PHYSICS
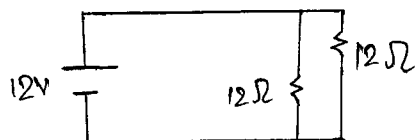
$$v^2 = u^2 + 2as$$

$$o = u^2 - 2gh$$

1. $\quad 2gh = u^2$ (Answer B)

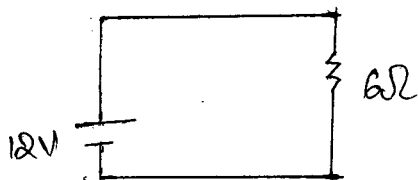$$h = \frac{u^2}{2g}$$

2. $1\,Fermi = 10^{-15}\,m$ is lower unit (Answer A)

3. Equivalent resistance circuit diagram

$$I = \frac{v}{Reg} = \frac{12}{6} = 2A$$ (Answer C)

4. Apparent Weight of the body inside the liquid weight in air –upthrust
   (ANS.D)

$$mg - Vi\rho_l g$$

$$(Vd)g - V\rho_l g$$

$$vdg - v\rho_l g \qquad (v_i = v \because body \text{ Is inmersed completely}) \qquad (\rho_l = b)$$

$$v(d - \rho)g$$

5. Relation Between α, β and γ is $\quad \alpha = \dfrac{\beta}{2} = \dfrac{\gamma}{3}$

$$\beta = \frac{2}{3}\gamma = \frac{2}{3} \times 7.2 \times 10^{-5}$$

$= 4.8 \times 10^{-5} c^{-1}$ (ANS. D)

6. A Convex mirror always forms virtual, erect and small image. (ANS. C)

7. in 12 hrs. Needle of clock completes one rotation. (ANS. D)

8. Lightening conductor is mode of copper. (ANS. B)

9. $P = \dfrac{w}{t} = \dfrac{F.s}{t} = \dfrac{mgh}{t} = \dfrac{v\rho gh}{t}$

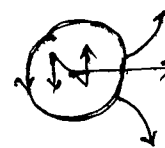$= \dfrac{50 \times 10^{-3} \times 10^3 \times 10 \times 25}{5} = 2500 watt$ (ANS.A)

10. Every parts of the lens makes complete image of the lens. (ANS. C)

11. Direction of magnetic field at the centre will be outward. (ANS. D)

12. Soft Iron is most suitable to make electromagnet. (ANS.C)

13. $F = 9vB \sin \theta$ is the force on a changed particle is a magnetic field .

IF $\begin{array}{l} V = 0 \\ F = 0 \end{array}$ (ANS.D)

CHEMISTRY

14. 2,8,8,1 It is according to auf bau principle. (ANS.C)

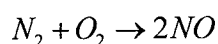15. Nacl can't turn litmus to any other because it is a neutral salt. (ANS.D)

16. Oxygen and sulphur belong to same group. (ANS.B)

17. The O.S of sulphur of Zn in left side is zero and right side is +2.hence it is oxidized. (ANS.A)

18. The ore particles are adhered to the Foam. (ANS.C)

19. Cu is below to the hydrogen in reactivity series. (ANS.A)

20. $4NH_3 + 3O_2 \rightarrow N_2 + 6H_2O$ (ANS.D)

$N_2 + O_2 \rightarrow 2NO$

21. Since the dissolution requires Heat absorption (endo thermic)increasing temperature increases solubility. (ANS. B)

22. $CH_2 = CH_2 + H_2 \rightarrow CH_3 - CH_3$ (ANS.C)

23. Fourth bond is not possible because of its unstabity. (ANS. C)

24. For iso electronic species : size $\alpha \dfrac{-ve}{+ve}$ Charges . (ANS. B)

25. Number of atoms $= n \times N \times multiplicity$

$$= \frac{44}{44} \times 6.023 \times 10^{23} \times 3$$

$$= 1.8 \times 10^{24}$$ (ANS.C)

26. Cycloalkanes have $E.F \ CH_2$ (ANS.B)

MATHEMATICS

81. $\left(\dfrac{1}{5}\right) \ \left(\dfrac{1}{4}\right)$

$\dfrac{1}{5} = \dfrac{20}{100} \qquad \dfrac{20}{100} \angle \dfrac{22}{100} \angle \dfrac{25}{100}$

