

SOLUTIONS PAPER-2(PCB) CODE-BA (UPSEE 2017)

PHYSICS

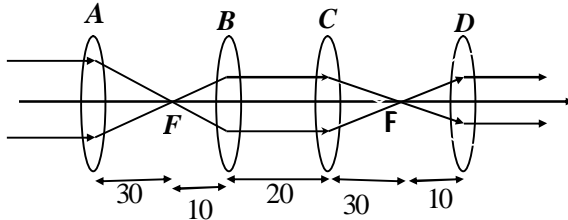
Sol.1. (C) ray will be still totally internally reflected at interface.

As n_2 decreases, $i_c = \sin^{-1}\left(\frac{n_2}{n_1}\right)$ also decreases, so condition $i > i_c$ is still satisfied and there will be still total internal reflection at interface. If angle of incidence is increased then ray will be still totally internally reflected at interface because $i > i_c$.

Sol.2. (B) 2eV

$$KE_{max} = h\nu_{max} - \phi = 3 - 1 = 2eV$$

Sol.3. (C) 100 cm

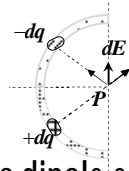


$$AD = 30 + 10 + 20 + 30 + 10 = 100 \text{ cm}$$

Sol.4. (B) conduction

As atoms in the spoon vibrate about their equilibrium positions and transfer energy from one end to other end. This process is conduction.

Sol.5. (B) along +y axis



Consider any two symmetric dipole elements, net contribution due to these elements at point P is along +y axis. Similarly by principle of superposition we can say that net electric field at P is directed along +y axis.

Sol.6. (D) $8kR^2$

$$KE_i + PE_i = KE_f + PE_f$$

$$\Rightarrow 0 + \frac{1}{2}k[OA - R]^2 = KE_f + \frac{1}{2}k[OB - R]^2$$

$$\Rightarrow \frac{1}{2}k[5R - R]^2 = KE_f + \frac{1}{2}k[R - R]^2$$

$$\Rightarrow KE_f = 8kR^2$$

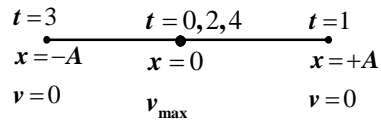
Sol.7. (B) $9\mu\text{J}$

$$U = \frac{1}{2}C_{eq} V^2 = \frac{1}{2} \frac{(3\mu)(6\mu)}{(3\mu + 6\mu)} (-3)^2 = 9\mu\text{J}$$

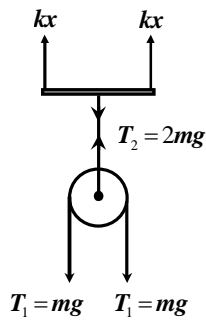
Sol.8. (A) experiences a force directed along the radial direction only.

Circular motion is a special case in gravitational field. There may be straight line, elliptical paths, but force will be always directed toward the centre of the sphere.

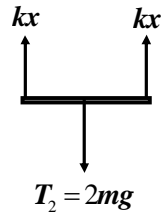
Sol.9. (C) speed is maximum at $t=4s$.



Sol.10. (A) $\frac{mg}{k}$



F.B.D. of lower rod



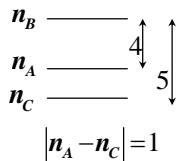
$$kx + kx = 2mg$$

$$\Rightarrow x = \frac{mg}{k}$$

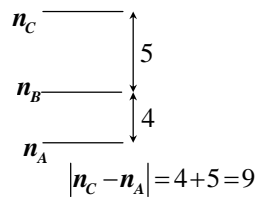
Sol.11. (C) 9

We consider two possible cases:

Case - I



Case - II



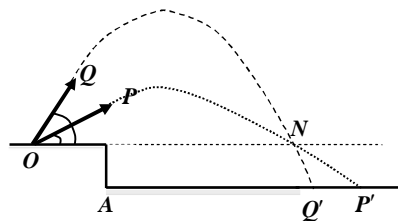
Sol.12. (A) 0.6 m/s

By momentum conservation

$$(10 \times 10^{-3})1000 = (10 \times 10^{-3}) \times 400 + 10v$$

$$\Rightarrow v = 0.6 \text{ m/s}$$

Sol.13. (B) $AP' > AQ'$



For complimentary angles range ON is same for P and Q as points O and N are on same horizontal plane. From figure $AP' > AQ'$

Sol.14. (D) 60 Hz

Second overtone $n=3 \therefore f_3 = 3f_0 = 60\text{Hz}$

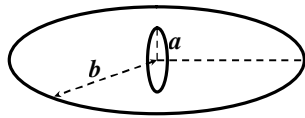
Sol.15. (B) 4 m/s^2

$$x = \text{slope}(t^2) = 2t^2 \Rightarrow \frac{d^2x}{dt^2} = 4$$

Sol.16. (C) 1s

In one time constant 63% change occurs in the value of current .The 63% of maximum current is 1.26 A .It is obvious from graph that current 1.26A corresponds to time which is slightly greater than 0.9sec. Hence option having 1s is most appropriate.

