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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

CLASS - 10

Question Paper Code : 1B107

KEY

1. A	2. A	3. B	4. A	5. B	6. C	7. C	8. D	9. C	10. B
11. D	12. D	13. C	14. D	15. D	16. A	17. B	18. C	19. C	20. D
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41. A	42. B	43. D	44. A	45. B	46. B	47. B	48. A	49. C	50. B
51. B	52. A	53. B	54. C	55. B	56. B	57. A	58. B	59. C	60. C

SOLUTIONS

MATHEMATICS

01. (A) Given in an AP $a_5 + a_{25} = 215$

$\Rightarrow$ $a + 4d + a + 24d = 215$

$\Rightarrow$ $2a + 28d = 215$

$a_9 + a_{21} = a + 8d + a + 20d$

$= 2a + 28d$

$= 215$

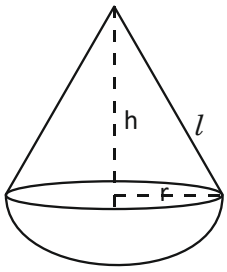
[$\because$ $2a + 28d = 215$]

02. (A) Let the radius of each of the cone and the hemisphere be r. Let the height of the cone be h and its slant height be l.

Then, curved surface area of the hemisphere

= curved surface area of the cone

$\Rightarrow$ $2\pi r^2 = \pi r l \Rightarrow 2\pi r^2 - \pi r\sqrt{r^2+h^2}$



$\Rightarrow$ $2r = \sqrt{r^2+h^2}$

[squaring both sides]

$4r^2 = r^2 + h^2$

$\Rightarrow$ $3r^2 = h^2 \Rightarrow \frac{r^2}{h^2} = \frac{1}{3} \Rightarrow \frac{r}{h} = \sqrt{\frac{1}{3}} = \frac{1}{\sqrt{3}}$

Hence, the required ratio is $1 : \sqrt{3}$

03. (B) $\left(\frac{2\sqrt{45} + 3\sqrt{20}}{2\sqrt{10}}\right) = \frac{2\sqrt{3\times3\times5} + 3\sqrt{2\times2\times5}}{2\sqrt{10}}$

$= \frac{2\times3\sqrt{5} + 3\times2\sqrt{5}}{2\sqrt{10}}$

$= \frac{\cancel{12}^{6}\sqrt{5}}{\cancel{2}\sqrt{10}}$

$= \frac{\cancel{\sqrt{2}}\times\sqrt{2}\times\sqrt{3}\times\sqrt{3}\times\cancel{\sqrt{5}}}{\cancel{\sqrt{2}}\times\cancel{\sqrt{5}}}$

$= 3\sqrt{2}$ which is an irrational number.

04. (A) Given $2^{x+1} = (2^2)^{y-2}$

$2^{x+1} = 2^{2y-4}$

$\therefore$ $x + 1 = 2y - 4$

$x - 2y = -4 - 1$

$x - 2y = -5 \longrightarrow (1)$

Given $3^{x+2} = (3^3)^{x-y}$

$3^{x+2} = 3^{3x-3y}$

$x + 2 = 3x - 3y$

$x - 3x + 3y = -2$

$-2x + 3y = -2 \longrightarrow (2)$

Eq. $(1) \times (2) \Rightarrow$

$2x - 4y = -10$

$2x - 3y = -2$

$-y = -12$

$y = 12$

$x - 2(12) = -5 \longrightarrow (1)$

$x = -5 + 24$

$x = 19$

$x - y = 19 - 12$

$= 7$

05. (B) Given $a_n = 38°$ & $n = 18$, $S_n = 360°$

But $S_n = \frac{n}{2}[a + a_n] = 360°$

$\frac{\cancel{18}^{9}}{\cancel{2}_{1}}[a + 38°] = 360°$

$a + 38° = \frac{360°}{9} = 40°$

$a = 40° - 38° = 2$

06. (C) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$= \frac{18 \pm \sqrt{324 - 4}}{2\times1}$

