

NEET MOCK TEST**KEY AND SOLUTIONS****PHYSICS**

1) 3	2) 3	3) 4	4) 3	5) 3	6) 1	7) 4	8) 3	9) 2	10) 3
11) 2	12) 1	13) 1	14) 2	15) 1	16) 1	17) 1	18) 3	19) 3	20) 1
21) 4	22) 1	23) 3	24) 3	25) 2	26) 3	27) 4	28) 1	29) 1	30) 3
31) 3	32) 3	33) 3	34) 3	35) 4	36) 1	37) 1	38) 3	39) 3	40) 2
41) 3	42) 1	43) 2	44) 2	45) 4					

CHEMISTRY

46) 4	47) 3	48) 4	49) 2	50) 2	51) 2	52) 1	53) 2	54) 2	55) 3
56) 3	57) 1	58) 4	59) 2	60) 1	61) 3	62) 2	63) 3	64) 3	65) 2
66) 4	67) 3	68) 3	69) 1	70) 3	71) 2	72) 3	73) 3	74) 3	75) 1
76) 4	77) 2	78) 4	79) 2	80) 4	81) 3	82) 2	83) 2	84) 4	85) 3
86) 1	87) 1	88) 3	89) 4	90) 2					

BOTANY

91) 2	92) 1	93) 2	94) 1	95) 3	96) 2	97) 3	98) 1	99) 4	100) 2
101) 3	102) 1	103) 3	104) 2	105) 1	106) 4	107) 4	108) 1	109) 3	110) 1
111) 1	112) 4	113) 2	114) 4	115) 2	116) 1	117) 2	118) 1	119) 4	120) 4
121) 2	122) 3	123) 3	124) 3	125) 2	126) 1	127) 1	128) 4	129) 3	130) 2
131) 3	132) 1	133) 3	134) 2	135) 3					

ZOOLOGY

136) 4	137) 1	138) 1	139) 2	140) 4	141) 4	142) 4	143) 2	144) 4	145) 2
146) 3	147) 4	148) 1	149) 2	150) 1	151) 4	152) 2	153) 2	154) 4	155) 3
156) 2	157) 4	158) 4	159) 1	160) 1	161) 1	162) 1	163) 1	164) 3	165) 2
166) 2	167) 3	168) 2	169) 4	170) 2	171) 1	172) 2	173) 2	174) 2	175) 2
176) 2	177) 4	178) 2	179) 3	180) 3					

PART-1 PHYSICS

1) (3) Given that torque $\vec{\tau} = 5\hat{i} + 3\hat{j} - 7\hat{k}$

Positive vector, $\vec{r} = 2\hat{i} + 2\hat{j} + \hat{k}$

$$\vec{\tau} = \vec{r} \times \vec{F} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2 & 2 & 1 \\ 5 & 3 & -7 \end{vmatrix} = \hat{i}(-14-3) - \hat{j}(-14-5) + \hat{k}(6-10) = -17\hat{i} + 19\hat{j} - 4\hat{k}$$

2) (3) Acceleration due to gravity g varies with depth as $g' = g \left(1 - \frac{d}{R_E}\right)$

3) (4)

4) (3) Capacitance will increase but not 5 times (because dielectric is not filled completely). Hence new capacitance may be $200 \mu F$.

5) (3) $v_d = \frac{1}{neA}$ Here $I = 1.54 A$, $n = 8.4 \times 10^{28}$ per m^3

$$A=10^{-6}\text{m}^2, e=1.6$$

$$\therefore v_d = \frac{5.4}{8.4 \times 10^{28} \times 1.6 \times 10^{-19} \times 10^{-6}} = 0.04 \text{ m/s } 10^{-19} \text{ C}$$

6) (1) The mean value of refractive index,

$$\mu = \frac{1.34 + 1.38 + 1.32 + 1.36}{4} = 1.35 \text{ and}$$

$$\Delta\mu = \frac{|1.35 - 1.34| + |1.35 - 1.38| + |1.35 - 1.32| + |1.35 - 1.36|}{4} = 0.02$$

$$\text{Thus } \frac{\Delta\mu}{\mu} \times 100 = \frac{0.02}{1.35} \times 100 = 1.48$$

