ \underline{3} \\ 0.15 \overline{)\,0.75\,(\,5} \\ \underline{0.75} \\ (0) \end{array}$$

18. (B)



Δ ADE $\sim \Delta$ ABC

(Angle and Angle similarily)

$\therefore \frac{AD}{AB} = \frac{DE}{BC}$

$\frac{10\,cm}{20\,cm} = \frac{DE}{10\,cm}$

DE = 5 cm

Δ AFG $\sim$ Δ ADE

(Angle and Angle similarily)

$\frac{AF}{AD} = \frac{FG}{DE}$

$\frac{4\,cm}{10\,cm} = \frac{FG}{5\,cm}$

$\therefore$ FG = 2 cm

Area of the shaded region

$= \frac{1}{2}$ FD(FG + DE)

$= \frac{1}{2} \times 6\,cm(2 + 5)\,cm = 21\,cm^2$

19. (D) Let the rate of the man in still water

= x Km. / hr.

Relative rate of man down stream

= $(x + 2)$ Km./ hr.

Relative rate of man upstream

= $(x - 2)$ km./ hr.

Distance from A to B = 30 Km

Time taken for the down journey

$= \frac{30}{x-2}$ hrs.

Time taken fo the upward journey

$= \frac{30}{x-2}$ hrs.

Total time taken for both journeys = 8 hrs.

Total time takne for both journeys = 8 hrs.

$\Rightarrow \frac{30}{x+2} + \frac{30}{x-2} = 8$

$\frac{30(x-2)+30(x+2)}{(x+2)(x-2)} = 8$

$\frac{30x - \cancel{60} + 30x + \cancel{60}}{x^2 - 4} = 8$

$\frac{60x}{x^2 - 4} = 8$

$8x^2 - 32 = 60\,x$

$\Rightarrow 8x^2 - 60x - 32 = 0$

$\Rightarrow 2x^2 - 15x - 8 = 0$

$2x^2 - 16x + x - 8 = 0$

$2x(x - 8) + 1(x - 8) = 0$

$(x - 8)(2x + 1) = 0$

$x - 8 = 0$ $\quad\quad$ $\therefore x = 8$ or

$2x + 1 = 0$ $\quad\quad$ $\therefore x = -\frac{1}{2}$

The negative value of x is neglected

Hence x = 8

$\therefore$ Rate of the man in still water = 8 Km./ hr.

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

$= \sqrt{(a\cos\theta + b\sin\theta - 0)^2 + (a\sin\theta - b\cos\theta - 0)^2}$

$= \sqrt{a^2\cos^2\theta + b^2\sin^2\theta + \cancel{2ab\sin\theta\cos\theta} + a^2\sin^2\theta + b^2\cos^2\theta - \cancel{2ab\sin\theta\cos\theta}}$

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

$= \sqrt{a^2 + b^2}$

21. (D) Cos 30° cos 45° – sin 30° sin 45°

$= \frac{\sqrt{3}}{2}\left(\frac{1}{\sqrt{2}}\right) - \frac{1}{2}\left(\frac{1}{\sqrt{2}}\right)$

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

$= \frac{\sqrt{2}\left(\sqrt{3}-1\right)}{4} = \frac{\sqrt{6}-\sqrt{2}}{4}$

22. (A) Given = $4\pi r^2$ = 50 paise = Rs 2,772

$= 4 \times \frac{22}{\cancel{7}_1} \times \frac{1}{2} \times r^2$ = Rs 2,772

r^2 = Rs 2,772 $\times \frac{7}{44}$

$r = \sqrt{63 \times 7} = \sqrt{441} = 21$

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

$= \frac{4}{3} \times \frac{22}{7} \times 21 \times 21 \times 21$

= 38,808 cm^3

23. (C) Given both roots are equal

$\therefore$ b2 – 4ac = 0

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$= \frac{-b \pm \sqrt{0}}{2a} = \frac{-b}{2a}$

24. (D) Area of the path = $\frac{3}{\cancel{5}_1} \times 100 \times 60^{12}$ m^2

= 3600 m^2

Let width of the path be x metres

$\therefore$ Total area = (100 + 2x)(60 + 2x)

= 6000 + 3600

6000 + 200x + 120x + 4x^2 = 9600

4x^2 + 320x = 3600

$x^2 + 80x = \frac{\cancel{3600}}{\cancel{4}} 900$

x^2 + 90x – 10x – 900 = 0

$x(x + 90) - 10(x + 90) = 0$

$\therefore$ x = – 90 (or) x = 10

$\therefore$ Width of the path = (x) = 10 m

25. (A) The given equations are

$\frac{1}{2(2x+3y)} + \frac{12}{7(3x-2y)} = \frac{1}{2}$ .....(i)

$\frac{7}{(2x+3y)} + \frac{4}{(3x-2y)} = 2$ .....(ii)

Putting $\frac{1}{(2x+3y)}$ = u and $\frac{1}{(3x-2y)}$

= v, the given equations become

$\frac{u}{2} + \frac{12v}{7} = \frac{1}{2} \Rightarrow$ 7u + 24v = 7 .....(iii)

and, 7u + 4v = 2 ..... (iv)