$= \frac{18 \pm \sqrt{320}}{2}$

$= \frac{18 \pm 8\sqrt{5}}{2}$

$x = 9 \pm 4\sqrt{5}$

07. (C) Let $x = \sqrt{4 + \sqrt{4 + \sqrt{4 + ...\infty}}}$

$x = \sqrt{4 + x}$

$x^2 = 4 + x$

$x^2 - x - 4 = 0$

$x = \frac{-(-1) \pm \sqrt{1 + 16}}{2} = \frac{\sqrt{17} + 1}{2}$ (or) $\frac{1 - \sqrt{17}}{2}$

08. (D) Given radius of cone $= \frac{14cm}{2} = 7cm$ & $h = 8$ cm

$\therefore$ Volume of cone $= \frac{1}{3}\pi \times 7 \times 7 \times 8cm^3$

$\therefore$ $\frac{\cancel{4}}{\cancel{3}}\pi (R^3 - r^3) = \frac{1}{\cancel{3}}\pi \times 7\times7\times\cancel{8}^{2} cm^3$

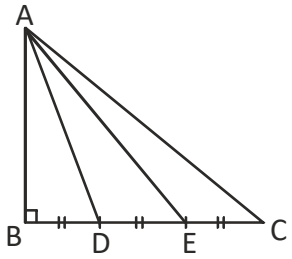
$\Rightarrow 5^3 - r^3 = 98cm^3$

$(125 - 98)cm^3 = r^3$

$r^{\cancel{3}} = 27cm^3 = (3cm)^{\cancel{3}}$

$\therefore$ $d = 2r = 6$ cm

09. (C) In ΔABC, $\angle B = 90°$ & BD = DE = EC



$\therefore$ $3AC^2 + 5AD^2 = 3(AB^2 + BC^2) + 5(AB^2 + BD^2)$

$= 3AB^2 + 3BC^2 + 5AB^2 + 5BD^2$

$= 8AB^2 + 3\left(\frac{3BE}{2}\right)^2 + 5\left(\frac{BE}{2}\right)^2$

$[\because BC = BE + EC = BE + \frac{BE}{2} = \frac{3BE}{2}]$

$= 8AB^2 + \frac{27BE^2}{4} + \frac{5BE^2}{4}$

$= 8AB^2 + \frac{27BE^2 + 5BE^2}{4}$

$= 8AB^2 + \frac{\cancel{32}^{8}BE^2}{\cancel{4}_{1}}$

$= 8(AB^2 + BE^2)$

$= 8AE^2$

10. (B) Let $\frac{1}{\sqrt{x}} = a \& \frac{1}{\sqrt{y}} = b$

$\Rightarrow 2a + 3b = \frac{13}{6}$ and $4a - 9b = -\frac{19}{6}$

$\Rightarrow 6(2a + 3b) = 13 \quad 6(4a - 9b) = -19$

$12a + 18b = 13 \rightarrow 1 \quad 24a - 54b = -19 \rightarrow 2$

eq 1 × 2 $\Rightarrow$

$$\begin{array}{rrrl} \not{24}a & -54b & = -19 & \longrightarrow 2 \\ \not{24}a & +36b & = 26 & \\ (-) & (-) & (-) & \end{array}$$

$+90b = +45$

$b = \frac{45}{90} = \frac{1}{2}$

$12a + \cancel{18}^{9}(\frac{1}{\cancel{2}}) = 13 \rightarrow 1$

$12a = 13 - 9 = 4$

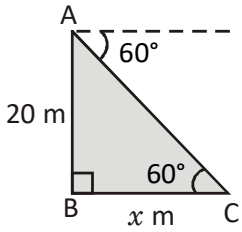
$a = \frac{\cancel{4}^{1}}{\cancel{12}_{3}} = \frac{1}{\sqrt{x}}$ & $b = \frac{1}{2} = \frac{1}{\sqrt{y}}$

$\therefore$ $\sqrt{x} = 3$ & $\sqrt{y} = 2$

$\therefore$ $x = 9$ & $y = 4$

$x + y = 13$

11. (D) Let AB be the tower and BC be the distance of the car from the tower.