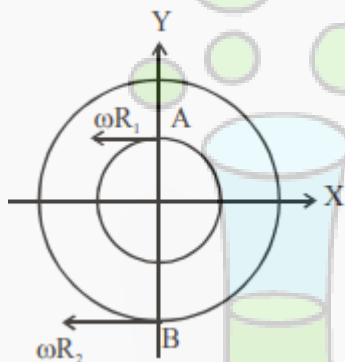
7) (4) Horizontal range = $\frac{u^2 \sin 2\theta}{g}$

For maximum range $\theta = 45^\circ$

$$\therefore R_{\max} = \frac{u^2 \sin 90^\circ}{g} = \frac{u^2}{g} \quad (\because \sin 90^\circ = 1)$$

8) (3) From, $\theta = \omega t = \omega \frac{\pi}{2\omega} = \frac{\pi}{2}$

So, both have completed quarter circle



Relative velocity, $V_A - V_B = \omega R_1 (-\hat{i}) - \omega R_2 (-\hat{i}) = \omega (R_2 - R_1) \hat{i}$

9) (2) Let ℓ be length of wire

$$\text{1st case: } \ell = 2\pi r \Rightarrow r = \frac{\ell}{2\pi}$$

$$B = \frac{\mu_0 I}{2\pi r} = \frac{\mu_0 I}{\ell}$$

$$\text{2nd case: } \ell = 2(2\pi r') \Rightarrow r' = \frac{\ell}{4\pi}$$

$$B' = \frac{\mu_0 I n}{2\pi \frac{\ell}{4\pi}} = \frac{2\mu_0 I}{\frac{\ell}{2}} \quad (\text{where } n=2)$$

$$\text{on putting the value of } B \Rightarrow B' = \Rightarrow B' = 4 \left(\frac{\mu_0 I}{\ell} \right) = 4B$$

10) (3)

11) (2) Given $\frac{\ell_1}{\ell_2} = \frac{1}{2}$ and $\frac{N_1}{N_2} = \frac{1}{2}$ From

$$L = \frac{\mu_0 N^2 A}{\ell} \propto \frac{N^2}{\ell}$$

$$\text{we get } \frac{L_1}{L_2} = \left(\frac{N_1}{N_2} \right)^2 / \left(\frac{l_1}{l_2} \right)^2 = \frac{(1/2)^2}{1/2} = \frac{1}{2}$$

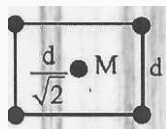
12) (1)

13) (1)

14) (2) By work-energy theorem $W = \Delta K$

$$\Rightarrow W = \frac{1}{2} m (v_f^2 - v_i^2) \Rightarrow W = \frac{1}{2} \times 0.5 \times (16^2 - 4^2)$$

$$\Rightarrow W = \frac{1}{4} \times 240 \Rightarrow W = 60J$$



15) (1)

$$U_{net} = -\frac{Gmm}{d} \times 4 - \frac{GMm}{d} \times 4\sqrt{2}$$

$$-\frac{Gmm}{\sqrt{2}d} \times 2 = -\frac{GM}{d} \left[(4 + \sqrt{2})m + 4\sqrt{2}M \right]$$

16) (1) Displacement current arises when electric field in a region is changing with time. It will be so if the charge on a capacitor is changing with time.

17)

(1)

$$\mu = \frac{\sin i}{\sin r} \quad \because i = 2r \Rightarrow \mu = \frac{\sin 2r}{\sin r} = \frac{2 \sin r \cos r}{\sin r}$$

$$r = \cos^{-1} \left(\frac{\mu}{2} \right), \quad \therefore i = 2 \cos^{-1} \left(\frac{\mu}{2} \right)$$

18) (3)

19)

(3) Area of cross section, $A = 250 \text{ cm}^2 = 250 \times 10^{-4} \text{ m}^2$

$$\text{maximum pressure} = \frac{\text{Force}}{\text{area of cross section}} = \frac{mg}{A} = \frac{5000g}{25 \times 10^{-4}} = \frac{20 \times g}{10^{-4}} = 2 \times 10^6 \text{ Pa}$$

