

**UPSEE 2016**  
**Paper 2 Code BA Solutions**  
**Physics**

**Ans.1: (D)  $2R$**

By energy conservation between points A and B

$$Mg(2R) + \frac{1}{2}m(0)^2 = mgH + \frac{1}{2}m(0)^2 \Rightarrow H = 2R$$

**Ans.2: (D) 40 sec**

$$4t + 2t = 4(60) \Rightarrow t = 40$$

**Ans.3: (A) Towards the left**

Point of contact of wheel has velocity towards left.

**Ans.4: (C)  $b$  and  $m$  alone**

$$F = -\frac{dU}{dx} = -2bx \Rightarrow \omega = \sqrt{\frac{2b}{m}}$$

**Ans.5: (D) light is absorbed in quanta of energy  $E = h\nu$**

**Ans.6: (B)  $954 \text{ kg/m}^3$**

$$V\rho g = \frac{V}{6}(724)g + \frac{5V}{6}(1000)g \Rightarrow \rho = 954 \text{ Kg / m}^3$$

**Ans.7: (C) 144 cm**

$$n(18) = l \text{ where length of string is } l$$

$$(n+1)(16) = l$$

Gives  $n=8$  and  $l=144\text{cm}$

**Ans.8: (A)  $4.8 \times 10^{-4} \text{ C}$**

$$Q = \frac{\phi}{R} = \frac{(20 \times 10^{-4})(2.4)}{10} = 4.8 \times 10^{-4} \text{ C}$$

**Ans.9: (B)  $\frac{3q}{2\sqrt{2}\pi\epsilon_0 a}$**

$$V = \frac{kq}{a \sin 45^\circ} + \frac{k(-q)}{a \sin 45^\circ} + \frac{k(3q)}{a \cos 45^\circ} = \frac{1}{4\pi\epsilon_0} \frac{3q}{\frac{a}{\sqrt{2}}} = \frac{3q}{2\sqrt{2}\pi\epsilon_0 a}$$

**Ans.10: (D)  $\infty$**

$$\text{Resistance} = \frac{dV}{dI} = \frac{1}{\left(\frac{dI}{dV}\right)} = \frac{1}{\text{Slope}} = \frac{1}{0} = \infty$$

**Ans.11: (C) It moves back and forth (oscillating) towards the wolf**

Sound wave is longitudinal wave .

**Ans.12: (B) Silver**

**Ans.13: (D)  $4V$**

$$A_1V_1 = A_2V_2 \Rightarrow \pi(2R)^2 V = \pi R^2 V_B \Rightarrow 4V = V_B$$

**Ans.14: (B) 6 minutes**

$$-\frac{d\theta}{dt} = k[\theta_{av} - \theta_0]$$

$$-\frac{(59-61)}{4} = k\left[\frac{61+59}{2} - 30\right]$$

$$\frac{1}{2} = k30 \Rightarrow k = \frac{1}{60}$$

$$-\frac{(49-51)}{t} = k\left[\frac{51+49}{2} - 30\right]$$

$$\frac{2}{t} = k(20) \Rightarrow t = 6$$

**Ans.15:(C)18000C**

$$i = \frac{7.5}{9} \therefore Q = it = \frac{7.5}{9}(6)(60)(60) = 18000C$$

**Ans.16: (B)  $\frac{B\omega l^2}{2}$**

**Ans.17: (A)  $3\Phi_E$**

$$\Phi_E = \frac{q}{\epsilon_0} \therefore \Phi = \frac{q + (-3q) + 5q}{\epsilon_0} = \frac{3q}{\epsilon_0} = 3\Phi_E$$

**Ans.18:(B)27A**

$$IV = P_1 + P_2 + P_3$$

$$I(120) = 1800 + 1300 + 100 \therefore I = 26.67A$$

**Ans.19: (A)2A**

$$B = \frac{\mu_0}{2\pi(0.1)}[10 + 8 + I - 20] = 0 \therefore I = 2$$

**Ans.20:(C)80V**

$$|\mathcal{E}| = L \left| \frac{di}{dt} \right| = (40 \times 10^{-6}) \left( \frac{6-0}{3 \times 10^{-6}} \right) = 80V$$

**Ans.21: (D) 12.1eV**

$$\Delta E = E_3 - E_1 = -1.5 - (-13.6) = 12.1eV$$

**Ans.22: (D) There is no change**

$$\vec{F} = q\vec{v} \times \vec{B} = 0 \text{ So velocity is constant}$$

**Ans.23: (B)  $-10^{-5}$**

**Ans.24: (A) 1**

$$K.E = \frac{1}{2}mv^2 = \frac{1}{2}m \left( \sqrt{\frac{GM}{r}} \right)^2 = \frac{1}{2}m \frac{GM}{r}$$

$$U = -m \frac{GM}{r} \therefore E = K.E + U = m \frac{GM}{2r} - m \frac{GM}{r} = -m \frac{GM}{2r}$$

