P ANSWER KEY & SOLUTION KEY FINAL ROUND - 16 (PCB) Dt.25.04.2024

PHYSICS

SECTION - A (35 Questions)

01. **(1)** At $x = 0, t = 0, v = 0$
So KE = 0, U = 0 $\Rightarrow$ TE = 0
So at final position
K.E. = – P.E. $\Rightarrow -\{2^2-3(2)^2\} = 2J$

02. **(4)** 1 Newton = 10^{-5} Dynes (Wrong among all options)

03. **(3)** $C' = kC$, and $U' = \frac{q^2}{2kC}$.
Due to dielectric slab field between plates decreases hence force decreases.

04. **(3)** $\chi_m = \frac{I}{H}, \chi_m$ will be larger when I is larger.
Assertion is true but Reason is false.

05. **(2)** Fringe width,

$$\beta = \frac{D\lambda}{d} = \frac{1.5\times589\times10^{-9}}{0.15\times10^{-3}}$$

$$= 5.9\times10^{-3} \quad m = 5.9\,mm$$

06. **(3)** $I_{rms} = \frac{i_m}{\sqrt{2}} = \frac{5}{\sqrt{2}} A$
If voltage applied is $V = V_m \sin \omega t$, i given indicates that it is ahead of V by δ where $0 < \delta < 90^\circ$ which indicates that the circuit contains R and C.

07. **(3)** Volume = $a^3 = (7.023)^3 = 373.715\ m^3$
In significant figures volume of cube will be $3.737 m^3$ because its side has four significant figures.

08. **(4)**

09. **(2)** In Streamline flow of liquid velocity of each particle at a particular cross section is constant. So velocity is same. Hence, the correct answer is option (2).

10. **(2)** Radiation pressure on reflecting surface is

$$P = \frac{2I}{c} = \frac{2\times1350}{3\times10^8}\ \text{Nm}^{-2}$$

Total force on the surface = PA = $\frac{2\times1350}{3\times10^8}\times10^4$

$= 9 \times 10^{-2}$ N

11. **(1)** As $V_C = 3V_R \Rightarrow$

$$V_0(1-e^{-t/RC}) = 3V_0e^{-t/RC} \Rightarrow$$

$$V_R = \frac{V_0}{4} = V_0e^{-\frac{t}{RC}} \Rightarrow \frac{1}{4} = e^{-\frac{t}{RC}}$$

12. **(1)** $B = -\frac{\Delta P}{\Delta V/V} = -\frac{100\times10^5}{-0.01/100} = 10^{11}\ \text{N/m}^2$
$= 10^{12}$ dyne/cm^2.

13. **(3)** Mutual inductance of the pair of coils depends upon relative position and orientation of the two coils as $M = K\sqrt{L_1L_2}$.

14. **(3)** $\overline{F}_{ext}$ on system = 0 Hence $\overline{P}_{system}$ = constant

$$\overline{P}_i = \overline{P}_f \quad M_1\overline{v}_1 + M_2\overline{v}_2 = M''\overline{v}'$$

$$(1000)\,(50)\,\hat{i} + 250(0)\hat{i} = 1250\,\overline{v}'\,,$$

$v' = 40\ \hat{i}$ km/hour ·

15. **(3)** $f_{r_{max}} = T$

$$\mu N = T$$

$$0.5(2+8)g = Mg$$

$$M = 5kg$$

16. **(3)** For UCM, $a_r \neq 0$ and $a_t = 0$.

17. **(2)** Let B moves with V at angle θ with horizontal
By the momentum conservation
along x $\quad 3m\times10 = 2mv\cos\theta$

$\Rightarrow v\cos\theta = 15$

along y $\quad 0 = m\times40 + 2mv\sin\theta$

$\Rightarrow v\sin\theta = 20$

$$v = \sqrt{(v\sin\theta)^2 + (v\cos\theta)^2} = 25\text{m/s}.$$

18. **(4)** $\vec{L} = \vec{r}\times\vec{p} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & 2 & -1 \\ 3 & 4 & -2 \end{vmatrix}$

$$= \hat{i}(-4+4) - \hat{j}(-2+3) + \hat{k}(4-6) = 0\hat{i} - 1\hat{j} - 2\hat{k}$$

$\vec{L}$ has components along $-y$ axis $-z$ axis but it has no component in the x-axis. The angular momentum is in yz plane. *i.e.*, perpendicular to x-axis.