20) (1)

$$21) (4) \text{ Mass defect} = \frac{B.E}{c^2}$$

Mass of nucleus = Mass of proton + mass of neutron - mass defect

$$22) (1) \text{ Strain} = \frac{\text{Change in length}}{\text{Original length}} \quad \text{Hence no dimension}$$

23) (3)

$$24) (3) l_1 + l_2 \text{ and } = l_1 = nl_2$$

$$\therefore l_1 = \frac{nl}{n+1} \text{ and } l_2 = \frac{l}{n+1}$$

$$\text{As } k \propto \frac{1}{l}, \therefore \frac{k_1}{k_2} = \frac{l/(n+1)}{(nl)/(n+1)} = \frac{1}{n}$$

25) (2)

$$\vec{E} = \frac{\partial v}{\partial x} \hat{i} + \frac{\partial v}{\partial y} \hat{j} \quad \therefore |\vec{E}| = k\sqrt{(x^2 + y^2)} = kr$$

Given $v = -kxy$ $E \propto r$

$$\therefore \vec{E} = ky \hat{i} + kx \hat{j}$$

26) (3) According to Hooke's law

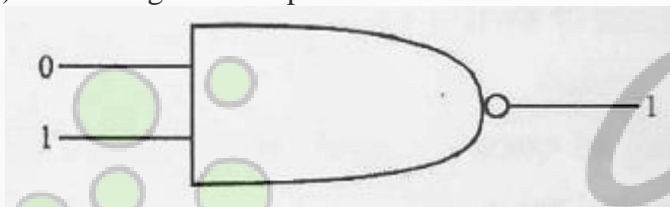
$$\text{Stress} \propto \text{strain i.e., } \frac{F}{A} \propto \frac{\Delta l}{l} \Rightarrow \text{For same } F \text{ \& } l, \Delta l \propto \frac{1}{A}$$

27) (4) (A) is a NAND gate so output is $\overline{1 \times 1} = \bar{1} = 0$

(B) is a NOR gate so output is $\overline{0 \times 1} = \bar{1} = 0$

(C) is a NAND gate so output is $\overline{0 \times 1} = \bar{0} = 0$

(D) is a XOR gate so output is $0 \oplus 0 = 0$



Following is NAND Gate $Y = \overline{AB}$

28) (1)

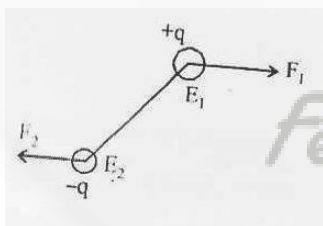
29) (1) For the longest wavelength to emit photo electron

$$\frac{hc}{\lambda} = \phi \Rightarrow \lambda = \frac{hc}{\phi} \Rightarrow \lambda = \frac{6.63 \times 10^{-34} \times 3 \times 10^8}{4 \times 1.6 \times 10^{-19}} = 310 \text{ nm}$$

30) (3) Apply Bernoulli's theorem between Piton and hole $P_A + \rho gh = P_0 + \frac{1}{2} \rho v_e^2$

Assuming there is no atmospheric pressure on piston

$$\frac{5 \times 10^5}{\pi} + 10^3 \times 10 \times 10 = 1.01 \times 10^5 + \frac{1}{2} \times 10^3 \times v_e^2 \Rightarrow v_e^2 = 1.78 \text{ m/s}$$



31. (3)

The electric field will be different at the location of force on the two charges. Therefore the two charges will be un equal. This will result in a fore as well as torque.

32) (3) $\vec{P}_{total} = MV_{cm}$

33) (3) Let x kg of ice can melt Using law of Calorimetry,

Heat lost by copper = Heat gained by ice

$$2 \times 400 \times (500-0) = x \times 3.5 \times 10^5 \quad \text{or } x = \frac{2 \times 400 \times 500}{3.5 \times 10^5} = \frac{8}{7} \text{ kg}$$

34) (3)

(A) → (2); (B) → (3); (C) → (1); (D) → (4)

35) (4)