**Alternative:**

$$\text{we know that } E = -K \Rightarrow |E| = K$$

**Ans.25:(B)**  $16 m / s^2$  ,  $4 m / s$

$$a_c = 32 \cos 60^\circ = 16 m / s^2$$

$$a_c = \frac{v^2}{R} \Rightarrow 16 = \frac{v^2}{1} \Rightarrow v = 4 m / s$$

**Ans.26:(D)**  $10 \frac{m}{s^2}$  upwards the incline

$$a = \frac{75 - 5g \sin 30^\circ}{5} = (75 - 25) / 5 = 10 m / s^2$$

**Ans.27:(A)** 60J

$$W = KE_f - KE_i = \frac{1}{2}(3)(64 + 16) - \frac{1}{2}(3)(36 + 4) = \frac{1}{2}(3)(80 - 40) = 60J$$

**Ans.28: (C)** 335J

$$W = Q_A - Q_R$$

$$25 = 360 - Q_R \therefore Q_R = 335J$$

**Ans.29: (A)**  $\frac{3\sigma}{2\epsilon_0}$

$$E = \frac{\sigma}{2\epsilon_0} + \frac{-2\sigma}{2\epsilon_0} + \frac{4\sigma}{2\epsilon_0} = \frac{3\sigma}{2\epsilon_0}$$

**Ans .30: (C)** Three in parallel

$$U = \frac{1}{2} CV^2 \quad \text{For } U \text{ maximum, } C \text{ must be maximum}$$

**Ans.31:(D)**  $\frac{20}{3} \Omega$

$$\text{By Wheatstone bridge } R_{eq} = \frac{(4+6)(8+12)}{(4+6)+(8+12)} = \frac{20}{3} \Omega$$

**Ans.32: (C)**  $a < b, b > c$

**Ans.33: (B)**  $2f$

$$\frac{1}{f} = (\mu - 1) \left( \frac{1}{R} - \frac{1}{-R} \right)$$

$$\frac{1}{f_1} = (\mu - 1) \left( \frac{1}{R} - \frac{1}{\infty} \right) \Rightarrow f_1 = 2f$$

**Ans.34: (B)** 26V

$$V = (2 + 4)4 + 2 = 26 \text{ volt}$$

**Ans.35: (C)**  $2\sqrt{2}$

$$\lambda = \frac{h}{p} = \frac{h}{\sqrt{2mKE}} = \frac{h}{\sqrt{2mqV}}$$

$$\frac{\lambda_1}{\lambda_2} = \frac{\sqrt{m_2 q_2}}{\sqrt{m_1 q_1}} = \frac{\sqrt{4m_p 2e}}{\sqrt{m_p e}} = 2\sqrt{2}$$

**Ans.36:(A)**  $\frac{6g}{5L} \sin \theta$

$$I = 4m\left(\frac{L}{2}\right)^2 + m\left(\frac{L}{2}\right)^2 = \frac{5}{4}mL^2$$

$$\tau = 4mg \frac{L}{2} \sin \theta - mg \frac{L}{2} \sin \theta = mg \frac{3L}{2} \sin \theta$$

$$\tau = I\alpha \Rightarrow \alpha = \frac{\tau}{I} = \frac{6g}{5L} \sin \theta$$

**Ans.37: (C)**  $4\hat{i} - 5\hat{j}$

Horizontal component remains constant, whereas vertical component changes its sign.

**Ans.38: (C)** 5 %

$$T = 2\pi \sqrt{\frac{l}{g}} \Rightarrow \frac{\Delta T}{T} = \frac{\Delta l}{2l} + \frac{\Delta g}{2g} \Rightarrow \frac{\Delta T}{T} \% = \left(\frac{3}{2} + \frac{7}{2}\right) \% = 5\%$$

**Ans.39: (D)** 100W

$$\text{Work per cycle} = \frac{1}{2} \times (30 - 10)(8 - 2) = 60J \therefore P = \frac{60 \times 100}{60} = 100W$$

**Ans.40: (A)** Path -I

**Ans.41: (A)** 3Hz

$$v_1 = 30300 / 100 = 303Hz, v_2 = 30300 / 101 = 300Hz \Rightarrow v_1 - v_2 = 3Hz$$