On subtracting (iv) from (iii), we get

20 v = 5

$v = \frac{5}{20} = \frac{1}{4}$

$\Rightarrow \frac{1}{(3x-2y)} = \frac{1}{4} \quad \left[\because v = \frac{1}{(3x-2y)}\right]$

$\Rightarrow 3x - 2y = 4$ ..... (v)

Putting v = $\frac{1}{4}$ in (iii), we get

7u + 24 $\times \frac{1}{4}$ = 7

7u = (7 – 6) = 1

$u = \frac{1}{7}$

$\Rightarrow \frac{1}{(2x+3y)} = \frac{1}{7} \quad \left[\because u = \frac{1}{(2x+3y)}\right]$

$\Rightarrow 2x + 3y = 7$ ..... (vi)

Multiplying (v) by 3, (vi) by 2 and adding the results, we get

13x = 26 $\Rightarrow$ x = 2

PHYSICS

26. (B) When light passes through a glass slab with plane parallel surfaces, it undergoes refraction twice

From air to glass (bends towards the normal)

From glass back to air (bends away from the normal)

A key property of a glass slab with parallel faces is

The emergent ray is parallel to the incident ray.

Because the two surfaces are parallel

The angle of refraction at the first surface becomes the angle of incidence at the second surface.

The bending at the second surface exactly cancels the bending at the first surface.

Hence, the angle of emergence equals the angle of incidence, regardless of the refractive index (as long as the slab faces are parallel).

Angle of emergence

= Angle of incidence = 30°

27. (A) During sunset, sunlight has to travel through a greater thickness of Earth's atmosphere. Due to Rayleigh scattering, shorter wavelengths (blue and violet) are scattered away in all directions, while the longer wavelength (red) reaches the observer. Hence, the Sun appears reddish.

(B) Incorrect — blue and violet light are scattered away, not intensified.

(C) Incorrect — the Sun's temperature does not change at sunset.

(D) Incorrect — the reddish colour is not due to cloud reflection.

28. (B) In the circuit, the 6 O resistor (at point Q) and the 4 O resistor (at point R) are connected in parallel.

In a parallel combination, the voltage across each branch is the same.

Current through a branch is given by

$I = \frac{V}{R}$.

Therefore, the branch with higher resistance carries less current.

Since:

Resistance at $Q = 6\Omega$

Resistance at $Q = 4\Omega$

$I_Q < I_R$

Points P and S lie in the main series path, where the total current flows, which is greater than the current in any single parallel branch.

Hence, the least current flows at point Q.

29. (B) In an astigmatic eye, the cornea is not perfectly spherical; it has different curvatures in different meridians (planes). This causes light rays to focus at multiple points instead of a single point on the retina, leading to blurred or distorted vision, as shown in the diagram.

Option A is wrong : Cornea is not simply thinner; thickness is not the issue.

Option C is wrong : The cornea is not shifted from the optical axis.

Option D is wrong : The focal length varies in different directions, not uniformly shorter.

30. (C) When the key K is open, the circuit is incomplete, so no current flows through the long straight conductor.

- A magnetic field due to a current-carrying conductor is produced only when current flows.
- Since there is no current, the conductor does not contribute any magnetic field at point O.
- The magnetic field present at point O is therefore only due to the Earth's magnetic field, not the conductor.

Hence, the magnetic field at point O is independent of the conductor when the key is open.

31. (C) Refractive index (μ) indicates how much a medium slows down light and bends it. A higher refractive index means light travels slower and bends more towards the normal when entering from air. Since $\mu_a < \mu_\beta < \mu_c$ medium C has the highest refractive index, so the ray bends most in medium C.

32. (D) Sheela cannot read a newspaper when it is closer than 100 cm, which means her near point is farther than the normal near point (25 cm). This indicates hypermetropia (long-sightedness).

To correct this, a convex lens is used so that an object at 25 cm appears to be at her near point (100 cm).

$$\text{Powre} = \frac{1}{0.25} - \frac{1}{1.0} = 4 - 1 = +3\text{D}$$

Hence, a + 3 D convex lens is required.

33. (B) A phone charger contains a transformer that operates on alternating current. Even when no phone is connected, AC in the primary coil produces a continuously changing magnetic field, which causes electromagnetic induction losses such as eddy current loss and hysteresis loss in the core. These losses convert electrical energy into heat, making the charger feel warm.

34. (A) Conjunctiva is a thin transparent membrane that covers the visible outer surface of the eye → (I).

- Crystalline lens is a flexible, biconvex lens that helps to focus incoming light precisely onto the retina → (IV).
- Aqueous humour is a transparent fluid between the cornea and lens that provides refractive power to the cornea and helps in light refraction → (III).
- Vitreous humour is a jelly-like substance that fills the eyeball and maintains its shape and form → (II).

35. (B) Power formula for parallel circuit

In parallel, voltage across each bulb = battery voltage V.