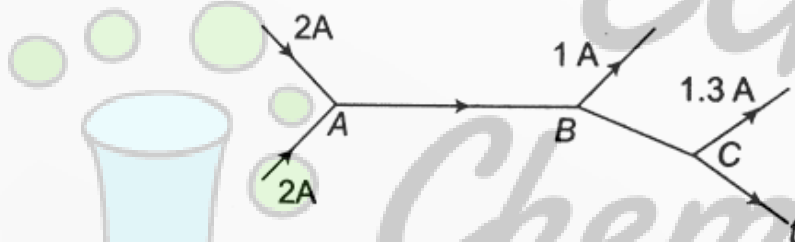
Equivalent capacitance of n_2 number of capacitors each of capacitance C_2 in parallel = $n_2 C_2$
 Equivalent capacitance of n_1 number of capacitors each of capacitance C_n in series.

Capacitance of each is $C_1 = \frac{C_1}{n_1}$

According to question, total energy stored in both the combinations are same i.e.,

$$\frac{1}{2} \left(\frac{C_1}{n_1} \right) (4V)^2 = \frac{1}{2} (n_2 C_2) V^2$$

$$\therefore C_2 = \frac{16C_1}{n_1 n_2}$$

36) (1) According to Kirchoff's law At junction A, $i_{AB} = 2+2=4A$ At junction B, $i_{AB} = i_{BC} - 1 = 3A$ At junction C, $i = i_{BC} - 1.3 = 3 - 1.3 = 1.7 \text{ amp}$ 37) (1) We know $\frac{I}{I_s} = 1 + \frac{G}{S} \Rightarrow \frac{750}{100} = 1 + \frac{13}{S} \Rightarrow S = 2\Omega$ 38) (3) $P = V_{r.m.s} \times I_{r.m.s} \times \cos \phi = \frac{1}{2} V_0 I_0 \cos \phi$

$$P = \frac{1}{2} \times 100 \times (100 \times 10^{-3}) \cos \pi / 3 = 2.5W$$

39) (3)

$$K = \frac{1}{2} m \omega^2 (A^2 - x^2)$$

40) (2)

$$\therefore K_{\max} = \frac{1}{2} m \omega^2 A^2, \text{ at } x = 0$$

41) (3) For the prism as the angle of incidence (i) increases, the angle of deviation (δ) first decreases goes to minimum value and then increases42) (1) We know that for maxima $b \sin \theta = (2n+1) \frac{\lambda}{2}$ or $\sin \theta = \frac{2n+1}{2} \left(\frac{\lambda}{b} \right)$

So on decreasing the slit width 'b', keeping λ same, $\sin \theta$ and hence m increase

43) (2) Boyle's Law states $P \propto \frac{1}{V}$ for constant T. So, $\frac{V_1}{V_2} = \frac{P_2}{P_1} = \frac{2P}{P} = 2:1$ 44) From equation, $\omega = 100$

$$\therefore \frac{2\pi}{T} = 100 \Rightarrow v = \frac{100}{2\pi}$$

$$\frac{2\pi}{\lambda} = 20 \Rightarrow \lambda = \frac{2\pi}{20}$$

$$v = \lambda v = \frac{2\pi}{20} \times \frac{100}{2\pi} = 5 \text{ m/s}$$

45) (4) When screw on a screw-gauge is given six rotations, it moves by 3mm on the main scale

$$\therefore \text{Pitch} = \frac{3}{6} = 0.5 \text{ mm}$$

$$\therefore \text{Least count L.C} = \frac{\text{Pitch}}{\text{CSD}} = \frac{0.5 \text{ mm}}{50} = \frac{1}{100} \text{ mm} = 0.01 \text{ mm} = 0.001 \text{ cm}$$

PART-II CHEMISTRY

46) (4) Molar conductivity $\wedge_m = \frac{k \times 1000}{M}$

$$k = \frac{1}{R} \times \text{cell constant}; = \frac{1}{R} \times \frac{\ell}{A} = \frac{1}{5 \times 10^3 \Omega} \times \frac{1 \text{ cm}}{100 \text{ cm}^2} = 2 \times 10^{-6} \Omega^{-1} \text{ cm}^{-1} \text{ or } \text{Scm}^{-1}$$

$$\frac{2 \times 10^{-6} \times 1000}{0.1}; = \frac{2}{100} \text{ Sm}^2 \text{ mole}^{-1}$$

47) (3) Nitration of benzene proceeds through electrophilic substitution mechanism.