$\therefore$ $\tan 60° = \frac{20}{x}$

$\Rightarrow x = \frac{20}{\tan 60°} = \frac{20}{\sqrt{3}} = 11.54$

12. (D) Let the two sides of the triangle be x and y, then

$41^2 = x^2 + y^2 \Rightarrow x^2 + y^2 = 1681$

and $\frac{1}{2}xy = 180 \Rightarrow xy = 360$

$(x + y)^2 = x^2 + y^2 + 2xy$

$= 1681 + 720 = 2401$

$\Rightarrow$ $x + y = 49 \Rightarrow x - y = \sqrt{(x+y)^2 - 4xy}$

$\Rightarrow$ $x - y = 31$ which is the required difference.

13. (C) $(\sin x - \cos x)^4 = [(\sin x - \cos x)^2]^2$

$= (\sin^2 x + \cos^2 x - 2\sin x \cos x)^2$

$= (1 - 2\sin x \cos x)^2$

$= 1 + 4\sin^2 x \cos^2 x - 4\sin x \cos x$

$(\sin x + \cos x)^2 = \sin^2 x + \cos^2 x + 2\sin x \cos x$

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

$\sin^6 x + \cos^6 x = (\sin^2 x)^3 + (\cos^2 x)^3$

$= (\sin^2 x + \cos^2 x)^3$

$- 3\sin^2 x \cos^2 x(\sin^2 x + \cos^2 x)$

$= 1^3 - 3\sin^2 x \cos^2 x(1)$

$= 1 - 3\sin^2 x\cos^2 x$

$\therefore$ LHS $= 3(1 + 4\sin^2 x\cos^2 x - 4\sin x\cos x)$

$+ 6(1 + 2\sin x\cos x) + 4(1 - 3\sin^2 x\cos^2 x)$

$= 3 + 12\sin^2 x\cos^2 x - 12\sin x\cos x$

$+ 6 + 12\sin x\cos x + 4 - 12\sin^2 x\cos^2 x$

$= 13$

14. (D) The required distance

$$= \sqrt{\left[\left(\sqrt{3}+1\right)-\left(\sqrt{3}-1\right)\right]^2+\left[\left(\sqrt{2}-1\right)-\left(\sqrt{2}+1\right)\right]^2}$$

$$= \sqrt{(2)^2+(2)^2} = 2\sqrt{2}$$

15. (D) $BD = 2\sqrt{2}$

$$\therefore r = \frac{BD}{2} = \frac{2\sqrt{2}}{2}\text{ cm} = \sqrt{2}\text{ cm}$$

Area of Circle $= \pi\left(\sqrt{2}\right)^2 = 2\pi$ cm^2

Area of square $= 2^2 = 4$

Area of circle – Area of square $= 2\pi - 4$

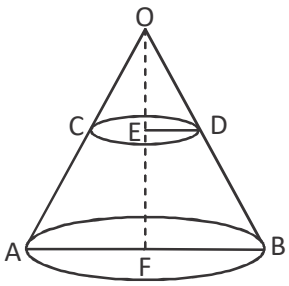
Area between circle and square on each side $= \frac{2\pi-4}{4}$

Area of shaded regions

$$= 4\left[\frac{\pi(1)^2}{2} - \frac{\pi-2}{2}\right]$$

$$= 4\left[\frac{\pi-\pi+2}{2}\right] = 4 \text{ cm}^2$$

16. (A) Let OAB be the given cone cut off by a plane CD parallel to the base AB such that a small cone OCD is left.



For the cone OAB :

Height H = 30 cm

Let the radius of the base be R.

Then, Volume of the cone OAB

$$= \frac{1}{3}\pi R^2 h$$

$$= \left[\frac{1}{3}\pi R^2 \times 30\right]\text{cm}^2 = \left(10\pi R^2\right)\text{cm}^3$$

For the cone OCD :

Let the height be h and radius of the base be r.