$\dfrac{1}{4} = \dfrac{25}{100}$ (ANS.B)

82. $\dfrac{A}{B} = \dfrac{2}{3} \qquad \dfrac{B}{C} = \dfrac{4}{5} \qquad \dfrac{C}{D} = \dfrac{6}{7}$

$\dfrac{A}{D} = \dfrac{A}{B} \times \dfrac{B}{C} \times \dfrac{C}{D} \qquad \dfrac{2}{3} \times \dfrac{4}{5} \times \dfrac{6}{7} \qquad \dfrac{A}{D} = \dfrac{16}{35}$

83. $obs \qquad\qquad Mean$

$x_1, x_2, ----xn \rightarrow \bar{x}$

$$ax_1, ax_2, ---axn \rightarrow a\overline{x}$$

$a = 2$ \qquad New Mean \quad $2 \times 6 = 12$

84. Prime no. from 3 to 25

3,5,7,11,13,17,19,23

$$P = \frac{8}{23}$$

85. 12, 15, - - - - - - - - 99

$$Tn = a + (n-1)d$$
$$99 = 12 + (n-1)3$$
$$8\tfrac{2}{3} + 1 = n$$
$$n = 30$$

86. Marks obtained

$$\{25, 26, 27, 28, 29\}$$
$$mean = \left\{\frac{25 + 26 + 27 + 28 + 29}{5}\right\} = (27)$$
$$mediam = \{27\}$$
$$mod\,e =$$

All has some prepvency so any one possible. \qquad (ANS.C)

87. \quad $\left(1 - \frac{1}{n}\right) + \left(1 - \frac{2}{n}\right) + \left(1 - \frac{3}{n}\right) + - - - - \left(1 - \frac{n}{n}\right)$

$$= (1 + 1 + 1 + 1 + - - - - - - + 1) - \frac{1}{n}(1 + 2 + 3 + - - - - n)$$

$$= n - \frac{1}{n}\left\{\frac{n(n+1)}{2}\right\}$$

$$= \left(\frac{n-1}{2}\right) \qquad\qquad \text{(ANS. D)}$$

88.

$$x + y = 7 --------(1)$$
$$3x - 2y = 11------(2)$$

From (1)

$$y = (7 - x)$$
$$3x - 2(7 - x) = 11$$
$$3x - 14 + 2x = 11 \qquad\qquad \text{(ANS.A)}$$
$$5x = 25$$
$$x = 5$$

89. $X^a = y, y^b = z, z^c = x$

$$\left(x^a\right)^b = z$$
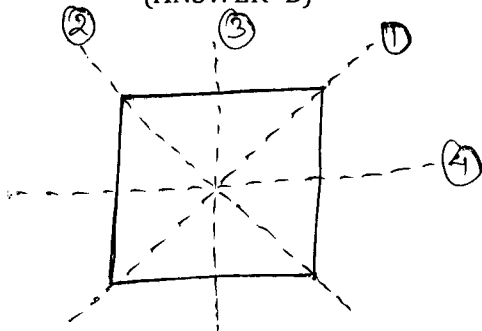$$x^{ab} = z \qquad\qquad \text{(ANS.A)}$$
$$\left(x^{ab}\right)^c = x \Rightarrow x^{abc} = x \Rightarrow abc = 1$$

90. **(ANSWER -B)**

91. $x^2 + 3x + 2$, (i) $x^2 + 5x + 6$ (ii)

$$HCF = (x + a)$$

$x = -a$ is a root of (i) and (ii) on solving.......

$$x^2 + 3x + 2 = (x + 1)(x + 2)$$

$$\Rightarrow x = -1, -2$$
$$x^2 + 5x + 6 = (x + 2)(x + 3)$$
$$\Rightarrow x = -2, -3$$

$x = -2$ is a common root

$$\Rightarrow -a = -2$$
$$\therefore a = 2 \qquad \text{(ANS. B)}$$

$$92 \quad \sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}$$

$$\sqrt{225} = 15$$
$$\sqrt{154 + 15} = \sqrt{169} = 13$$
$$\sqrt{108 + 13} = \sqrt{121} = 11 \qquad \text{(ANS.A)}$$
$$\sqrt{25 + 11} = \sqrt{36} = 6$$
$$\sqrt{10 + 6} = \sqrt{16} = 4$$