19. **(3)** Here, $\gamma = 5\times10^{-4}K^{-1} = 5\times10^{-4}{}^{\circ}C^{-1}$

Let ρ_2, ρ_1 be the density of glycerin at temperature $t_2{}^{\circ}C$ and $t_1{}^{\circ}C$ respectively. Then

$\rho_2 = \rho_1[1-\gamma(t_2-t_1)] = \rho_1 - \rho_1\gamma(t_2-t_1)$

or $\dfrac{\rho_1-\rho_2}{\rho_1} = \gamma(t_2-t_1)$

Fractional change in the density of glycerin

$\dfrac{\rho_1-\rho_2}{\rho_1} = \gamma(t_2-t_1) = (5\times10^{-4})\times40 = 0.02$

20. **(3)** C_2 and C_3 are parallel so $V_2 = V_3$
C_1 and combination of C_2 & C_3 is in series.
So, $V = V_2 + V_1$ or $V = V_3 + V_1$
and also $Q_1 = Q_2 + Q_3$

21. **(4)** Graph between horizontal velocity and time in a projectile motion is a straight line parallel to the time axis as the horizontal velocity remains constant (equal to $u\cos\theta$) with time.

22. **(4)** If the path of the charged particle is circular, then radius of circular path is directly proportional to the speed and mass of the particle as $r = \dfrac{mv}{q_0B}$

$\therefore$ Centripetal force $= \dfrac{mv^2}{r} = q_0vB$

Also, $r = \sqrt{2mK}\,/\,qB$

23. **(3)** When key K is pressed, current through the electromagnet increases from zero to maximum. Eddy currents are produced in the ring. According to Lenz's law, the direction of eddy currents is such that the ring is repelled and it jumps out of the core.

24. **(2)** As springs are in parallel, so their effective spring constant,

$K = k_1 + k_2$

$\therefore$ Frequency of oscillations,

$v = \dfrac{1}{2\pi}\sqrt{\dfrac{K}{M}} = \dfrac{1}{2\pi}\sqrt{\dfrac{k_1+k_2}{M}}$.

25. **(1)**

26. **(3)** $R_{equivalent} = \dfrac{(30+30)30}{(30+30)+30} = \dfrac{60\times30}{90} = 20\,\Omega$

$\therefore\ i = \dfrac{V}{R} = \dfrac{2}{20} = \dfrac{1}{10}$ ampere

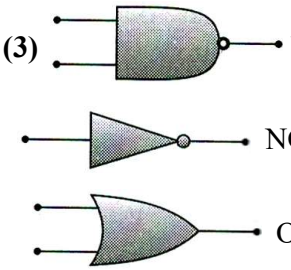
27. **(2)** Momentum

$Mu = \dfrac{E}{c} = \dfrac{h\nu}{c}$

Recoil energy

$\dfrac{1}{2}Mu^2 = \dfrac{1}{2}\dfrac{M^2u^2}{M} = \dfrac{1}{2M}\left(\dfrac{h\nu}{c}\right)^2 = \dfrac{h^2\nu^2}{2Mc^2}$.

28. **(3)**



29. **(2)** On reverse biasing potential barrier increases and in forward biasing it decreases

30. **(3)** In figure, $AC = l\cos\theta$

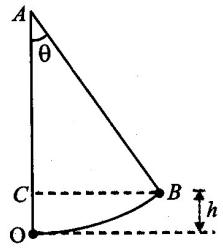
$\therefore OC = OA - AC$

$= l - l\cos\theta$

$= l(1-\cos\theta)$

Max. K.E. of bob at O
= Max. P.E. of bob at B
$= mg \times OC$

$= mgl(1-\cos\theta)$.



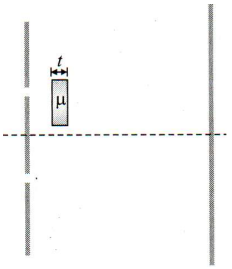
31. **(3)**

32. **(4)**

$\Delta x = (\mu-1)t = 1\lambda$

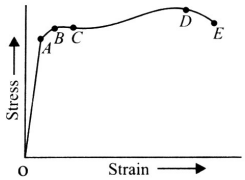
for one maximum shift

$t = \dfrac{\lambda}{\mu-1}$



33. **(3)**

OA– hooks law
D – breaking stress
E – Fracture point
B – elastic limit
C – yield point

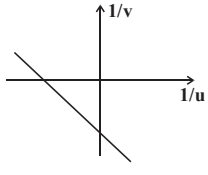


34. **(1)** For concave mirror $\dfrac{1}{v}+\dfrac{1}{u} = \dfrac{1}{-f}$

$\Rightarrow \dfrac{1}{v} = -\dfrac{1}{u} - \dfrac{1}{f}$

on comparing $y = -mx - c$

$\Rightarrow$



35. **(1)** Equations show that phase difference between two waves,

$\phi = \pi/2$

$\therefore$ from $R = \sqrt{a^2 + b^2 + 2ab\cos\pi/2}$

$= \sqrt{a^2 + a^2 + 2a^2\cos 90^0}$

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

Both the statements are true.