Then, the volume of the cone OCD

$$= \frac{1}{3}\pi r^2 h.$$

New, $\frac{1}{3}\pi r^2 h = \frac{1}{27}\left(10\pi R^2\right)$ [given]

$$\Rightarrow \left(\frac{R}{r}\right)^2 = \frac{9h}{10} \quad \ldots \text{(i)}$$

Also, $\Delta OED \sim \Delta OFB$ [$\because$ OF = H = 30 cm]

$\therefore$ $\frac{OE}{OF} = \frac{ED}{FB} \Rightarrow \frac{h}{30} = \frac{r}{R} \Rightarrow \frac{R}{r} = \frac{30}{h}$ ... (ii)

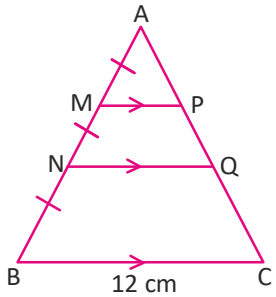
From (i) and (ii) we get :

$$\left(\frac{30}{h}\right)^2 = \frac{9h}{10} \Rightarrow h^3 = 1000 \Rightarrow h = 10\text{ cm.}$$

Thus, the height of the smaller cone OCD = 10 cm.

Hence, the height of the section from the base = EF = OF – OE = H – h = (30 – 10) cm = 20 cm.

17. (B)



Given MP || BC

$\Rightarrow$ $\angle AMP = \angle B$ [$\because$ Corresponding angles]

$\Delta AMP \sim \Delta ABC$ [$\because$ A.A similarity]

$$\frac{AM}{AB} = \frac{MP}{12\text{cm}}$$

$$\frac{AM}{AM+MN+NB} = \frac{MP}{12cm}$$

$$\frac{AM}{AM+AM+AM} = \frac{MP}{12cm}$$

$$\frac{AM}{3\,AM} \times 12 \text{ cm} = MP$$

MP = 4 cm

similarly we can prove $\frac{AN}{AB} = \frac{NQ}{BC}$

$$\Rightarrow \quad \frac{2\,AM}{3\,AM} = \frac{NQ}{12\,cm}$$

$$NQ = \frac{2}{3} \times 12 \text{ cm}$$

NQ = 8 cm

$\therefore$ PM + NQ = 4 cm + 8 cm = 12 cm

18. (C) In quadrilaterals ABCD and PQRS

$$\frac{7}{20} = \frac{z}{16\frac{2}{3}} \Rightarrow \frac{7}{20} = \frac{3z}{50}$$

$$\Rightarrow \quad z = \frac{35}{6} = 5\frac{5}{6} \text{ units}$$

19. (C) The circles touch internally.

$\therefore$ difference of their radii

= distance between their centres = 6 cm.

Let the radii of given circles be r cm and (r + 6) cm.

Sum of their areas = $[\pi r^2 + \pi(r+6)^2]$ cm^2
= $\pi[r^2 + (r+6)^2]$ cm^2.

$\therefore$ $\pi[r^2 + (r+6)^2] = 116\pi$

$\Rightarrow$ $r^2 + (r+6)^2 = 116$

$\Rightarrow$ $2r^2 + 12r - 80 = 0$

$\Rightarrow$ $r^2 + 6r - 40 = 0$

$\Rightarrow$ $(r+10)(r-4) = 0$

$\Rightarrow$ $r + 10 = 0$ or $r - 4 = 0$

$\Rightarrow$ r = 4 [neglecting r = –10, as radius cannot be negative]

$\therefore$ the radii of the given circles are 4 cm and 10 cm.

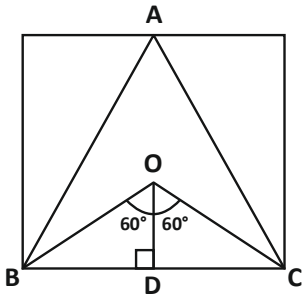
$\therefore$ R = r + d = 4 cm + 6 cm

= 10 cm

R + r = 10 cm + 4 cm

= 14 cm

20. (D) Let O be the centre of the circle. Join BO and CO



Now, $\angle BAC = 60° \Rightarrow BOC$

$= 2(\angle BAC) = 120°$

Draw $OD \perp BC$

Then, $\angle BOD = \angle COD = 60°$

From right ΔBDO, we have

$$\frac{OD}{OB} = \cos 60° = \frac{1}{2} \Rightarrow \frac{OD}{42\text{ cm}} = \frac{1}{2}$$

$$\Rightarrow OD = \left(42 \times \frac{1}{2}\right) cm = 21 \text{ cm},$$

$$\text{and } \frac{BD}{OB} = \sin 60° = \frac{\sqrt{3}}{2} \Rightarrow \frac{BD}{42cm} = \frac{\sqrt{3}}{2}$$

$$\Rightarrow BD = \left(42 \times \frac{\sqrt{3}}{2}\right) cm = 21\sqrt{3} cm$$

$$\therefore \quad BC = 2 \times BD = \left(2 \times 21\sqrt{3}\right) cm = \left(42\sqrt{3}\right) cm$$