48) From 1st and 2nd set of data – no change in rate is observed with the change in concentration of ‘C’
So the order with respect to ‘C’ is zero.

From 1st and 4th sets of data

Dividing eq.(4) by eq.(1)

$$\frac{1.25 \times 10^{-3}}{5.0 \times 10^{-3}} = \left[\frac{0.005}{0.010} \right]^y \text{ or } 0.25 = (0.5)^x = (0.5)^x \therefore x = 2$$

The order with respect to ‘A’ is 2.

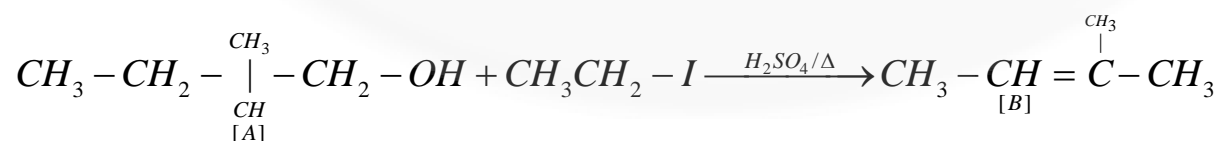
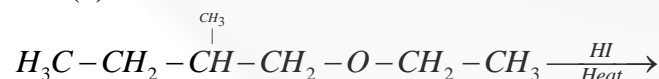
From the 1st and 3rd sets of data dividing eq.(1) by eq.(3)

$$\frac{5.0 \times 10^{-3}}{1.0 \times 10^{-3}} = \left[\frac{0.005}{0.010} \right]^y$$

The order with respect to ‘B’ is 1

So, the order with respect to the reactants A, B and C are 2, 1 and 0

49) (2)



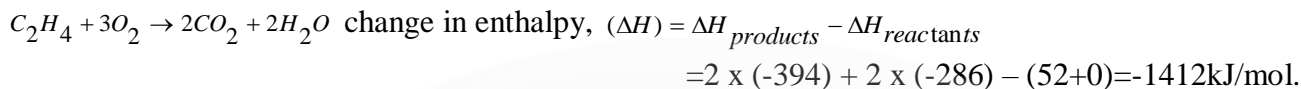
50) (2) Hydrazine (NH₂NH₂) does not contain carbon and hence on fusion with Na metal, it cannot form NaCN; consequently hydrazine does not show Lassaigne’s test for nitrogen.

51) (2) Formyl chloride is unstable at room temperature.

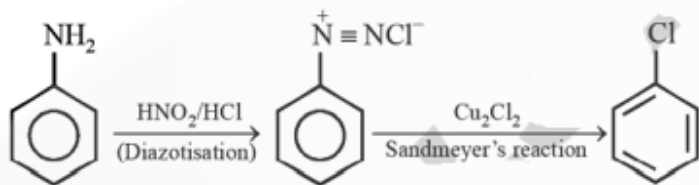
52) (1) Sc = [Ar] 3d¹ 4s²

- 53) (2) According to VSEPR theory, the molecule is of AB_3E type in which arrangement of electron pairs are in tetrahedral shape. But due to a lone pair of electrons, the actual shape is trigonal pyramidal.
- 54) (2) Enthalpy of formation of $C_2H_2O_4$ and H_2O are 52, -394 and -286 kJ/mol respectively.

(Given) The reaction is



- 55) (3)



- 56) (3) Calcium Acetylene
carbide

57) (1) Secondary amine is more basic than primary amine.