SECTION - B (Attempt Any 10 Questions)

36. **(3)** $\frac{dT}{dt} = \frac{eA\sigma}{mc}(T^4 - T_0^4) = \frac{e(6a^2)\sigma}{(a^3 \times \rho)c}(T^4 - T_0^4)$

$\Rightarrow$ For the same fall in temperature, time $dt \propto a$

$\frac{dt_2}{dt_1} = \frac{a_2}{a_1} = \frac{2\,\text{cm}}{1\,\text{cm}}$

$\Rightarrow dt_2 = 2 \times dt_1 = 2 \times 100$ sec $= 200$ sec

(As $A = 6a^2$ and $m = V \times \rho = a^3 \times \rho$)

37. **(3)** From conservation of momentum

$mv = (m + M)v'$

$0.5v = (0.5 + 1.0)v'$

$\Rightarrow \quad v' = \frac{v}{3}$

From COME,

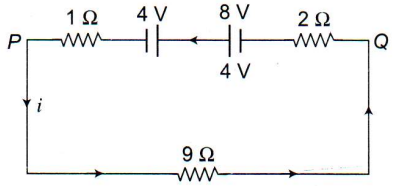
$(m + M)gh = \frac{1}{2}(m + M)(v')^2$

$10 \times 1.8 = \frac{1}{2} \times \frac{v^2}{9}$

$\Rightarrow \quad v = 18$ m/s

38. **(1)** Dynamic lift of an aeroplane is based on Bernoulli's principle.

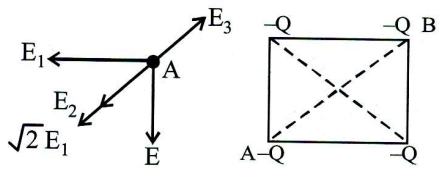
39. **(1)** Applying Kirchhoff's voltage law in the given loop,



$-2i + 8 - 4 - 1 \times i - 9i = 0 \Rightarrow i = \frac{1}{3}$ A

Potential difference across PQ $= \frac{1}{3} \times 9 = 3$V

40. **(2)**



For the system to be equilibrium, net field at A should be zero

$\sqrt{2}\,E_1 + E_2 = E_3$

$\therefore \frac{kQ \times \sqrt{2}}{a^2} + \frac{kQ}{(\sqrt{2}\,a)^2} = \frac{kq}{\left(\frac{a}{\sqrt{2}}\right)^2}$

$\Rightarrow \frac{Q\sqrt{2}}{1} + \frac{Q}{2} = 2q \Rightarrow q = \frac{Q}{4}(2\sqrt{2} + 1)$

41. **(2)** For P.E. E : $\lambda \le \frac{hc}{W_e}$

$\lambda \le \frac{1240nm - eV}{3eV}$

$\lambda \le 413.33nm$

$\lambda \approx 414nm$

42. **(3)** $n = 6$

AB : isochoric process, $\Delta W_{AB} = 0$

BC : isobaric process,

$\Delta W_{BC} = nR\Delta T = nR(T_C - T_B)$

$= 6$R $(2200 - 800)$

$= 8400$ R

CD : isochoric process, $\Delta W_{CD} = 0$

DA : isobaric process,

$\Delta W_{DA} = nR\Delta T = nR(T_A - T_D)$

$= 6$R $(600 - 1200)$

$= -3600$ R

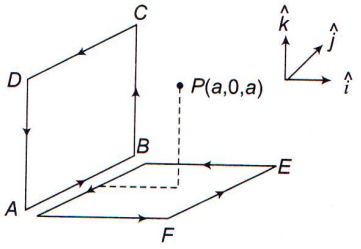
$\Delta W_{cyclic} = \Delta W_{AB} + \Delta W_{BC} + \Delta W_{CD} + \Delta W_{DA}$

$= 8400\,R - 3600\,R = 4800\,R$

43. **(4)** The magnetic field at P(a, 0, a) due to loop is equal to the vector sum of the magnetic fields produced by loops ABCDA and AFEBA as shown in the figure.

Magnetic field due to loop ABCDA will be along $\hat{i}$ and due to loop AFEBA along $\hat{k}$. Magnitude of magnetic field due to both the loops will be equal.

Therefore, direction of resultant magnetic field at P will be $\frac{1}{\sqrt{2}}(\hat{i} + \hat{k})$.



44. **(4)** Time to reach zero to peak value

$= \frac{T}{4} \Rightarrow \frac{1}{50\times 4} \Rightarrow \frac{1}{200} \Rightarrow 5\times 10^{-3}$ sec

$I_{peak} = \sqrt{2}\, I_{rms} \Rightarrow \sqrt{2}\times 10 = 14.14$ Amp

45. **(2)** Let the momentum of the third piece be $p_x\hat{i} + p_y\hat{j}$.