**Ans.42: (C)**  $0.75I_0$

$$I = I_0 \cos^2 30^\circ = 0.75I_0$$

**Ans.43: (B)** laser light is highly coherent

**Ans.44: (B)** 19%

$$KE_2 = \frac{p_2^2}{2m} = \frac{(0.9p)^2}{2m} = \frac{0.81p^2}{2m}$$

**Ans.45: (A)** Magnification of microscope is inversely proportional to the least distance of distinct vision.

$$\text{Magnification } M = 1 + \frac{D}{f}$$

**Ans.46: (C)**  $64\pi SR^2$

$$W = S \left[ 8\pi S(3R)^2 - 8\pi S(R)^2 \right] = 64\pi S(R)^2$$

**Ans.47: (C)** Less than 300 km/hr

$$\langle v \rangle = \frac{d + d}{t_1 + t_2} = \frac{200 + 200}{\frac{200}{400} + \frac{200}{200}} = \frac{800}{3} = 267 \text{ km/hr}$$

**Ans.48: (C)** remains constant

$$dS = \frac{dQ}{T} = 0 \therefore S = \text{constant}$$

**Ans.49: (C)**  $A = 0, B = 1, C = 1$

Output  $C = A + AB$

**Ans.50: (C)** chromatic aberration

## Chemistry

**Ans.51: (C) He<sup>+</sup>**

$$\text{Ionization Potential} = E_{\infty} - E_1$$

$$54.4 = 0 - E_1 \text{ or } E_1 = -54.4 \text{ eV}$$

$$\text{But } E_1 = -13.6 \times \frac{Z^2}{(1)^2} \text{ eV or } -54.4 \text{ eV} = -13.6 \times Z^2 \text{ or } Z=2 \text{ ,So He}^+ \text{ ion}$$

**Ans.52:(C)**  $n = 3, l = 2, m = 1, s = +\frac{1}{2}$

Energy  $\propto (n+l)$

For Options: (A)  $(n+l) = 3+0 = 3$

(B)  $(n+l) = 3+1 = 4$

(C)  $(n+l) = 3+2 = 5$

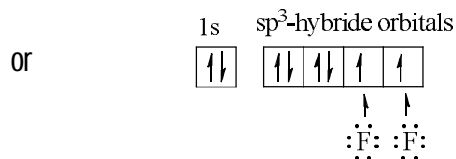
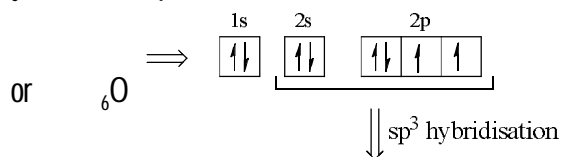
(D)  $(n+l) = 4+0 = 4$

So  $n = 3, l = 2, m = 1, s = +\frac{1}{2}$  Set of quantum number has highest energy.

**Ans.53: (C) sp<sup>3</sup>**

OF<sub>2</sub> :-

$${}_6\text{O} \Rightarrow 1s^2 2s^2 2p^4$$



 sp<sup>3</sup>, Two lone pairs of electron V-shape

**Ans.54.: (D)** SO<sub>3</sub><sup>2-</sup>, ClO<sub>3</sub><sup>-</sup> and BO<sub>3</sub><sup>3-</sup>

NO<sub>3</sub><sup>-</sup> ⇒ sp<sup>2</sup> ⇒ Trigonal planar

AsO<sub>3</sub><sup>3-</sup> ⇒ sp<sup>3</sup> ⇒ Pyramidal (one lone pair)

CO<sub>3</sub><sup>2-</sup> ⇒ sp<sup>2</sup> ⇒ Trigonal planar

ClO<sub>3</sub><sup>-</sup> ⇒ sp<sup>2</sup> ⇒ Pyramidal (one lone pair)

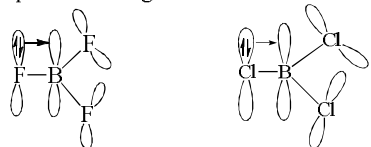
SO<sub>3</sub><sup>2-</sup> ⇒ sp<sup>3</sup> ⇒ Pyramidal (one lone pair)

BO<sub>3</sub><sup>3-</sup> ⇒ sp<sup>3</sup> ⇒ Pyramidal (one lone pair)

So SO<sub>3</sub><sup>2-</sup>, ClO<sub>3</sub><sup>-</sup> & BO<sub>3</sub><sup>3-</sup> all are non-planar