Area of the designed region

= (area of the circle with r = 42 cm) – (area of equilateral ΔABC with $a = 42\sqrt{3}$ cm)

$$= \left(\pi r^2 = \frac{\sqrt{3}}{4}a^2\right) = \left\{\left(\frac{22}{7} \times 42 \times 42\right) - \left(\frac{1.73}{4} \times \left(42\sqrt{3}\right)^2\right)\right\} cm^2$$

$$= \left\{5544 - \left(\frac{1.73}{4} \times 1764 \times 3\right)\right\} cm^2$$

= (5544 – 2288.79) cm^2

= 3255.21 cm^2

21. (C) $\frac{1}{p}+\frac{1}{q}+\frac{1}{r}=\frac{pq+qr+rp}{pqr}$

$=\frac{\left(\frac{c}{a}\right)}{\left(\frac{-d}{a}\right)}$

$=\frac{-c}{d}$

22. (A) Given $\alpha+\beta=\frac{-b}{a}=-4$

$\therefore\ 5\alpha+5\beta=-20\rightarrow(1)$

Given $5\alpha+2\beta=1\rightarrow(2)$

$(-)\ \ (-)\ \ (-)$

$3\beta=-21$

$\beta=-7$

$\alpha-7=-4$

$\alpha=-4+7=3$

$\therefore\ \alpha\beta=k\Rightarrow k=3\times-7=-21$

23. (C) If $\cos\theta=\frac{1}{2}$ then $\sec\theta=2$

$\Rightarrow \sec\theta+\cos\theta=2+\frac{1}{2}=\frac{5}{2}$

$\therefore\ \cos\theta=\frac{1}{2}=\cos60^\circ\Rightarrow\theta=60^\circ$

$\therefore\ \sin^2\theta=\sin^260^\circ=\left(\frac{\sqrt{3}}{2}\right)^2=\frac{3}{4}$

(or)

Given $\frac{1}{\cos\theta}+\cos\theta=\frac{5}{2}$

$\Rightarrow \frac{1+\cos^2\theta}{\cos\theta}=\frac{5}{2}$

$\Rightarrow 2\cos^2\theta-5\cos\theta+2=0$

$\Rightarrow 2\cos^2\theta-4\cos\theta-\cos\theta+2=0$

$\Rightarrow 2\cos\theta(\cos\theta-2)-1(\cos\theta-2)=0$

$\therefore\ \cos\theta=2$ (or) $\cos\theta=\frac{1}{2}$

But $\cos\theta$ never be greater than 1

$\therefore\ \cos\theta=2$ is refected

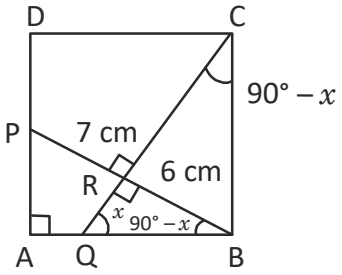
$\therefore\ \cos\theta=\frac{1}{2}=\cos60^\circ$

$\therefore\theta=60^\circ$

$\sin^2\theta=(\sin60^\circ)^2$

$=\left(\frac{\sqrt{3}}{2}\right)^2=\frac{3}{4}$

24. (D) Let $\angle CQB=x$



$\Rightarrow \angle QBR=90^\circ-x$ and $\angle QCB=(90^\circ-x)$

$\therefore\ \Delta BAP\cong\Delta CBQ$ [$\because$ ASA congruency]