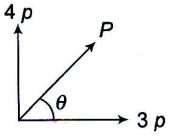
By the momentum conservation

$0 = -3p\hat{i} - 4p\hat{j} + p_x\hat{i} + p_y\hat{j}$

$0 = (-3p + p_x)\hat{i} + (-4p + p_y)\hat{j}$

$-3p + p_x = 0 \Rightarrow p_x = 3p$

$-4p + p_y = 0 \Rightarrow p_y = 4p$



The momentum of the third piece

$|\vec{P}| = \sqrt{(3p)^2 + (4p)^2} = 5p$

$\tan\theta = \frac{4p}{3p} \Rightarrow \theta = \tan^{-1}\frac{4}{3}$.

46. **(2)** According to ideal gas equation

$P = \frac{\rho RT}{M}$ *or* $\rho = \frac{PM}{RT}$ *or* $\rho \propto \frac{P}{T}$

From the graph,

$\left(\frac{P}{T}\right)_A = \frac{P_0}{T_0}$ *and* $\left(\frac{P}{T}\right)_B = \frac{3}{2}\left(\frac{P_0}{T_0}\right)$

or $\left(\frac{P}{T}\right)_B = \frac{3}{2}\left(\frac{P}{T}\right)_A$

$\therefore \rho_B = \frac{3}{2}\rho_A = \frac{3}{2}\rho_0$.

47. **(3)** $I_A\omega_A = I_B\omega_B; \therefore \frac{\omega_A}{\omega_B} = \frac{I_B}{I_A}$ ...(i)

Kinetic energy $= \frac{1}{2}I\omega^2$

$\therefore \frac{(KE)_A}{(KE)_B} = \frac{\frac{1}{2}I_A\omega_A^2}{\frac{1}{2}I_B\omega_B^2} = \frac{I_A}{I_B}\times\left(\frac{I_B}{I_A}\right)^2 = \frac{I_B}{I_A}$ (Using (i))

As $I_A > I_B$ (Given) ; $\therefore$ $(KE)_A < (KE)_B$

48. **(2)** A-4 ; B-2 ; C-1 ; D-3

Lyman series, $\lambda_{max} = 4/3R$ and $\lambda_{min} = 1/R$

Balmer series, $\lambda_{max} = 36/5R$ and $\lambda_{min} = 4/R$

Paschen series, $\lambda_{max} = 144/7R$ and $\lambda_{min} = 9/R$

Bracket series, $\lambda_{max} = 400/9R$ and $\lambda_{min} = 16/R$

49. **(2)** x and y both are in horizontal plane in two perpendicular direction so

$v = v\sqrt{3i} + v\hat{j}$

$v_x = v\sqrt{3}, v_y = v$

$v\sqrt{3} = \frac{x}{t}, v = \frac{y}{t}$

$x = \sqrt{3}y$

50. **(4)** nVSD = $(n-1)$ MSD

1 VSD $= \frac{n-1}{n}$MSD

$= \frac{n-1}{n}\times\ acm$

Least count = 1 MSD – 1 VSD

$= \left[a - \frac{n-1}{n}a\right]$cm

$\Rightarrow \frac{a}{n}cm \Rightarrow \frac{10a}{n}mm$

CHEMISTRY

SECTION - A (35 Questions)

51. **(3)** Number of protons in one molecule of $CaCO_3$

$= 20 + 6 + 8\times 3 = 50$

Number of protons in 10 g $CaCO_3$

= number of molecules × 50

$= \frac{10}{100}\times 6.023\times 10^{23}\times 50 = 3.0115\times 10^{24}$

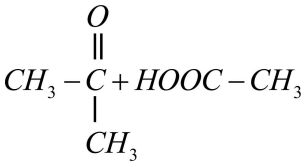
(Molecular weight of $CaCO_3 = 100$)

52. **(4)** $t_{1/2} = ka^{1-n}$, n being order, k = rate constant

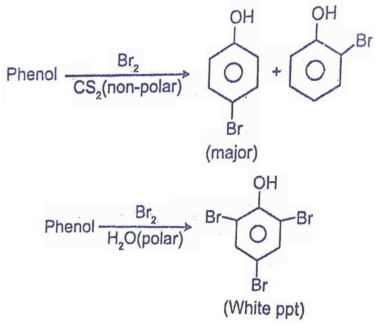
$\log t_{1/2} = \log k + (1-n)\log a$

Slope, $(1-n) = -2$, $n = 3$.

53. **(1)** $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3 \xrightarrow[\Delta]{KMnO_4/H^+}$



54. **(4)**



55. **(3)** Ionisation energy increases from left to right in a period. But oxygen after removal of first electron gets stable half-filled electronic configuration and thus its second ionisation energy is higher than that of fluorine. Thus, order of 2nd ionisation energy is C < N < F < O.

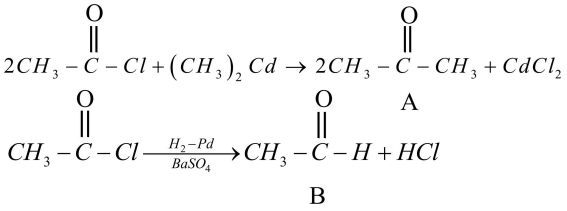
56. **(2)** o-, m-, p- derivatives have $\alpha = 60^{o}$, 120^{o} and 180^{o} respectively, p-derivative has zero dipole moment. Dipole moment of m-dichlorobenzene is more than toluene.