93. A............ ...B

(1,0 is the midpoint of A and B so Option (C) is Correct)   (ANS. C)

94. $3y - 2x = 4 ----(i)$

$$4y - px = 2 ----(ii)$$
$$m_1 = -\left(\frac{-2}{3}\right) = \frac{2}{3}$$
$$m_2 = -\left(\frac{-p}{4}\right) = \frac{p}{4}$$

$$\therefore m_1 \times m_2 = -1$$
$$\frac{2}{3} \times \frac{p}{4} = -1 \qquad \text{(ANS. D)}$$
$$p = -6$$

95. Initial volume = final volume

$$\frac{4}{3}\pi \left\{ 3^3 + 4^3 + 5^3 \right\} = \frac{4}{3}\pi R^3$$
$$\therefore R^3 = \left(3^3 + 4^3 + 5^3 \right) \qquad \text{(ANS.D)}$$
$$\therefore R = 3\sqrt{216}$$
$$R = 6am$$

96. $P + b + h = 24$

$p + b = 24 - 10 = 10 - - - - - -(i)$

$and.....p^2 + b^2 = 100$
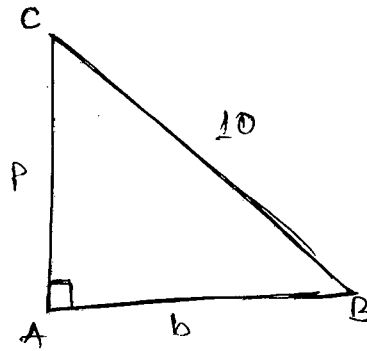
$(p + b)^2 - 2pb = 100$

$14^2 - 2pb = 100$

$2pb = 96$

$pb = 48$

FROM (I) and (II) $P = 8$, $B = 6$

$(p - b)^2 = (P + b)^2 - 4pb$
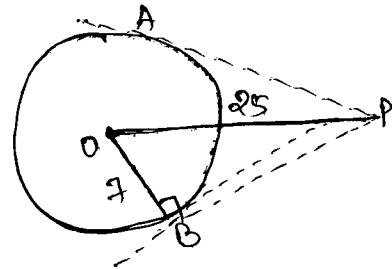
$= 196 - 192$

$(p - b)^2 = 4$

$p - b = 2 ....(ii)$
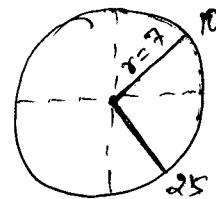
97. *APQ*

$PB = 24$

$OP = 25$

$PA = PB = 24cm$

$OB = 7cm$

98. $A = \dfrac{\pi^2 \theta}{360^0} = \dfrac{22}{7} \times \dfrac{90}{360} - - - - -15\,min = 15 \times 6 = 90^0$
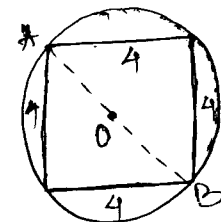
$\dfrac{77}{2}$

99. $AB = \sqrt{4^2 + 4^2} = \sqrt[4]{2}$ $m = r = \sqrt[2]{2}$

$A = \pi r^2 = \pi (2/2)^2 = 8\pi$

100. $\tan \theta = \dfrac{4}{5}$

$\dfrac{5\sin\theta - 3\cos\theta}{5\sin\theta + 3\cos\theta}$ TAKE cos θ common from Numerator and Denominator

$$\frac{\cos\theta\left\{5\dfrac{\sin\theta}{\cos\theta}-3\right\}}{\cos\theta\left\{5\dfrac{\sin\theta}{\cos\theta}+3\right\}}$$

$$\left\{\frac{5\tan\theta-3}{5\tan\theta+3}\right\}$$

$$\left\{\frac{5\times\frac{4}{5}-3}{5\times\frac{4}{5}+3}\right\}$$

$$\left\{\frac{1}{7}\right\} \qquad\qquad\qquad \text{(ANS.D)}$$