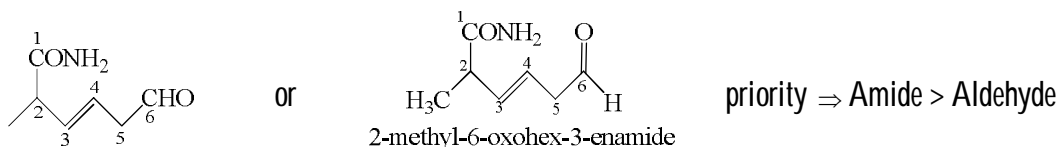
**Ans.55: (B) stronger 2p(B)-2p(F) π - bonding**

πp-πp back bonding

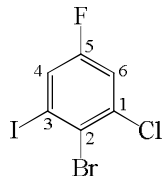


Size of Cl is more than the size of F so in case of BF<sub>3</sub> strong 2p(B)-2p(F) π -bonding occurs so lewis acidity of BF<sub>3</sub> is less than BCl<sub>3</sub>.

**Ans.56: (A) 2-methyl-6-oxohex-3-enamide**



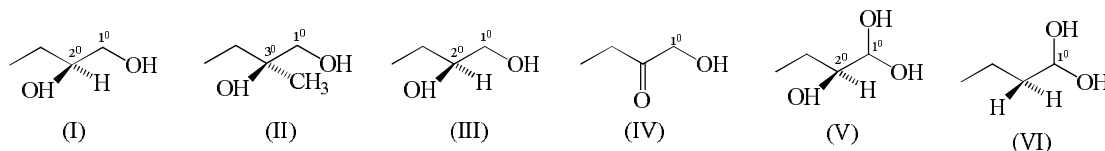
**Ans.57: (B) 2-Bromo-1-chloro-5-fluoro-3-iodo benzene**



\* Numbering according to lowest set of locant rule

2-Bromo-1-chloro-5-fluoro-3-iodo-benzene

**Ans.58: (D)(i), (iii), (v)**



So at least one 2°- alcohol present in I, III & V

**Ans.59: (C) intermediate 2**

According to Hammonds Postulates the transition state resemble to that species which is energetically near to it.

**Ans.60: (B) Cl > F > Br > I**

On moving up to down in the group. Electron affinity decrease due to decrease in size but chlorine has high electron affinity fluorine due to presence of vacant d-orbitals.

**Ans.61: (B) Coordination isomerism**

Answer is (B) because of coordination isomerism is a form of structural isomerism in which the composition of the complex ion varies. In a coordination isomer the total ratio of ligand to metal remains the same, but the ligands attached to specific metal ion change.

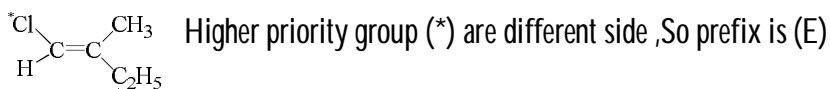
**Ans.62: (A) zero**

Species which is excess in reaction mixture follow zero order kinetics, so order of reaction with respect to O<sub>2</sub> is zero

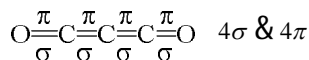
**Ans.63: (D) Reduction**

Friedel-Craft reaction is an aromatic electrophilic substitution. So reduction is not a Friedel-Craft reaction.

**Ans.64: (A) E**



**Ans.65: (A) 4  $\sigma$  and 4  $\pi$  bonds**

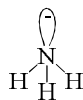


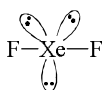
**Ans.66: (B) linear, pyramidal**

XeF<sub>2</sub> = sp<sup>3</sup>d hybridization, 3l.p. & 2 l.p.

NH<sub>3</sub> = sp<sup>3</sup> hybrid

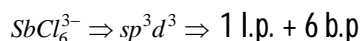
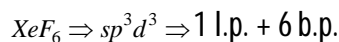
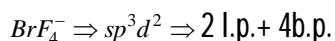
1l.p. + 3b.p.





So

**Ans.67: (C) 2,1 and 1**



**Ans.68: (A) isotropic**

Crystalline solids are anisotropic not isotropic

**Ans.69: (A) vapour pressure of solute is zero**

Non volatile solute is always have zero vapour pressure

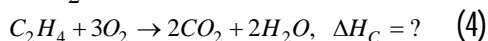
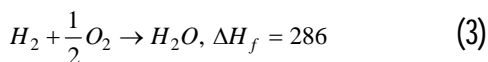
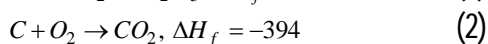
**Ans.70: (B) associated colloids**

Micelles are associated colloids which are formed above the CMC (critical micelles concentration)

**Ans.71: (A) Milk fat is dispersed in water**

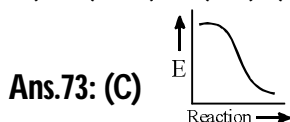
Emulsions are colloids in which both dispersed phase & dispersion medium are liquids. So milk is emulsion in which liquid is dispersed in water.