57. **(3)** Angular momentum $(mvr) = \frac{nh}{2\pi}$

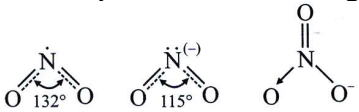
58. **(2)** In the process of neutralization heat is always released.

59. **(1)** Na/liq.NH_3-trans addition.

60. **(1)**



61. **(4)** NO_3^- has sp^2 hybridisation and three resonating structures.
Hence ONO bond angle = 120^{o}.
NO_2^+ has sp hybridisation and N does not contain lone pair of electrons. Hence shape is linear $(\ddot{O}=\overset{+}{N}=\ddot{O})$ with bond angle = 180^{o}.
NO_2 has one electron whereas NO_2^- has one lone pair of electrons. Hence in NO_2^-, the repulsion on the bond pairs are more and angle is less.



62 **(2)** $p\pi - p\pi$ bonding is weak in case of phosphorus because of comparatively larger size it is unable to form multiple bonds. Hence, P_2 gets converted to P_4.

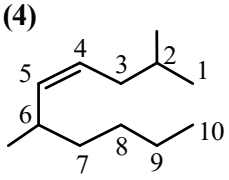
63. **(2)** $K = \frac{[NOCl]^2}{[NO]^2[Cl_2]}$

64. **(1)** Among the given statements, A, C and E are incorrect while statements B and D are correct. The correct form of A, C and E are
- The boiling point of a solution is always higher than the pure solvent.
- Passage of spontaneous flow of solvent molecules from the solvent to the solution through a semipermeable membrane is called osmosis.

Cryoscopic constant (K_f) decreases with increase in enthalpy of fusion. ($\Delta_{fus}H$).

65. **(2)** Factual

66. **(4)**



67. **(4)** In red phosphorus, one of the P_4 bonds is broken, and one additional bond is formed with a neighbouring tetrahedron resulting in a more chain-like structure.
It is formed by heating white phosphorus to 250°C, it becomes an amorphous network of atoms that reduces strain and given greater stability thereby renders it unreactive.

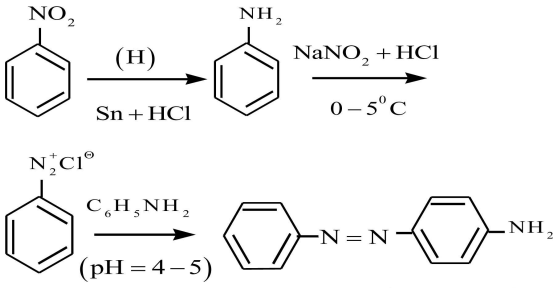
68. **(4)** The correct match is
A-II, B-IV, C-III, D-I

69. **(4)** $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$,
Equilibrium constant depends on temperature only.

70. **(1)** A-I, B-II, C-III, D-IV

71. **(2)** A is but-2-yne ; B is cis-2-butene.

72. **(1)**



yellow dye

73. **(4)** Both A and R are true and R is the correct explanation of A.

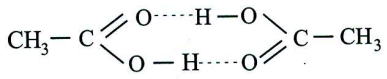
74. **(4)** Solvate isomers.

75. **(3)** For KBr, i = 1 + α = 1 + 0.80 = 1.80

$\Delta T_f = iK_f m = 1.80 \times 1.86 \times 0.5 = 1.674$

$T_f = 273 - 1.674 = 271.326$ K

76. **(3)** Acetic acid in benzene undergoes association and forms a dimer. Therefore its molecular mass will be $60 \times 2 = 120$.



Dimer of acetic acid in benzene

77. **(1)** C-X bond in halo benzene acquires double bond character.

$(CH_3)_2 CH - X \xrightarrow{-X} (CH_3)_3 \overset{\oplus}{C}H (2^0 \text{ carbocation})$

$(CH_3)_2 C - X \xrightarrow{-X} (CH_3)_3 \overset{\oplus}{C} (3^0 \text{ carbocation})$

In aryl halides reactivity can be increased by substituting EWG.

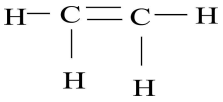
78. **(2)** $2^{n-1} + 2^{\frac{n}{2}-1}$

79. **(1)** $(NH_4)_2CO$

80. **(3)** A regular decrease in the size of the atoms and ions in lanthanide series from La^{3+} to Lu^{3+} is called lanthanide contraction. The similarity in size of the atoms of Zr and Hf is due to the lanthanide contraction.

81. **(2)** Higher the reduction potential stronger is the oxidising agent.