$\therefore\ CQ=13$ cm

Let $RQ=y\Rightarrow CR=(13-y)$

In ΔBCQ, $\angle QBC=90^\circ$ & $BR\perp QC$

$\therefore\ BR^2=QR\times RC$

$36\ cm^2=y(13-y)$

$y^2-13y+36=0$

$y=4$ (or) 9

$\therefore\ y=4$ is selected because $QB<BC$

$\therefore\ RC=9$

In ΔBRC, $BC^2=BR^2+RC^2=117$

25. (A) $\frac{a_1}{a_2}=\frac{5}{3}$, $\frac{b_1}{b_2}=\frac{-15}{-9}=\frac{5}{3}$

$\frac{c1}{c2}=\frac{-8}{\left(\frac{-24}{5}\right)}=\frac{5}{3}$

$\therefore\ \frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}\Rightarrow$ coinciding lines

PHYSICS

26. (D) Mercury, Copper and Nichrome are ohmic conductors. Bulb of a torch is not an ohmic conductor.

27. (A) $^{d}\mu_a = \frac{5}{2} = \frac{\mu_a}{\mu_d}$

$^{g}\mu_a = \frac{3}{2} = \frac{\mu_a}{\mu_g}$

$^{g}\mu_d = \frac{\mu_d}{\mu_a} \times \frac{\mu_a}{\mu_g} = \frac{2}{5} \times \frac{3}{2} = \frac{3}{5}$

28. (C) In commercial electric motors, a permanent magnet is not used to rotate the armature, an electromagnet is used.

29. (B) $i = \frac{A + D_m}{2} = \frac{60 + 40}{2} = 50°$

30. (A) As $H = I^2RT$

So, heat generated in a conductor is directly proportional to time.

31. (D) For mirror M_2, $\angle i°$

$\therefore$ $\angle r = 0°$

i.e., the reflected ray would retrace its path turning through 180°.

Mirror M_2 has no effect.

32. (C) If the magnetic field lines are parallel and equidistant, they represent a uniform magnetic field.

33. (C) When the ray suffers minimum deviation, it becomes parallel to the base of prism P. As prism Q and R are of same material and have identical shape, therefore, the ray continues to be parallel to base of Q and R. Hence, final deviation of the ray remains the same as before.

34. (B) As light rays from sun ($u = \infty$) converge at a point 15 cm in front of a concave mirror, hence focal length of concave mirror $f = -15$ cm.

To form an image of exactly same size as that of an object, the object should be placed at the centre of curvature ($u = R = 2f$) of mirror. Hence, the object should be placed at 30 cm in front of the mirror.

35. (C) Resistance of each heater =

$$R = \frac{V^2}{P} = \frac{220 \times 220}{1000} = 48.4\ \Omega$$

Heaters are connected in parallel =

$$R_{eff} = \frac{R}{2} = \frac{48.4}{2} = 24.2\ \Omega$$

Combined power across 220 V line =

$$P = \frac{V^2}{R} = \frac{220 \times 220}{24.2} = 2000\ W$$

CHEMISTRY

36. (A) Metals react with dilute hydrochloric acid to give metal chlorides and hydrogen gas is released. Based on the reactivity series of metals, sodium is the most reactive metal followed by magnesium and zinc.

(i) Sodium metal is very reactive. It reacts violently with dilute hydrochloric acid to form sodium chloride and hydrogen.

(ii) Magnesium metal is less reactive than sodium. It reacts quite rapidly with dilute hydrochloric acid to form magnesium chloride and hydrogen.

(iii) Zinc metal is less reactive than magnesium and aluminium. It reacts less rapidly with dilute hydrochloric acid to form zinc chloride and hydrogen.

As the reactivity of metals decreases from sodium to zinc, sodium metal releases hydrogen gas faster followed by magnesium and zinc.

37. (A) Potassium permanganate ($KMnO_4$) is an oxidising agent. It oxidises ferrous sulphate to ferric sulphate in the presence of dilute H_2SO_4.

38. (D) 1 mole of acetic acid is mixed with 1 mole of alcohol to give 1 mole of ester.

39. (C) When black copper (II) oxide reacts with dilute HCl, it dissolves in the acid to form a blue-green solution of copper (II) chloride salt.

40. (B) Aluminium is a metal which forms an invisible protective layer and prevents further oxidation. Aluminium oxide is the covering of film formed with its chemical formula, Al_2O_3.