**Ans.72: (D)  $-1412 \text{ kJ mol}^{-1}$**



But  $\text{equ. } 2 \times (\text{equ-2}) - 2 \times (\text{equ-3}) - (\text{equ-1}) = \text{equ-4}$

$$2(-394) + 2(-286) - (52) = -1412 \text{ KJmol}^{-1}$$



If the difference between energy of reactant & transition state is zero then activation energy is zero.

**Ans.74: (C)  $t_{1/2} \propto a^0$**

$$t_{1/2} \propto \frac{1}{n-1}$$

For first order reaction  $n = 1$

So  $t_{1/2} \propto \frac{1}{a^0}$

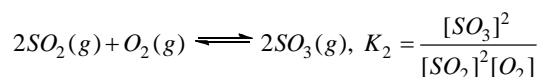
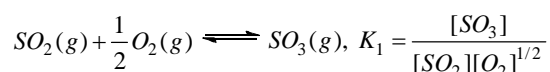
Or  $t_{1/2} \propto a^0 \text{ constant}$

**Ans.75: (D)  $2.0 \text{ ML}^{-1}$**

Active mass is concentration in mole litre<sup>-1</sup> or concentration in molarity

$$\text{So Molarity} = \frac{8.5}{17} \times \frac{1000}{250} = 2.0 \text{ ML}^{-1}$$

**Ans.76: (C)  $K_1^2 = K_2$**



$$K_1^2 = \frac{[SO_3]^2}{[SO_2]^2[O_2]} = K_2$$

So  $K_1^2 = K_2$

**Ans.77: (B) three stereoisomers**

When same groups are present in opposite side called threo stereoisomer .

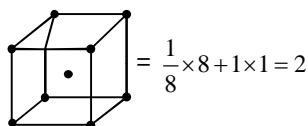
**Ans.78: (C) Schottky**

During the Schottky defects same number of cations & anions are missing from their lattice site so density is decreased.

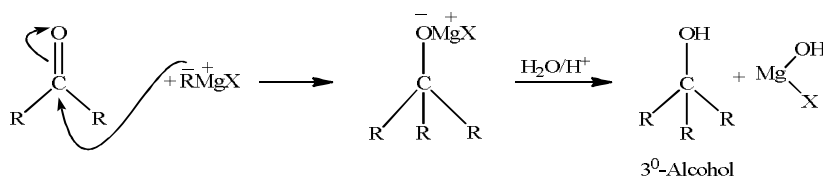
**Ans.79: (A)  $\frac{1}{8}$**

$$N = N_0 / 2^n \therefore N = N_0 / 2^3 = N_0 / 8$$

**Ans.80: (B) 2**



**Ans.81: (C) 3° alcohol**



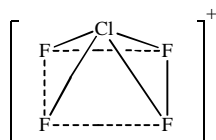
**Ans.82: (B) CaOCl<sub>2</sub>**

Bleaching powder is CaOCl<sub>2</sub>

**Ans.83: (B) square pyramidal**

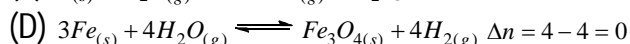
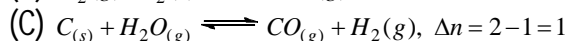
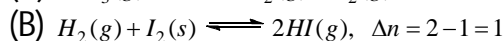
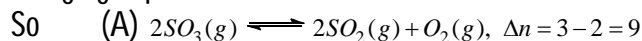


4 b.p. of e<sup>-</sup> & 1 lone pair of e<sup>-</sup> & shape is square pyramidal

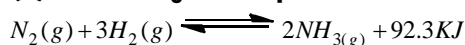


**Ans.84: (D)  $3Fe(s) + 4H_2O(g) \rightleftharpoons Fe_3O_4(s) + 4H_2(g)$**

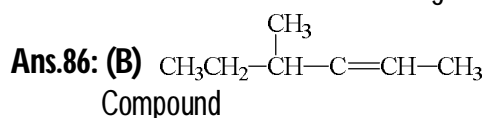
If gaseous moles of reactant is equal to the gaseous moles of product then reaction is not affected by the changing in pressure



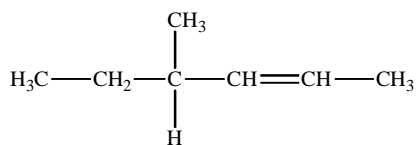
**Ans.85: (A) Increasing the temperature**