58) From the expression of Bohr's theory, we know that

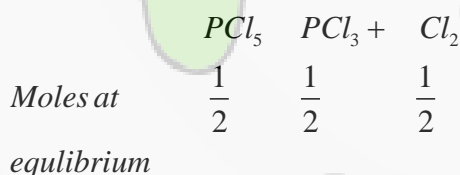
$$m_e v_1 r_1 = n_1 \frac{h}{2\pi}; m_e v_2 r_2 = n_2 \frac{h}{2\pi}$$

$$\frac{m_e v_1 r_1}{m_e v_2 r_2} = \frac{n_1}{n_2} \times \frac{h}{2\pi} \times \frac{2\pi}{h}$$

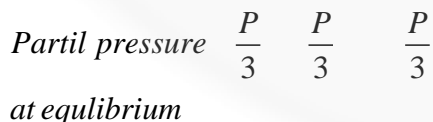
Given, $r_1 = 5 r_2, n_1 = 5, n_2 = 4$

$$\frac{m_e \times v_1 \times 5 r_2}{m_e \times v_2 \times r_2} = \frac{5}{4} \Rightarrow \frac{v_1}{v_2} = \frac{5}{4 \times 5} = \frac{1}{4} = 1:4$$

- 59) (2) Blood cells neither swell nor shrink in isotonic solution. As isotonic solution have equal concentration, therefore there is no flow of solvent occurs and hence, solvent neither enters nor flow out of the blood cells.
- 60) (1) Moving down the group, stability of lower oxidation state increases $Al < Ga < In < Tl$
- 61) (3) A-(s), B-(r), C-(q), D-(p)



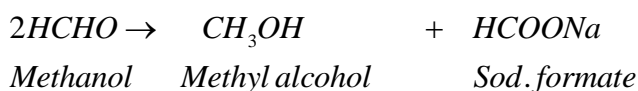
- 62) (2) Mole fraction at equilibrium
- | | | | |
|--|---------------|---------------|---------------|
| | $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |
|--|---------------|---------------|---------------|



$$K_p = \frac{\frac{P}{3} \times \frac{P}{3}}{\frac{P}{3}} = \frac{P}{3} \Rightarrow P = 3K_p$$

- 63) (3) Fuel cells produce electricity with an efficiency of about 100%
- 64) (3) Assertion is true but reason is false. Electronegativity refers to the tendency of atom to attract bonding electrons.
- 65) (2) There is a nodal plane between two nuclei.

- 66) The aldehydes which do not have α -hydrogen atom react with NaOH when half molecules are reduced to alcohol and other half molecules are oxidised to acid (Cannizzaro reaction)



- 67) (3) During isothermal expansion of an ideal gas, $\Delta T = 0$. Now $H=U+PV$

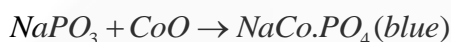
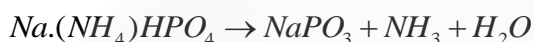
$$\therefore \Delta H = \Delta U + \Delta(PV)$$

$$\therefore \Delta H = \Delta U + \Delta(nRT);$$

$$\text{Thus if } \therefore \Delta T = 0, \Delta H = \Delta U$$

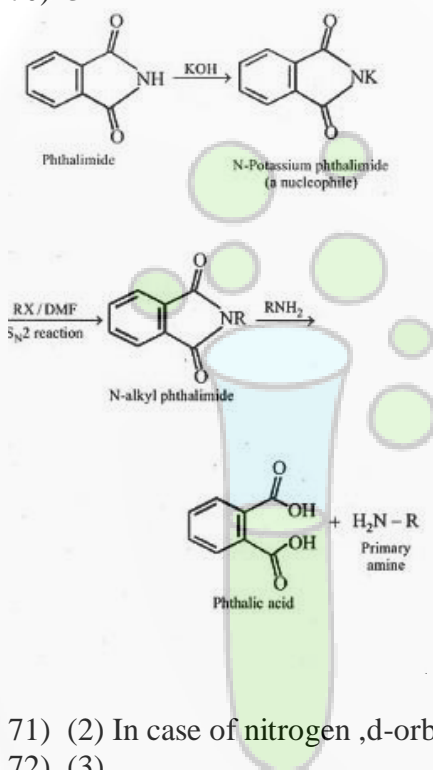
i.e. remain unaffected

- 68) (3) Microcosmic salt . $\text{Na}(\text{NH}_4)\text{HPO}_4 \cdot 4\text{H}_2\text{O}$ is used for bead test



- 69) (1) Given $K_a = 1.00 \times 10^{-5}$, $C = 0.100$ mol for a weak electrolyte, degree of dissociation

70) 3



- 71) (2) In case of nitrogen ,d-orbitals are no available.