41. (A) Rancidity is the oxidation of oil containing or oily foods when they come in contact with oxygen and moisture present in the air.

42. (B) It is a monobasic acid.

$$2CH_3CO_2H + Mg \rightarrow (CH_3CO_2^-)_2Mg^{2+} + H_2$$

43. (D) The residue formed is Na_2CO_3 which can react with more dilute acid to form carbon dioxide gas.

$$Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2 \uparrow$$

44. (A) Calcium gives away two electrons, being in Group II of the periodic Table. Zinc will give away two electrons to form the Zn^{2+} ion. Nitrogen, being in Group V, will gain three electrons to form N^{3-} ion. Iodine, being in Group VII, will gain one electron.

45. (B) Slaking of lime is an exothermic process. Dry lime (CaO) dissolves in water to form calcium hydroxide called Slaked lime $Ca(OH)_2$. As it is a base, the pH of solution will become more than seven (7).

BIOLOGY

46. (B) $Q \rightarrow S \rightarrow T \rightarrow P \rightarrow R$

47. (B) Coronary arteries blood to the heart muscles.

48. (A) Hormones are destroyed in the liver.

49. (C) The ciliated cells contain cilia, which can perform wave like movements to remove mucus containing dust and bacteria.

50. (B) Decomposers convert organic components into inorganic substances.

51. (B) In the given figure the capillary that receives blood from the direction Q has more concentration of carbon dioxide.

52. (A) This technique is mostly used for the production of large fruit bearing plants the girdling restricts the nutrients to the roots.

53. (B) Animal R is omnivore as it feed on both animals and plant Q.

54. (C) Lacteal absorbs fat.

55. (B) The reactants of photosynthesis are the products of cellular respiration.

CRITICAL THINKING

56. (B) Course of Action I:

This suggests that the government should provide agricultural equipment and machinery free of cost to farmers.

While this would solve the problem of farmers not being able to buy equipment due to lack of funds, it might not be feasible or sustainable for the government to provide equipment free of cost to all farmers across the country.

Course of Action II:

This suggests that the government should provide loans at cheap interest rates to farmers.

This directly addresses the issue mentioned in the statement, which is the lack of access to low-interest credit. By providing loans at lower interest rates, farmers would be able to afford the equipment and machinery they need.

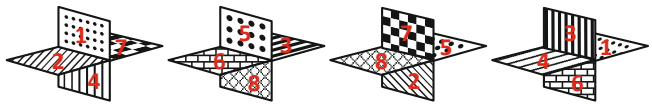
This course of action is more feasible and directly tackles the root cause of the problem stated.

Conclusion :

Based on the analysis, Course of Action II logically follows from the statement as it directly addresses the issue of lack of access to low-interest credit, making it more feasible and sustainable.

Answer : II. Government should launch a scheme to provide farmers, loans at cheap interest rates which will help them buy equipment and machinery.

57. (A)



58. (B) Assertion (A) : This statement is true. The Indian government has indeed decided not to join the RCEP agreement.

Reason (R) : This statement is also true. The RCEP does not include all the members of the G20 grouping; it includes 15 member countries primarily from the Asia-Pacific region, while the G20 includes countries from all over the world.

Relation between Assertion and Reason :

The reason for India's withdrawal from the RCEP agreement is primarily due to concerns about protecting domestic industries and agriculture, ensuring fair trade practices, and concerns about trade deficits with RCEP countries.

The fact that RCEP does not include all G20 members is not the reason for India's withdrawal. The non-inclusion of all G20 members in RCEP is unrelated to the economic and strategic concerns that led India to decide against joining RCEP.

Conclusion : Both Assertion (A) and Reason (R) are true, but (R) is not the correct explanation of (A).

Answer : (B) If both (A) and (R) are true but (R) is not the correct explanation of (A).

59. (C) Except (ii) statement remaining statements are summery of given passage.

60. (C)

1. Determine the Shadow's Position :

- Shadows are formed on the side of the object opposite to the light source.

2. Shape of the Shadow :

- The shape of the shadow will be a silhouette of the object. The closer the object is to the light source, the larger and more diffused the shadow will be. The further the object is from the light source, the smaller and sharper the shadow will be.

The End