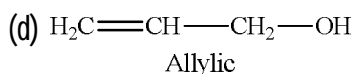
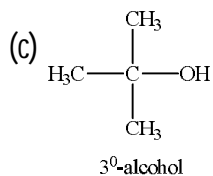
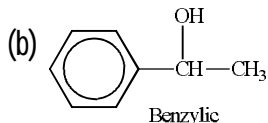
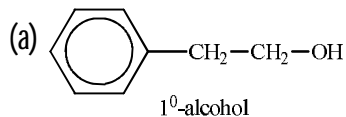
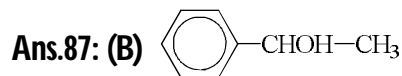
Reaction is exothermic so on increasing the temperature equilibrium shifted in backward direction





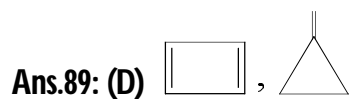


gives geometrical isomerism & it is also give enantiomerism.

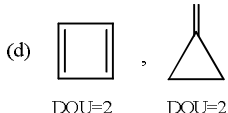
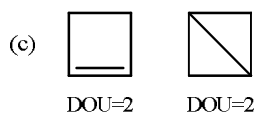
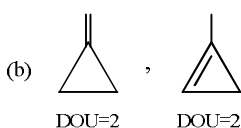
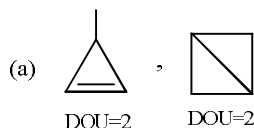


So compound give fastest reaction with conc. HCl

**Ans.88: (A) Polythene**

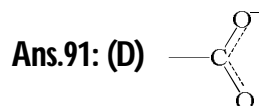
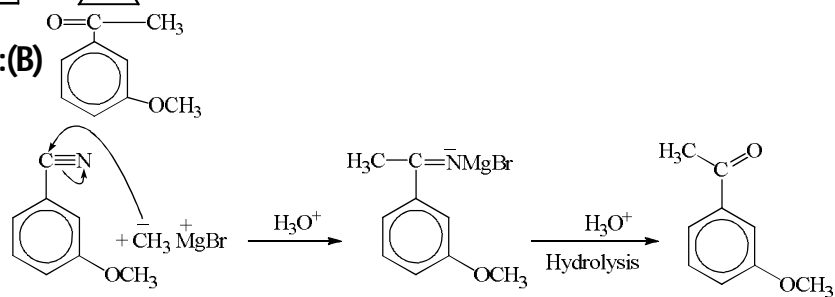


$$\text{C}_4\text{H}_6 \text{ Degree of unsaturation (DOU)} = \frac{10-6}{2} = 2$$

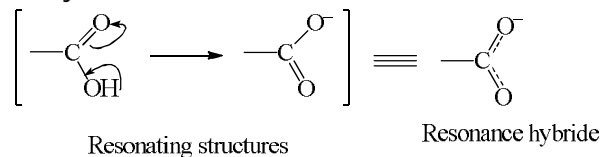


So , is not the pair of  $\text{C}_4\text{H}_6$

**Ans.90: (B)**



Resonance in carboxylate ion  $-\text{COO}^-$



**Ans.92: (B) kg. ms<sup>-2</sup>**

$$E = mc^2 \Rightarrow kg(ms^{-1})^2 = Kgm^2s^{-2}$$

So kg.ms<sup>-2</sup> is not the unit of energy .

**Ans.93: (A) 134.1 gm mol<sup>-1</sup>**

$$P_{total} = 99.652 KPa$$

$$P_{water} = 85.140 KPa$$

$$P_{liquid} = (99.652 - 85.140) KPa = 14.512 kPa$$

$$\text{And } \frac{m_A}{m_B} = \frac{1.27 g}{1g}$$

$$\text{We have } \frac{m_A}{m_B} = \frac{P_A M_A}{P_B M_B}$$

$$\text{or } M_A = \left( \frac{m_A}{m_B} \right) \left( \frac{P_B M_B}{P_A} \right) \quad \therefore M_A = (1.27) \left( \frac{85.140 KPa \times 18 g mol^{-1}}{14.512 kPa} \right) \cong 134.1 g mol^{-1}$$

**Ans.94: (A) Cell will swell**

Osmotic pressure

**Ans.95: (C) 6.92**

Solution is very dilute so concentration of H<sup>+</sup> ions in HCl solution

= H<sup>+</sup> ions in water + H<sup>+</sup> is ion in HCl

$$= 1 \times 10^{-7} + 2 \times 10^{-8} = 12 \times 10^{-8}$$

$$\text{So } pH = -\log(12 \times 10^{-8}) = -\log(2^2 \times 3 \times 10^{-8})$$

$$= -2 \log 2 - \log 3 + 8 \log 10 = -2(0.301) - 0.477 + 8 = 6.92$$

**Ans.96: (C) A<sub>3</sub>B<sub>12</sub>C**

A	B	C
At corner	At Centre of Each face	At corner
$6 \times \frac{1}{8}$	$6 \times \frac{1}{2}$	$2 \times \frac{1}{8}$
$\frac{3}{4}$	3	$\frac{1}{4}$
3	12	1