82. **(2)** In molten NaCl, current is carried by the movement of ions; cation towards the negative electrode (cathode) and anion towards the positive electrode (anode).

83. **(3)** 

No. of hybridized orbital = $sp^2 + sp^2$

$= 3 + 3 = 6$

No of pure orbital = No. of hydrogen + 2

x no. π bonds = 4 + 2 (1)

Ratio of pure and = 6 : 6 = 6

Hybridised orbital = 1 : 1.

84. **(1)** If both Assertion & Reason are true and the Reason is the correct explanation of the Assertion

85. **(2)** Specific conductivity is the conductance of ions kept in a cube of side 1 unit and hence, it decreases with dilution.

SECTION - B (Attempt Any 10 Questions)

86. **(1)** $\lambda = \frac{h}{mv}$; when v is same $\lambda \propto \frac{1}{m}$

Thus, the order of wavelength is electron > hydrogen > helium > neon.

87. **(3)** $C + O_2 \rightarrow CO_2; \Delta H^\circ = -a$ kJ ...(i)

$2CO + O_2 \rightarrow 2CO_2; \Delta H^\circ = -b$ kJ ...(ii)

Formation of CO can be written as:

$C + \frac{1}{2} O_2 \rightarrow CO; \Delta H^\circ = ?$ ...(iii)

For getting equation (iii),
Substration equation (ii)/2 from equation (i)

Thus, $\Delta H = -a - (-b/2) = b/2 - a = \frac{b - 2a}{2}$

88. **(1)** Both are SN_2

89. **(3)** $H - \overset{\overset{O}{\|}}{C} - H$

gives Tollen's test but does not give halo form test as it has no

$CH_3 - \overset{\overset{O}{\|}}{C} - groups$

90. **(2)** Smaller the atom, stronger is the bond and greater the bond dissociation energy. Therefore the bond C–D has the greatest energy or smallest atoms.

91. **(4)** Hybridisation is sp^3d^2.

92. **(2)** In FeS_2 oxidation number of S is –1.

$+2 + 2x = 0 \Rightarrow x = -1$.

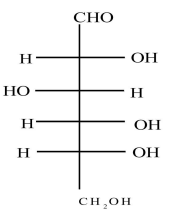
93. **(4)** $2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$

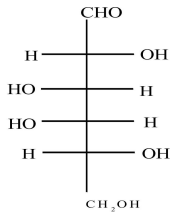
$$\text{Rate} = -\frac{1}{2}\frac{d[N_2O_5]}{dt} = +\frac{1}{4}\frac{d[NO_2]}{dt}$$

$\therefore$ Rate of decomposition of N_2O_5 to rate of formation of NO_2 is

$$-\frac{1}{2}\frac{d[N_2O_5]}{dt} : \frac{1}{4}\frac{d[NO_2]}{dt} \Rightarrow \frac{\frac{-d[N_2O_5]}{dt}}{\frac{d[NO_2]}{dt}} = \frac{2}{4} = 1:2$$

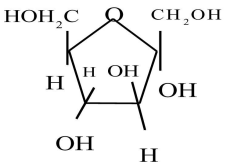
94. **(1)**

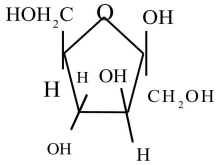




D – Glucose D – Galactose

Differ in configuration of fourth carbon. Hence they of C_4 – epimers

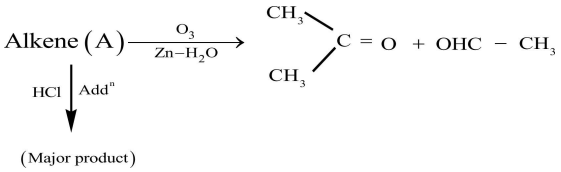




α – D fructose β – D fructose

Differs in configuration of second carbon which is C_2 anomers.

95. **(2)** The given hint is



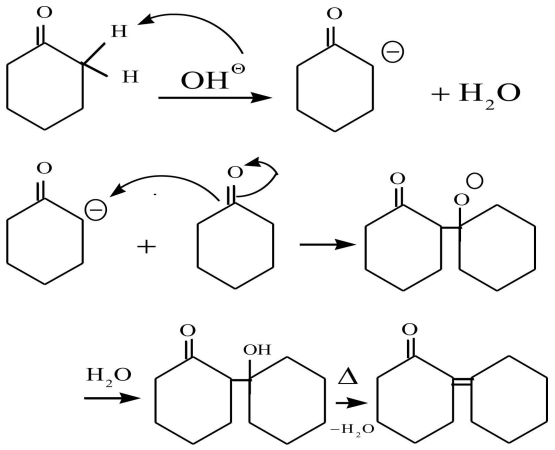
The products obtained from first reaction gives an idea about alkene i.e 2 – methyl – 2 –butene.