Sol.17. (C) zero



At the position of smaller loop, Magnetic field due to larger loop is parallel to plane of smaller loop. Due to larger loop, magnetic flux linked with smaller loop is zero. Hence mutual induction is zero.

$$\phi_1 = Mi_2 \Rightarrow 0 = Mi_2 \Rightarrow M = 0$$

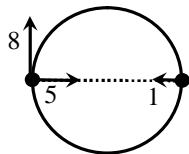
Sol.18. (D) 3 m / s

$$\text{Impulse during } t=2 \text{ to } t=4 \text{ is } \frac{1}{2}(3-2)(5) + \frac{1}{2}(4-3)(-5) = 0$$

Impulse = change in momentum

$$mv_f - mv_i = 0 \Rightarrow v_f = v_i = -3 \Rightarrow \text{speed} = 3$$

Sol.19. (D) 10



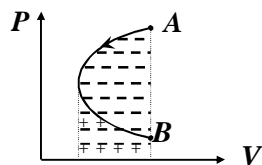
$$\vec{a}_Q = -\hat{i}, \vec{a}_P = 5\hat{i} + 8\hat{j} \Rightarrow \vec{a}_{rel} = \vec{a}_P - \vec{a}_Q = 6\hat{i} + 8\hat{j}, \Rightarrow |\vec{a}_{rel}| = 10$$

Sol.20. (A) pressure of 85cm of Hg

$$P_{gas} = P_{atm} + P' = 76 \text{ cm of Hg} + 9 \text{ cm of Hg} = 85 \text{ cm of Hg}$$

Sol.21. (C) work done by gas is negative

Volume does not remain constant throughout the process AB . As $T = \frac{PV}{nRT}$, temperature decreases initially as both P and V decreases .By area under curve ,net work done is negative.



Sol.22. (A) 20 kgm²s⁻³

$$\frac{dKE}{dt} = P_{all} = \vec{F} \cdot \vec{v} = m\vec{a} \cdot \vec{v} = (100 \times 10^{-3})(20\hat{i} + 10\hat{j}) \cdot 10\hat{i} = 20$$

Sol.23. (C) It remains stationary

$$\text{Maximum possible friction force } F_{frictionMax.} = (0.5)2g = 10N$$

$$\text{Maximum applied force } F_{appliedMax.} = 8(1) = 8N$$

$\because F_{applied Max.} < F_{friction Max.}$ so the block will remain stationary

Sol.24. (A) $84 kPa$

$$\Delta p = B \left(\frac{-\Delta V}{V} \right) = 2100 \times 10^6 \times \frac{0.004}{100} = 84 kPa$$

Sol.25. (D) $m_1 R^2 + \frac{m_2 R^2}{3}$

$$I = I_{ABC} + I_{AOC} = \sum m_i R_i^2 + m_2 \frac{(AC)^2}{12} = R^2 \sum m_i + m_2 \frac{(2R)^2}{12} = m_1 R^2 + m_2 \frac{R^2}{3}$$

Sol.26. (A) dark

$$\text{Path difference } \Delta = 13.5\lambda = \left(13 + \frac{1}{2}\right)\lambda = \left(n + \frac{1}{2}\right)\lambda$$

So there will be minima.

Sol.27. (A) It will be clockwise

As collision is elastic, so after collision ball moves towards left with speed v . As walls and ground are smooth, there is no tangential torque on the ball. Only normal forces and mg force pass through the centre of the ball, so their torques about the centre are zero. Torques on the ball about its centre is zero. By $\tau = I\alpha$, angular acceleration is zero hence angular velocity does not change.

Sol.28. (A) electron

$$R = \frac{mv}{qB} \quad v, q \text{ and } B \text{ are same so } R \propto m$$

Mass of electron is minimum for given options.

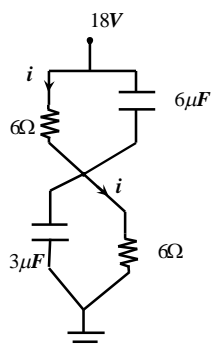
Sol.29. (C) $8 Nm$

$$\tau = iAB \sin 90^\circ = 2 \times \frac{1}{2} \times 2 \times 2 \times 2 = 8 Nm$$

Sol.30. (A) $84 m^2$

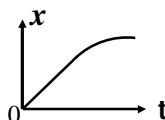
Result should have only two significant numbers (same as 12m).