Power of a bulb

$$P = \frac{V^2}{R}$$

For bulb R: $P_R = \frac{V^2}{R}$

For bulb 2R : $P_{2R} = \frac{V^2}{2R}$

So at the original voltage, the Rbulb is brighter than the 2Rbulb.

Step 2: Effect of doubling voltage

If battery voltage is doubled ($V \rightarrow 2V$), power becomes

$$P' = \frac{(2V)^2}{R} = \frac{4V^2}{R} = 4P$$

Similarly, for 2R

$$P'_{2R} = \frac{(2V)^2}{2R} = \frac{4V^2}{2R} = 4.\frac{V^2}{2R} = 4P_{2R}$$

→ Both bulbs' power (brightness) becomes four times their original value.

Step 3: Relative brightness

At any given voltage: Rbulb is brighter than 2R bulb.

CHEMISTRY

36. (C) Dilute nitric acid can react only with Mg and Mn and releases hydrogen gas as they are highly reactive metals.

37. (C) Calcium hydroxide does not form products without the involvement of a physical quantity. Heat energy is a physical quantity that breaks down calcium hydroxide to form calcium oxide and water. Heat energy is needed to break old bonds and form new bonds.

38. (C) Soaps are the sodium salts of fatty acids with the ionic group [– COO^-Na^+].

39. (C) pH from 7.1 to 14 is called alkaline pH. Hence, the pH of blood is between 7 and 8 so, it is slightly alkaline.

40. (A) Metals zinc, iron, lead and copper are obtained by reduction method using carbon.

41. (C) When Cl_2 gas is passed through dry slaked lime, bleaching powder is produced.

42. (B) Sodium (Na) and Oxygen (O_2) are the two elements that undergo combination reaction to form sodium oxide ($2Na_2O$).

43. (B) By electrolytic refining, a pure metal can be obtained.

44. (D) CO gains an oxygen to form CO_2 i.e., it is oxidised. Hence, it is a reducing agent. Chlorine and copper (II) oxide are oxidising agents. Reaction given in option (C) is a non-redox reaction.

45. (D) Ethanol (alcohol) is the active ingredient of all alcoholic drinks. It is widely used in medicines such as tincture iodine, cough syrups, alcoholic drinks etc.

BIOLOGY

46. (A) The pancreas produces pancreatic juice (that contains amylase and lipase) and hormones involved in the regulation of blood glucose concentrations (insulin and glucagon). Pepsin in produced in the stomach and requires an acidic pH to function.

47. (B) plants are considered autotrophs as they helps to convert light energy into chemical energy.

48. (B) The walls of blood capillaries are one-cell thick to assist in the diffusion of substances.

49. (D) When the leaves fold up, the sufaace area exposed to sunlight is reduced. Guard cells become flaccid since they are not able to photosynthesise. closing the stomata (1). Less carbon dioxide enters the leaves and thus photosynthetic rate drops (2). As stomata close, less water is able to leave the plant via transpiration (3).

50. (D) The process by which air is taken into the lungs occurs with the diaphragm contracting and flattening, the external intercostal muscle contracting and the internal intercostal muscles relaxing. This will cause the volume of the thoracic cavity to increase. The resultant change in air pressure causses the lungs to expand so that air will rush into the lungs.

51. (C) The shoot bends upward toward light $\rightarrow$ this is phototropism.

The root bends downward due to gravity $\rightarrow$ this is geotropism.

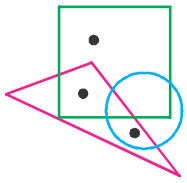
52. (B) Tallness is a dominant trait, so even one T allele is enough to make the plant tall."Therefore, both TT and Tt express the tall phenotype.

53. (B) Gastric juice has the lowest pH (1.5 - 3.5)

54. (B) A positive Benedict's test shows the presence of reducing sugars.

55. (C) A heterozygous tall plant has the genotype Tt. During gamete formation, the alleles T and t segregate from each other. On self-pollination, these alleles recombine in the F_2 generation, producing both tall (TT, Tt) and dwarf (tt) plants.

CRITICAL THINKING

56. (A) 

57. (C) The statement suggests introducing yoga sessions for army personnel.

This recommendation logically arises because yoga is not currently a part of the regular training, so the Ministry felt the need to suggest it.

Option(A) Talks only about heart ailments not mentioned in the statement.

Option(B) Is a general fact, not the specific reason for this suggestion.

Option(D) Is too extreme ("only way"), which is not implied.

58. (C) 1. J + M $\rightarrow$ J is the daughter of M

2. M × C $\rightarrow$ M is the sister of C

3. C % I $\rightarrow$ C is the father of I

From(2) : M is C's sister

From (1) : J is M's daughter

Therefore, J is the daughter of C's sister, which means

J is the niece of C

59. (D) Monday - Mathematics.

Tuesday - Psychology

Wednesday - Chemistry

Thursday - Computer

Friday - Biology

Saturday - Physics

Sunday - English

60. (A) The increase in child labour lead to India becoming the country with largest number of child labourers.