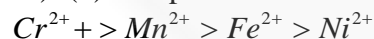
72) (3)

- 73) (3) Sucrose is non- reducing in nature .It does not contain a free aldehydic or ketonic group . Maltose and fructose are reducing sugars.

74 (3) Ligands (based on priority) present are :

(i) NH_3 (ii) Cl^- (iii) NO_2 So, IUPAC name will be Diamminechloridonitrito-N- platinum (II).

75) (1) In a period on moving from left to right ,ionic radii decreases So order of cationic radii is



76) (4) Magnetic quantum number determines the orientation of the orbital.

77) (2) For zero order reaction ,

$$\text{rate } r = k[\text{R}]^0 \Rightarrow \text{rate} = \frac{-d[\text{R}]}{dt} = k \times 1$$

$\Rightarrow d[\text{R}] = -kdt \Rightarrow [\text{R}] = -kt + \text{R}_0$ where R_0 is the concentration of reactant at time $t = 0$. Thus , $[\text{R}]$ decreases with time t.

$$78) (4) A : 28 \text{ g of He} = \frac{28}{4} = 7 \text{ mol}$$

$$B : 46 \text{ g of Na} = \frac{46}{23} = 2 \text{ mol}$$

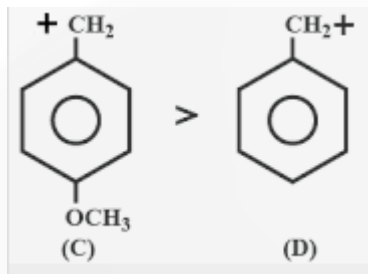
$$C : 60 \text{ g of Ca} = \frac{60}{40} = 1.5 \text{ mol}$$

$$D : 27 \text{ g of Al} = \frac{27}{27} = 1 \text{ mol}$$

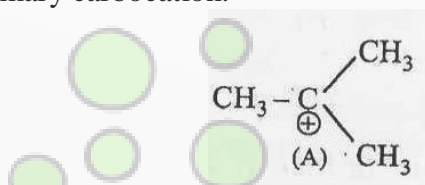
79) (2) Due to partial double bond character of C-OH bond.

80) (4) Assertion is false but reason is true. CH_2Cl_2 is polar while CCl_4 is no-polar because in CCl_4 net dipole moment cancels.

81) (3) In $\text{S}_{\text{N}}1$ reaction carbocation acts as an intermediate .



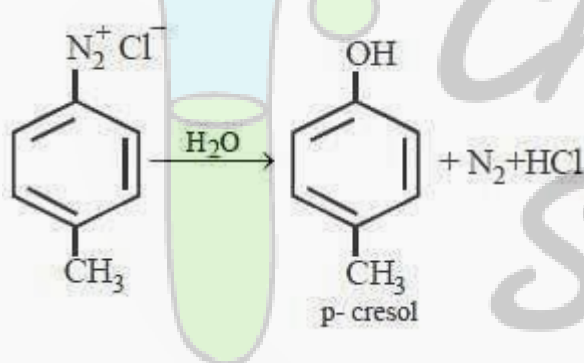
Carbocation produced by (C) is more stable than carbocation produced by (D) due to +I effect of $-\text{OCH}_3$ group. Further in (A) there is formation of tertiary carbocation after rearrangement while (B) is primary carbocation.



So, the correct order is (C)>(D)>(A)>(B)

82) (2) At equilibrium, the rate of forward and backward relations is equal.

83)



(2)

84) (4) On going from left to right in lanthanoid series ionic, size decreases i.e;

$$\text{Ce}^{3+} > \text{Tb}^{3+} > \text{Er}^{3+} > \text{Lu}^{3+}$$

85) (3) $\text{K}[\text{Co}(\text{CO})_4]$

Let O.N. of Co be x then

$$1 \times (+1) + x + 4 \times (0) = 0$$

for k for Co for CO

$$\therefore \text{O.N. of Co is} = -1$$

86) (1) A ketonic group gives only 2,4-DNP test and not the Fehling's test

Thus, statement (ii) is incorrect and only (i),(iii),(iv) and (v) are correct

87) (1)

$$88) (3) P_{\text{Total}} = P_A^0 X_A + P_B^0 X_B = 50 \times 0.3 + 100 \times 0.07 = 85 \text{ torr}$$

$$P_2 = y_B \times P_{\text{Total}}$$

$$70 = y_B \times 85$$

$$y_B = \frac{70}{85} = \frac{14}{17}$$

89) (4) Primary structure retains.