So molecular formula = A<sub>3</sub>B<sub>12</sub>C,

**Ans.97: (C) X<sub>2</sub>Y<sub>4</sub>Z**

Z	Y	X
Corner	in $\frac{1}{2}$ Td in $\frac{1}{2}$ Oh	
	Voids	voids
$8 \times \frac{1}{8}$	$8 \times \frac{1}{2} \times 1$	$4 \times \frac{1}{2} \times 1$
1	4	2

So formula is X<sub>2</sub>Y<sub>4</sub>Z

**Ans.98: (D) B > A > C**

According to question the position of elements in electrochemical series is

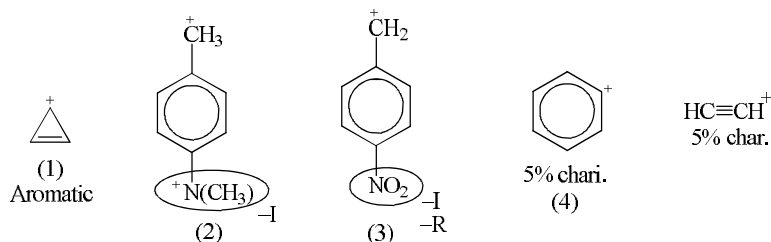
C

A

B

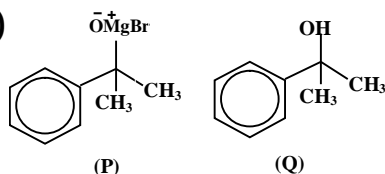
Oxidizing power of elements increases in electrochemical series on moving up to down so decreasing order of oxidizing power is B > A > C

Ans.99: (D) 1 > 2 > 3 > 4 > 5



So decreasing order of stability 1 > 2 > 3 > 4 > 5

Ans.100: (A)



### Biology Answer Key

Ans.101: (C) Found in plant cells only

Tonoplast is a cytoplasmic membrane surrounding a large central vacuole in plant cells.

Ans.102: (D) Muramic acid

It is a characteristic feature of prokaryotic cell wall.

Ans.103: (B) Zygotene \_ During Zygotene phase homologous chromosomes comes close to each other and start pairing that is called synapsis.

Ans.104: (B) Two

The two chromatids of a duplicated chromosome are held together at the centromere.

Ans.105: (A) Pyramid of Energy

Pyramids of energy are always upright, as energy is lost at each trophic level.

Ans.106: (C) Oxides of Nitrogen

\_Photochemical smog is formed through the reaction of solar radiation with airborne pollutants like nitrogen oxides and volatile organic compounds.

Ans.107: (D) X

There are many X-linked diseases, such as hemophilia, colorblindness etc. but known Y-linked diseases are few and very rare.

Ans.108: (C) Division

"Phylum" applies formally to any biological domain, but it is always used for animals, whereas "Division" is often used for plants.

Ans.109: (C) Opening of Flower bud

Anthesis refers to the time of flowering, when flower bud opens with parts available for pollination.

**Ans.110: (B) Drupe**

Coconuts is a drupe fruit with a hard stony covering enclosing the seed.

**Ans.111: (D) Vascular cambium**

Secondary growth is due to the two types of lateral meristems i.e. vascular cambium & cork cambium.

**Ans.112: (B) Asymbiotic nitrogen-fixing bacteria**

Both are free living aerobic bacteria those can fix atmospheric nitrogen.

**Ans.113: (C) *Trichodesmium***

Red water-bloom of *Trichodesmium* is due to their primary light harvesting pigment, phycoerythrin.

**Ans.114: (B) *Agaricus***

*Agaricus* is an edible mushroom.

**Ans.115: (B) Gemma Cup**

Gemma cups are small receptacles located on the thalli and contain specialized structures called gemmae which are green multi-cellular buds.

**Ans.116: (A) Prothallus**

The gametophyte is the haploid stage of the pteridophyte life-cycle. It develops from the spore produced on the sporophyte. This spore germinates and develops into a body called the prothallus.

**Ans.117: (B) *Cycas***

**Ans.118: (D) Flower**

If the peduncle terminates into flower then it is called cymose inflorescence.