Sol.31. (C) $27 \mu C$



$$i = \frac{18}{6+6} = 1.5 A \quad \text{and} \quad V_2 = R_2 i = 6 \times 1.5 = 9V ; q_2 = (3)9 = 27 \mu C$$

Sol.32. (B)

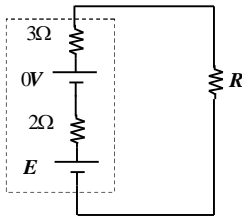


Initially velocity is constant, so slope of $x-t$ graph is constant and finite. Finally velocity becomes zero hence slope of $x-t$ graph becomes zero.

Sol.33(C) $20m^3$

$$mg = \rho_{air} Vg \Rightarrow 26g = 1.3Vg \Rightarrow V = 20m^3$$

Sol.34. (D) 5Ω



Since equivalent internal resistance of equivalent cell across the external resistor R is $2 + 3 = 5\Omega$, Hence power delivered to R will be maximum if $R = 5\Omega$

Sol.35. (A) $\frac{1}{4}$

$$R_A = \frac{\rho l}{\pi(2R)^2}, R_B = \frac{\rho l}{\pi(R)^2} \Rightarrow \frac{R_A}{R_B} = \frac{1}{4} \Rightarrow \frac{V_A}{V_B} = \frac{R_A I}{R_B I} = \frac{1}{4}$$

Sol.36. (A) AI

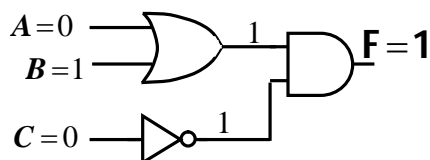
Sol.37. (A) $7 \text{ kgm}^2\text{s}^{-1}$

$$L = 2 \times 2 \times 2 \sin 90^\circ + 3 \times 3 \times 3 \sin 0^\circ - 1 \times 1 \times 1 \sin 90^\circ = 8 - 1 = 7$$

Sol.38. (A) $\frac{2V^2}{3R}$

$$P = \frac{V^2}{R_{eq}} = \frac{V^2}{R + \frac{R}{2}} = \frac{V^2}{\frac{3R}{2}} = \frac{2V^2}{3R}$$

Sol.39. (C) $A = 0, B = 1, C = 0$



Sol.40. (D) *remains same*

Intensity after passing through polaroid A is $I_A = \frac{I_0}{2} = \frac{\text{Intensity of unpolarised light}}{2}$

Intensity after passing through polaroid B is $I_B = I_A \cos^2 \theta$

Here θ is the angle between pass axes of A and B. Here their pass (transmission) axes always remain parallel to each other i.e. $\theta = 0$. $\therefore I_B = I_A = \frac{I_0}{2} = \text{constant}$. Hence during the rotation, intensity of transmitted light through polaroid B remains same.

Sol.41. (B) *4 days*

$$8000 \rightarrow 4000 \rightarrow 2000 \rightarrow 1000$$

4days 4days 4days

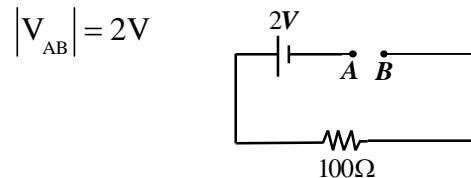
$$T_{1/2} = 4\text{days}$$

Sol.42. (B) 1035 A°

$$\lambda \cong \frac{12420}{\Delta E} = \frac{12420}{|E_2 - E_1|} = \frac{12420}{|-4 - (-16)|} = 1035 \text{ A}^\circ$$

Sol.43. (D) $2V$

In reverse bias, it is equivalent to open circuit condition. From figure given below



Sol.44. (B) *greater than P but less than 16P*

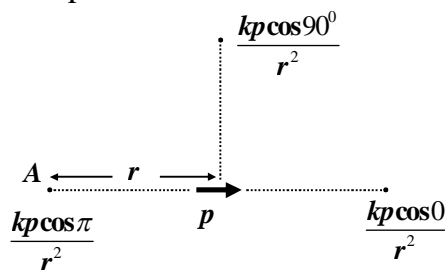
$$P \propto T^4, P' \propto T'^4 \text{ Here } T = 273 + 50, T' = 273 + 100 \therefore T < T' < 2T$$

$$\frac{P'}{P} = \left(\frac{273 + 100}{273 + 50} \right)^4 \therefore 1 < \frac{P'}{P} < 2^4$$

Sol.45. (D) *It is not possible*

It is not possible, because it will violate the second law of thermodynamics (Clausius statement). If we consider imaginary case in which temperature of sample becomes more than 600K then it will radiated power is more than absorbed power. Hence it will correspond to decreasing temperature situation. So it is not possible to heat the sample to 900K.