96. **(2)** Among the given statements, A and B are correct while the statements C, D and E are incorrect.
Their corrected form is:
- The primary valency of the metal ion is satisfied by negative ions.
- The primary valency are normality ionisable.
- Neutral molecules satisfied the secondary valencies in a complex.

97. **(3)** VA group includes N, P as non-metals, As and Sb as metalloids and Bi is a metal.

98. **(2)** A is true but R is false. The correct form of R is:
Gold has a higher reduction potential than the given metals. Hence, $AuCl_3$ will react with these metals.

99. **(1)**



100. **(3)** Alcohols are less acidic than water except methanol.

BOTANY

Section - A (35 Questions)

101. **(2)** (NCERT 11th , Page no. 92, Line no. 07-09)
102. **(4)** (NCERT 12th Page no 23, 2nd Paragraph, Line no- 18 and 19)
103. **(2)** (NCERT 12th Page no- 26 2nd Paragraph, Line no- 3 and 4)
104. **(3)** (NCERT 12th Page no- 36, 3rd paragraph, line no- 23)
105. **(3)** (NCERT 11th, Page 245, point 15.3 (Line no. 01-02))
106. **(4)** (NCERT 11th PK 3.4 PAGE NO.38 and 39 concept based)
107. **(3)** (NCERT 12th, Pg 110, Last line - Connect with cell topic.)
108. **(3)** (NCERT 11th PK Page no.34 fig.3.2(d),concept)
109. **(3)** (NCERT 12th Pg 112, Table 6.1)
110. **(2)** (NCERT 11th Para 10.4.1 based concept Page no. 186)
111. **(1)** (NCERT 12th, Pg 86, Para 1, XO mech based)
112. **(4)** (NCERT 12th, Pg 116, Para 2)
113. **(2)** (NCERT 11th, Page No. 79, sub-topic 5.9.1)
114. **(4)** (NCERT 12th, Pg 110, Figure 6.11)
115. **(1)** (NCERT 11th, Page No. 68, sub-topic 5.2.1)
116. **(2)** (NCERT 12th, Pg 91, Thalassemia - Last 3 Lines)
117. **(2)** (NCERT 11th Para 10.4.1, Page no. 168/ Botany)
118. **(1)** (NCERT 11th Page no. 212, point 13.6.1, Page no. 214, 2nd paragraph – first 3 lines,Page no. 210, point 13.4, 1st paragraph – 1st two lines, Page no. 220, point 13.9)
119. **(4)** (NCERT 11th EXEMPLAR / PAGE NO. 50)
120. **(2)** (NCERT 11th Para 8.5.1, Figure 8.4 based, Page no.132/Botany)
121. **(2)** (NCERT 11th Para 8.5.3.2, Figure 8.5.3.2 based, Page no.134/Botany)
122. **(2)** (NCERT 12th, Page No. 115, 3rd Paragraph & 2nd Paragraph, last two lines)
123. **(4)** (NCERT 12th, Pg 90, Para 2)
124. **(2)** (NCERT 11th –Page no. 209, 13.3, 3rd paragraph, 6th and 7th line)
125. **(1)** (NCERT 11th Page no- 24, Paragraph-2.3.3, Line no- 11)
126. **(4)** (NCERT 11th Page no- 19, 1st pargraph, Line no- 6 and 7)
127. **(3)** (NCERT 11th, Page no. 248 (Last paragraph), 250 (Line no.- 01-03), 250 (Point 15.4.3.5) and 250 (Point 15.4.3.4)
128. **(3)** (NCERT 11th PK. Page no.38,2nd para,3rd line)
129. **(4)** (NCERT 11th, Page no- 8, Paragraph- 1.3, Line 24, 25)
130. **(3)** (NCERT 12th Page no.249, fig.14.4(d))
131. **(3)** (NCERT 11th, Page No. 73, sub-topic 5.5)
132. **(1)** (NCERT 12th, Pg 80, Dihybrid cross based)
133. **(1)** (NCERT 11th Pg.236, Fig. 14.6)
134. **(4)** (NCERT 11th Pg.227, 14.1)

135. **(3)** (NCERT 12th, Pg 121, 6.10)

SECTION - B (Attempt Any 10 Questions)

136. **(1)** (NCERT 11th, Page 247, Point 15.4.1 (First paragraph))
137. **(2)** (NCERT 11th, Page no. 93, Point- 6.3.5 (Line no. 07-08))
138. **(3)** (NCERT 11th Pg.230, 14.3)
139. **(2)** (NCERT 11th PK.Page no.33,3.1.32nd para)
140. **(3)** (NCERT 12th Page no.32)
141. **(2)** (NCERT 11th, Page No. 74, sub-topic 5.5.1.2)
142. **(4)** (NCERT 12th, Pg 108, Figure 6.9 based)
143. **(1)** (NCERT 11th Para 8.5.1, Figure 8.4 based, Page no.132)
144. **(2)** (NCERT 11th Para8.5.3.1, Page no.134)
145. **(3)** (NCERT 11th Page no. 210, 13.4, 4th paragraph)
146. **(4)** (NCERT 12th, Pg 87, 5.6.2)
147. **(2)** (NCERT 11th Page no- 24, Paragraph- 2.3.4, Line no- 29,30)
148. **(3)** (NCERT 12th Page no- 30, 3rd paragraph, Line no- 39)
149. **(4)** (NCERT 11th Page no- 10, Paragraph- 1.3.4, Line no- 10)
150. **(4)** (NCERT 11th Page no- 22, 1st paragraph, Line no- 1 and 2**)**