**Ans.119: (D) Lecithin**

Lecithin carries both anions & cations and forms a lecithin-ion complex.

**Ans.120: (B) Nitrogen deficient soil**

Insectivorous plants grow in Nitrogen deficient soil. They fulfill their nitrogen requirement by trapping & digesting insects.

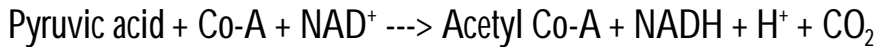
**Ans.121: (B) PEP**

In C<sub>4</sub> plants Phosphoenolpyruvate (a 3 carbon compound) picks up CO<sub>2</sub> and changes into Oxaloacetate (4 carbon compound) in the presence of water. This reaction is catalysed by the enzyme, phosphoenol pyruvate carboxylase.

**Ans.122: (C) P700**

In PS-I the light reaction centre is P700. Pigments absorb longer (>680nm) wavelengths of light.

**Ans.123: (C) Oxidative decarboxylation**



This reaction is called the oxidative decarboxylation of pyruvic acid to acetyl Co-A.

This reaction is the link between glycolysis and the citric acid cycle.

**Ans.124: (A) Guttation**

In the process of guttation positive xylem pressure (due to root pressure) causes liquid to exude from the pores, Hydathodes.

**Ans.125: (B) Close**

It is a nastic movement involving inward and upward bending of a plant part.

**Ans.126. (A) CH<sub>4</sub>, NH<sub>3</sub>, H<sub>2</sub>O, H<sub>2</sub>**

Miller in his classical experiment used these gases to produce amino acid mimicking the earlier environment and tested the chemical origin of life.

**Ans.127. (D) Evolution through inheritance**

Evolution through inheritance was not included in Darwin's theory he only explained about Survival of fittest, Struggle for existence & Natural selection.

**Ans.128. (A) Population**

Population is the unit of evolution. The genotype of the individual is fixed at birth and population is the smallest unit where evolutionary change is possible.

**Ans.129. (A) Peripatus**

Peripatus has both annelidian(segmented body,nephridia)and arthropodian (antennae,mandibles, claws etc.)characters and hence is the connecting link between the two.

**Ans.130. (D) a→4 , b→2 , c→1 , d →3**

**Ans.131. (B) O<sup>-</sup>**

O- as it does not contain antigen A, B and Rh

**Ans.132. (C) Jharkhand**

Jharkhand (Latehar District) has Pelmau(Betla) National park with a Tiger reserve having bison, axis axis ,elephant and leopards too.

**Ans.133. (C) Echinodermata**

Echinodermata show evolutionary nearness to hemichordates with enterocoelom type of development.

**Ans.134. (A) Amphibia and Mammalia**

Amphibia and Mammalia have dicondylic skull that is attached to the body with two articulatory condyles

**Ans.135. (B) Bats**

Bats exhibit echolocation system wherein ultrasonic sound is produced to perceive objects coming in its way.

**Ans.136. (C) Gigantic due to speedy growth**

Gigantic due to speedy growth as hormone secreted by its pituitary gland affects growth

**Ans.137. (D) Vasa vasorum**

Vasa vasorum supplies blood to the walls of blood vessels.

**Ans.138. (A) Ribs of axis vertebrae**

Odontoid process of axis of mammals is the rib of axis vertebrae

**Ans.139. (C) Blood of man**

Gametocytes of malarial parasites are formed in the RBC's of man which then gets transferred to the vector.

**Ans.140. (C) Digenetic**

Digenetic trypanosoma is a digenetic parasite having two hosts : Man & Tse-Tse fly.

**Ans.141. (B) Ostium → spongocoel → Osculum**

**Ans.142. (D) Wucheria bancrofti**

Wucheria bancrofti causes filariasis.

**Ans.143. (B) Spider - Arachnida**

Spiders having eight legs belong to Arachnida class of Arthropoda , Pila belongs to Gastropoda, Cockroach belongs to insect, Leech to Hirudineria.

**Ans.144. (D) Tornaria - Echinodermata**

Tornaria - Echinodermata is incorrect as it is a hemichordate larva rest all options are correct.

**Ans.145. (B) Developed wings**

Periplaneta americana has developed wing.

**Ans.146. (A) Pyrilla**

**Ans.147. (D) Coelomic fluid**

Coelomic fluid will come out

**Ans.148. (D) Larval forms**

Larval forms of both are similar

**Ans.149. (A) Sand fly, Tse tse fly, House fly, Culex**

Sand fly, Tse tse fly, House fly, Culex are all vectors which transmit diseases.

**Ans.150. (B) Oil of Chenopodium**

Oil of Chenopodium is used to cure Ascariasis