Sol.46. (C) $\frac{-kp}{r^2}$



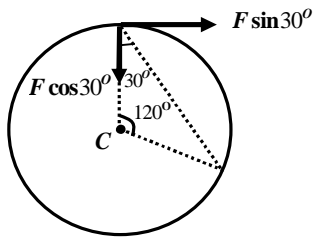
$$V_A = \frac{kp \cos \pi}{r^2} = \frac{-kp}{r^2}$$

Sol.47. (C) $\frac{(b^2 - a^2)\gamma}{R}$

$$\phi = \vec{B}_1 \cdot \vec{A}_1 + \vec{B}_2 \cdot \vec{A}_2 = Bb^2 \cos 0^\circ + Ba^2 \cos 180^\circ = B(b^2 - a^2) = (b^2 - a^2)\gamma t$$

$$i = \frac{|\epsilon|}{R} = \frac{\left| \frac{d\phi}{dt} \right|}{R} = \frac{(b^2 - a^2)\gamma}{R}$$

Sol.48. (C) $\frac{F}{MR}$



$$\tau = I\alpha \Rightarrow F \sin 30^\circ R = \frac{MR^2}{2} \alpha \Rightarrow \alpha = \frac{F}{MR}$$

Sol.49. (C) acceleration may be zero at t=2

Let us consider an example in which particle is projected vertically upward from ground at t=0 and it reaches highest point at t=2.

Then at that instant(t=2) velocity v=0 but acceleration=-g. Here displacement is non zero for the duration t=0 to t=2. For t>2 the ball again acquires velocity. In this example options(A),(B) and (D) are incorrect.

Let us consider another example in which a particle is moving on horizontal plane and it comes to rest permanently at t=1 ,then this is the one of the special case in which acceleration of particle is zero at t=2.

Sol.50. (C) $(4\hat{i} + 2\hat{j}) \text{ m/s}$

$$e = \left[\frac{v_{\text{separation}}}{v_{\text{approach}}} \right]_y \Rightarrow \frac{1}{2} = \frac{v_y - 0}{4 - 0} \Rightarrow v_y = 2$$

v_x remains same, Hence $\vec{v}_{\text{final}} = 4\hat{i} + 2\hat{j}$

CHEMISTRY

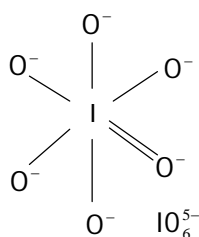
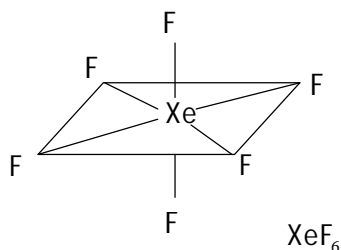
Sol.51. (A) $[\text{Co}(\text{CO})_4]^-$ and $\text{Ni}(\text{CO})_4$

$[\text{Co}(\text{CO})_4]^-$ has total electrons = $3+2 \times 4+1=12$,

$\text{Ni}(\text{CO})_4$ has total electrons = $4+2 \times 4=12$; Thus isoelectronic

Sol.52(B) (i), (ii) & (iv)

XeF_6 has distortion and become Pentagonal bipyramid with one lone pair.

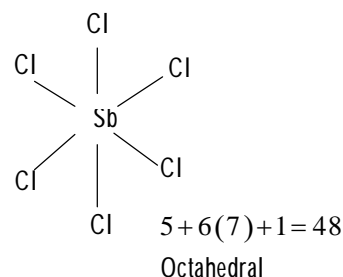


Orthoperiodate (5^-)

Octahedral

$7+6(6)+5=48$ electrons

Octahedral



$$\text{SnCl}_6^{2-} - 4+6(7)+2=48$$

6 set of electrons – octahedral

Sol.53. (B) $\text{H}_2\text{S} < \text{NH}_3 < \text{H}_2\text{O} < \text{HF}$

Sol.54. (D) BF_3

BF_3 can form π bond also in addition to σ bond. As F is more electronegative and octate in B is not complete.

Sol.55. (D) H_2O

H_2O will act as Brönsted acid as provided H^+ ion.