ZOOLOGY

Section - A (35 Questions)

151. **(3)** (NCERT 11th, Page no- 148, Paragraph- 9.5, Line no- 3-7)
152. **(2)** (NCERT 12th Page no- 132, 2nd paragraph, Line no- 19 and 20)
153. **(3)** (NCERT 11th page no 105, Cardiac muscle tissue)
154. **(2)** (NCERT 12th page no 59, 4.2, para 1)
155. **(4)** (NCERT 11th page no. 119, para1, line9)
156. **(2)** (NCERT 12th Para10.1, exercises based, Page no.181,189)
157. **(2)** (NCERT 12th Page no.236 (iv),5th line.)
158. **(1)** (NCERT 11th Page No. 52; 5th line of Aschelminthes)
159. **(3)** (NCERT 11th P.No.312, Disorders)
160. **(4)** (NCERT 12th P.No.2198, Last para linked to DNA Fingerprinting)
161. **(3)** (NCERT12th page no 63, STD)
162. **(1)** (NCERT12th page no 61, para 2)
163. **(3)** (NCERT 12th Page No. 138)
164. **(1)** (NCERT 11th Page No. 297 Regulation of Kidney Function)
165. **(1)** (NCERT 11th Page No. 290, Last line)
166. **(2)** (NCERT 11th Page No. 337, 4th and 5th paragraph)
167. **(1)** (NCERT 11th Page No.- 200 -Cardiac cycle)
168. **(3)** (NCERT 12th Page No.- 155 - AIDS)
169. **(3)** (NCERT 11th p.no.113, fig. 7016)
170. **(3)** (NCERT 12th page no 46, para 3)
171. **(4)** (NCERT 12th P.No.201, 2nd para)
172. **(3)** (NCERT 11th P.No.321, Hind Brain : Applied)
173. **(4)** (NCERT 11th Page No.- 190 - Disorders)
174. **(2)** (NCERT 11th Page No.- 197 - Lymph)
175. **(4)** (NCERT 11th, Page no-144, 3rd Paragraph, Line no- 4)
176. **(3)** (NCERT 12th Page no.265,15.2.1,2nd para)
177. **(3)** (NCERT 12th Page no.260 1st para 4th line.)
178. **(2)** (NCERT 12th P.No.212, 3rd Para)
179. **(2)** (NCERT 11th P.No.306, 1st para)
180. **(2)** (NCERT 11th P.No.312, Disorders)
181. **(1)** (NCERT 11th P.No.316, Human Nervous System : Applied)
182. **(3)** (NCERT 12th Page no-129, 1st Paragraph, Line no- 16 and 17)
183. **(1)** (NCERT 12th Page no- 133, 1st Paragraph, Line no- 2 and 3)
184. **(3)** (NCERT 12th Page No.- 155 - AIDS)
185. **(2)** (NCERT 11th Page No. 202-203)

SECTION - B (Attempt Any 10 Questions)

186. **(3)** (NCERT 11th, Page no-150, Paragraph 2nd, Line no- 21-23)
187. **(4)** (NCERT 12th Page no- 135, 3rd paragraph, Conceptual)
188. **(2)** (NCERT 12th Para 10.2.3, Page no.183)
189. **(1)** (NCERT 12th Page no.229,1st line)
190. **(3)** (NCERT 12th page no. 63, STI)
191. **(2)** (NCERT 12th page no 47, Last para)
192. **(2)** (NCERT 12th Page No.- 155 - AIDS)
193. **(1)** (NCERT 11th Exemplar)
194. **(1)** (NCERT 11th Page No. 297 and 298 - 19.6 (micturitions)
195. **(1)** (NCERT 11th Page No. 50, last 4th line of phylum cnidaria)
196. **(1)** (NCERT 11th P.No.307, 1st para, Fig 20.5 & Last Para)
197. **(3)** (NCERT 12th Para 10.2.3, Page no.183)
198. **(1)** (NCERT 11th P.No.321, Forebrain , Hindbrain para and P.No 317 last para)
199. **(1)** (NCERT 12th P.NO: 199: Fig:11.4 : Description: P.No.213: Biological Products ,212: Molecular Diagnosis)
200. **(3)** (NCERT 11th Page No. 340, 4th line of 2nd paragraph)