Sol.56. (B) 0.354 gm

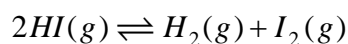
$$pOH = pK_b + \log \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]} \Rightarrow pOH = -\log K_b + \log \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]} \Rightarrow pOH = \log \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]K_b}$$

$$\Rightarrow 14 - 9.45 = \log \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]K_b} \quad \Rightarrow \because \log 3 \approx 0.47$$

$$\Rightarrow \log 10^{14} - (\log 10^9 + \log 3) \approx \log \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]K_b} \Rightarrow \log \frac{10^{14}}{10^9 \times 3} \approx \log \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]K_b} \Rightarrow \frac{10^{14}}{10^9 \times 3} \approx \frac{[\text{NH}_4\text{Cl}]}{[\text{NH}_3]K_b}$$

$$\Rightarrow \frac{10^{14}}{10^9 \times 3} [\text{NH}_3]K_b \approx [\text{NH}_4\text{Cl}] \Rightarrow \frac{10^{14}}{10^9 \times 3} \times 0.01 \times 1.85 \times 10^{-5} \approx [\text{NH}_4\text{Cl}] \approx 0.35$$

Sol.57. (D) $\frac{2\sqrt{K_p}}{1+2\sqrt{K_p}}$



At eq. $2(1-x) \quad x \quad x$

Total moles at equilibrium = $2-2x+x+x=2$, here x = degree of dissociation

$$K_p = \frac{\left(\frac{x}{2}\right)\left(\frac{x}{2}\right)P^2}{4(1-x)^2 P^2} = \frac{x^2}{4(1-x)^2} \Rightarrow 2\sqrt{K_p} = \frac{x}{1-x} \Rightarrow x = \frac{2\sqrt{K_p}}{1+2\sqrt{K_p}}$$

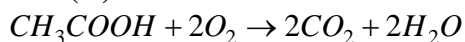
Sol.58. (C) 171

A 6% solution of sucrose $C_{22}H_{22}O_{11}$ conc. = $\frac{6g}{100ml} = 0.06ml^{-1} = \frac{60}{342}molel^{-1}$

For unknown solution conc. = $3g \text{ per } 100cc = 30 \text{ } gl^{-1} = \frac{30}{m}molel^{-1}$

For isotropic solution $\frac{60}{342} = \frac{30}{m} \Rightarrow m = \frac{30 \times 342}{60} = 171$

Sol.59. (D) 491 kJ



$$-869 = 2 \times (-395) + 2 \times (-285) - \Delta_f H_{(CH_3COOH)}$$

Simplification gives

$$-2 \times 434.5 = 2 \times (-395) + 2 \times (-285) - \Delta_S H_{(CH_3COOH)}$$

$$\text{or } -434.5 = (-395) + (-285) - \frac{1}{2} \Delta_f H \Rightarrow 491 = \Delta_f H$$

Sol.60. (B) Sulphur

Sol.61. (A) Cathode is Lead dioxide (PbO₂) and anode is Lead (Pb)

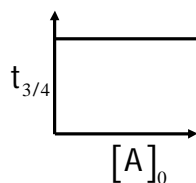
Sol.62. (D) ($\Delta S_{\text{system}} + \Delta S_{\text{surrounding}}$) > 0

Sol.63. (A) $PV_m = RT$

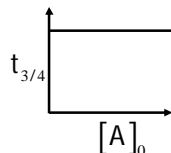
At low pressure & high pressure V is very high, thus $\frac{a}{V_m^2}$ and b are negligible, finally reduced

eq. $PV_m = RT$

Sol.64. (D)



If $t_{1/2}$ vs. $[A]^0$ is constant, it is radioactive decay hence is not of zero order. Thus answer will be



Sol.65. (C) Hexane

Sol.66. (A) 5×10^{-10} gm

Let W be the weight of Ra^{238} in equilibrium as

$$\frac{Th^{232}}{Ra^{238}} = \frac{t_{1/2Th}}{t_{1/2Ra}} \Rightarrow \frac{1 \times N_0 / 232}{W \times N_0 / 238} = \frac{1.4 \times 10^{10}}{7}; N_0 = \text{AvagardoNo}$$

$$W = \frac{238}{232 \times 2 \times 10^9} = 5 \times 10^{-10} \text{ gm}$$

Sol.67. (B) $n=4, l=0, m=0, s=+\frac{1}{2}$

For option (A) electron is in 3d

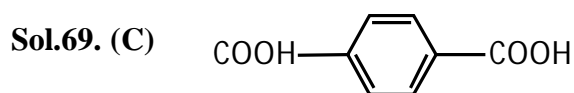
For option (B) electron is in 4s

For option (C) electron is in 4p

For option (D) electron is in 5s

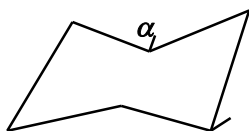
According to Aufbau principle $4s < 3d < 4p < 5s$. Hence Answer will be $n=4, l=0, m=0, s=+\frac{1}{2}$

Sol.68. (A) 4, 6



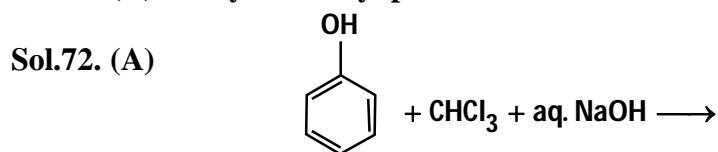
Terephthalic acid.

Sol.70. (B) cis-1, 3-dimethylcyclohexane



Two chiral centre of α plane of symmetry so it is meso compound.

Sol.71. (C) 2 ethyl-3 methyl pentanal



In Reimer-Tiemann, phenol reacts with CHCl_3 & aq. KOH/NaOH to give Salicylic Aldehyde.

Sol.73. (B) $\text{B} < \text{S} < \text{P} < \text{F}$

I.P. in period increases \uparrow left to right.

I.P. in group up to down \downarrow decreases.

Sol.74. (B) $\text{H}_3\text{C}-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}-\text{CH}_3$ and $\text{H}_2\text{C}-\text{CH}_2-\text{CH}-\overset{\oplus}{\text{C}}\text{H}_2$
 2° Carbocation will be more stable than 1°

Substituted carbocation will more stable than simple.

Sol.75. (A) Be_3N_2

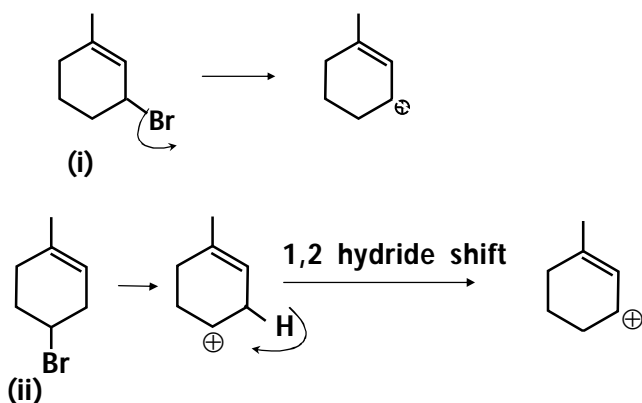
Sol.76. (C) Cannizzaro reaction

Sol.77. (C) BN

Sol.78. (C) $\text{i} > \text{iv} > \text{ii} > \text{iii}$

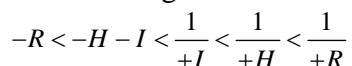
$$\text{Acidity} \propto \frac{1}{\text{basicity}}$$

Sol.79. (C) (i),(ii)



Sol.80. (A) iii < i < iv < ii

Acidic strength \propto electron withdrawing group strength.

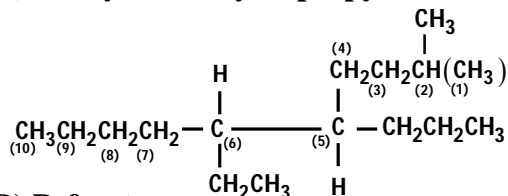


Sol.81. (A) Only -I effect

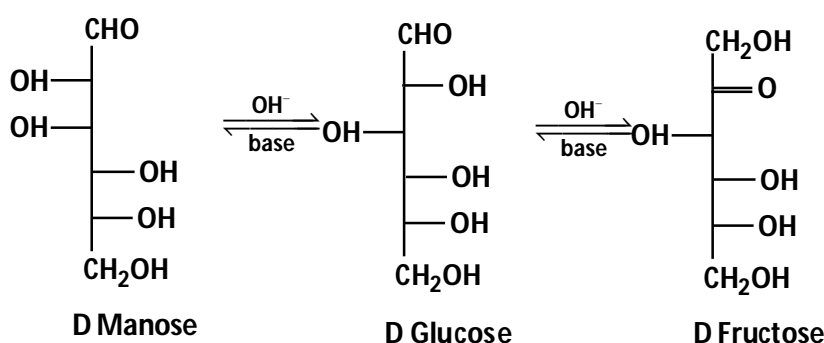
Due to SIR effect $-\text{NO}_2$ group goes out of plane of the paper (-I).

Sol.82. (C) AgNO_3

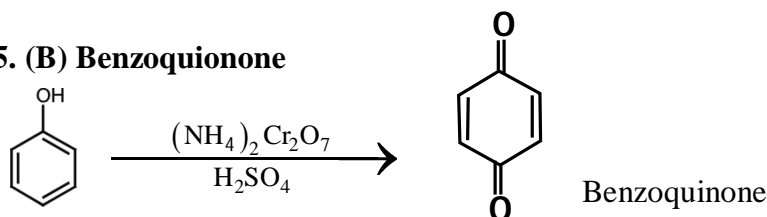
Sol.83. (A) 6-ethyl-2-methyl-5-propyldecane



Sol.84. (B) D-fructose

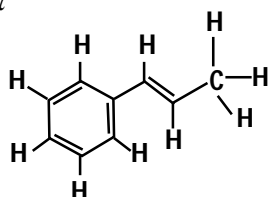


Sol.85. (B) Benzoquinone



Conjugated diketones

Sol.86. (C) $19\sigma, 4\pi$



19σ and 4π

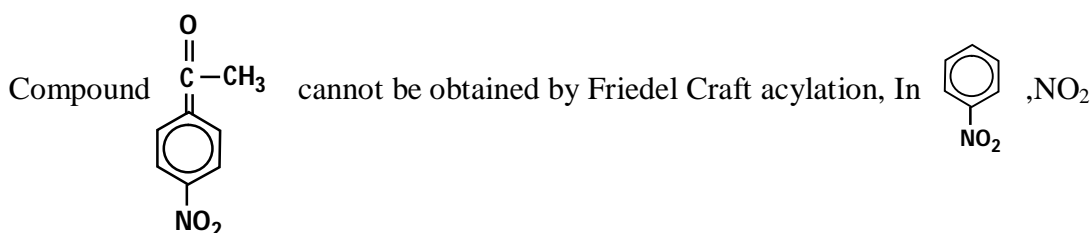
Sol.87. (B) (i) and (iii)

As a plane of symmetry exist in compound(ii), there is no chirality in it. Hence (i) & (iii) will be optically active.

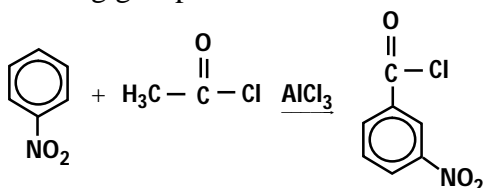
Sol.88. (A) BCl_3 and AlCl_3 are both Lewis acids and BCl_3 is stronger than AlCl_3

BCl_3 and AlCl_3 both are Lewis acids but BCl_3 is more electron deficient than AlCl_3 so BCl_3 is stronger Lewis acid than AlCl_3 due to high electron negativity. (E.N. B-2.0, Al 1.5)

Sol.89. (C) I, II, IV

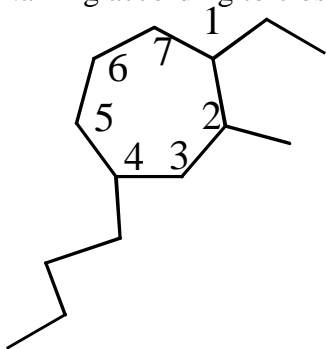


Group has -M or -R effect so it cannot be used in Friedel Craft acylation, this is deactivating & metadirecting group in ESR.

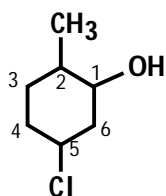


Sol.90. (A) 4-butyl-1-ethyl-2-methylcycloheptane

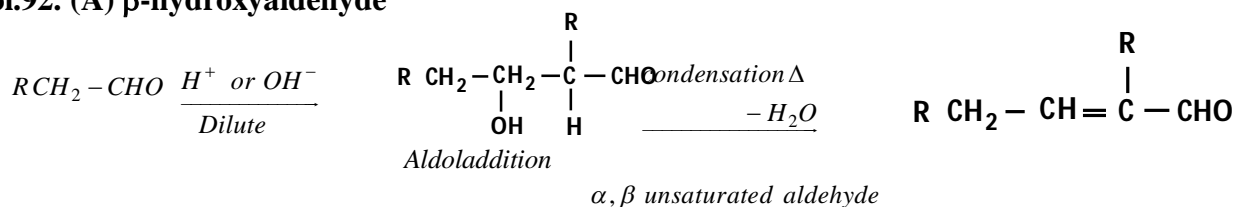
Naming according to closest set of locant rule



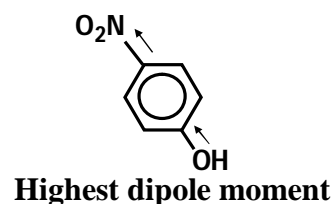
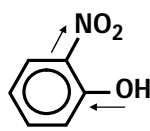
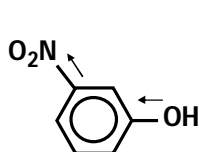
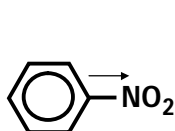
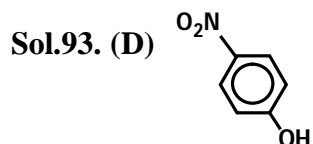
Sol.91. (D) 5-chloro-2-methylcyclohexanol



Sol.92. (A) β -hydroxyaldehyde

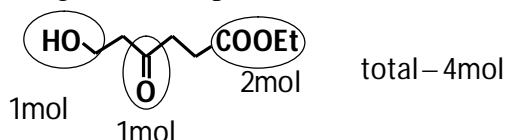


In aldol addition it is β hydroxyl aldehyde (aldol both alcohol and aldehyde group) But in aldol condensation the product is α, β unsaturated aldehyde



Sol.94. (A) 4

Grignard reagent will react on CO bond there are four C-O bond. These will be addition of Grignard reagent at four positions.



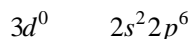
Sol.95. (A) KO_2

$\text{KO}_2 \rightarrow \text{K}^+ + \text{O}_2^- \equiv 17e^-$ in valance cell so unpaired electron present & show paramagnetism

$\text{SiO}_2 \rightarrow \text{Si}^{+4} + 2\text{O}^{2-} \equiv \text{Diamagnetic}$



$\text{TiO}_2 \rightarrow \text{Ti}^{+4} + 2\text{O}^{2-} \equiv \text{Diamagnetic}$

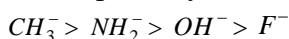
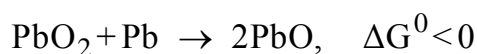


$\text{BaO}_2 \rightarrow \text{Ba}^{+2} + 2\text{O}^{2-} \equiv \text{Diamagnetic}$

Xe Configuration Ne Configuration

Sol.96. (C) CH_3^-

Nucleophilicity order

**Sol.97. (D) For lead +2, for tin +4**

i.e. ΔG^0 is negative so reaction is fisible i.e. for Pb,+2 Oxidation state is more stable.



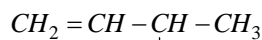
i.e. ΔG^0 is positive so reaction is nonfisible i.e. for Sn,+4 Oxidation state is more stable.

Correct answer is (D) For lead +2, for tin +4

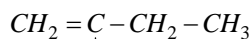
For lead +2, for tin +4 Oxidation State are more characteristics.

Sol.98. (A) 1-Phenyl-2-butane

(i) $\text{Ph}-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_3$ Geometrical isomerism.



(ii) $\text{CH}_2=\text{CH}-\underset{\text{Ph}}{\text{CH}}-\text{CH}_3$ No Geometrical isomerism

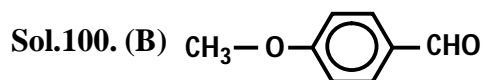


(iii) $\text{CH}_2=\underset{\text{Ph}}{\text{C}}-\text{CH}_2-\text{CH}_3$ No Geometrical isomerism

(iv) $\text{Ph}-\underset{\text{Ph}}{\text{C}}=\text{CH}-\text{CH}_3$ No Geometrical isomerism

Sol.99. (C) associate

At CMC they associate.



$\text{CH}_3-\text{O}-\text{C}_6\text{H}_4-\text{CHO}$ will be most reactive.

Hence most appropriate option is $\text{CH}_3-\text{O}-\text{C}_6\text{H}_4-\text{CHO}$

BIOLOGY

- Sol.101:** (C) Colloidal suspensions
Sol.102: (A) Thermoregulation
Sol.103: (C) Oriental cockroach
Sol.104: (B) Monera ,Protista ,Fungi, Plantae and Animalia
Sol.105: (C) *Orchid*
Sol.106: (D) Drupe
Sol.107: (C) Endodermis
Sol.108: (B) Nucleoside
Sol.109: (B) Lamellae
Sol.110: (D) Extra chromosomal DNA segment
Sol.111: (B) Foot
Sol.112: (C) *Cycas* rachis
Sol.113: (C) Haploid Sparophyte
Sol.114: (A) Total stem parasite
Sol.115: (B) Guttation
Sol.116: (A) RNA molecule
Sol.117: (C) Red
Sol.118: (C) Physical Process
Sol.119: (B) Gibberellin
Sol.120: (C) Removal of anthers
Sol.121: (C) Opening of flower
Sol.122: (B) Gamete
Sol.123: (A) Mutation
Sol.124: (B) Zygote intra fallopian transfer
Sol.125: (B) Nutrition
Sol.126: (A) Cretaceous
Sol.127: (A) Colon
Sol.128: (D) *Carpenter ant*
Sol.129: (D) Liver
Sol.130: (D) Spleen
Sol.131: (B) Glycoprotein
Sol.132: (A) All vertebrates
Sol.133: (B) Seed coat colour
Sol.134: (D) Cuticle
Sol.135: (B) Helper T lymphocytes
Sol.136: (D) all of the options
Sol.137: (C) Placenta and fully developed foetus
Sol.138: (B) *Leishmania donovani*

- Sol.139:** (B) Fats
Sol.140: (D) no eyes
Sol.141: (C) *Bombyx*
Sol.142: (C) G₁, S, G₂ and M
Sol.143: (C) Excretion
Sol.144: (D) Cryopresevation
Sol.145: (A) Epidermis of root
Sol.146: (B) Typoid fever
Sol.147: (B) Ventral Nerve cord
Sol.148: (D) Fungi
Sol.149: (D) Sporophyll
Sol.150: (C) Bentham and Hooker