- 90) (2) The hydrogen atom that is added to the carbonyl carbon of the aldehyde in the reduction is derived directly from the other aldehyde molecule as a hydride ion. The second hydrogen that is added to the negatively charged oxygen is coming from the solvent (consult mechanism of Cannizzaro reaction). Oxidation of one molecule of the compound at the expense of other molecule of the same compound is known as disproportionation.

PART-III BOTANY

- 91) (2) Competitive release is the growth of the species range when a competitor for its niche is eliminated. It usually occurs when one of two species competing for the same resource disappears, thereby allowing the remaining competitor utilize the resource more fully than it could in the presence of the first species. Joseph Connell's (1961) demonstrates competitive release for study of competition for space between the barnacle species *Balanus* and *Chthamalus* in the intertidal zone on the rocky Scottish coast.
- 92) (1) A mature sieve element possesses a peripheral cytoplasm and a large vacuole but lacks a nucleus.
- 93) (2) 2) II III IV I
- 94) (1)
- 95) (3) Eastern Himalayan and Western Ghats are the hotspot area which shows maximum biodiversity in our country.
- 96) (2) Bryophytes completely lack vascular tissue system and absorb water by generally body surface. Whereas pteridophytes are the first terrestrial plants to possess vascular tissues – xylem and phloem.
- 97) (3) Inside the nucellus, the female gametophyte of embryosae is located and enclosed within the integuments. Egg apparatus is situated at the micropylar end.
- 98) (1) Maize is a C_4 plant. It possesses Kranz anatomy which is absent in C_3 plants.
- 99) (4) Hershey & Chase (1962) discovers that DNA is the genetic material of bacteriophage. The experimented with T_2 phage which attacks the bacterium *E. coli*. Some virus made to grow on culture containing radioactive sulphur and some on radioactive phosphorus. Finding indicated that protein did not enter the bacteria from the viruses but DNA from the virus particle enters bacteria as genetic material.
- 100) (2) A-IV; B-III; C-II; D-I
- 101) (3) In some cases, a single gene can exhibit multiple phenotypic expression. Such genes are called pleiotropic genes
- 102) (1) A-IV; B-III; C-II; D-I
- 103) (3) Pneumatophores show growth vertically upward
- 104) (2) Intine of pollen grain is made of pecto-cellulose

- 105) During Anaphase I, from each tetrad, two chromatids of a chromosome move as a unit to one pole of a spindle, and migrate to the opposite pole. Thus, the homologous chromosomes of each pair are separated.
- 106) (4) Adenine always pairs with thymine with two hydrogen bonds and cytosine pairs with guanine with three hydrogen bonds.
- 107) (4) Frog is the primary consumer and snake is the secondary consumer. Peacock is the tertiary consumer found at the apex of the food pyramid.
- 108) (1) Heterochromatin is highly condensed, gene-poor, and transcriptionally silent. Whereas euchromatin is less condensed, gene-rich and more easily transcribed. So, option b is not correct. A typical nucleosome contains 200 bp of DNA helix.
- 109) (3) Cork cambium and vascular cambium are responsible for secondary growth which increases the girth of the stem. Therefore, they are considered as lateral meristems.
- 110) (1) A-III; B-IV; C-II; D-I
- 111) (1) Frame shift mutation: are those mutations in which the reading of the frame of the base sequence shifts laterally either in forward direction due to addition of one or more nucleotides or in backward direction due to deletion of one or more nucleotides.
- 112) (4)
- 113) (2) In growth pattern 'r' represents the intrinsic rate of natural increase.
- 114) (4) All the statements regarding G₀ stage of the cells are correct. G₀ stage or resting phase is a period in the cell cycle in which cells exist in a quiescent state. G₀ phase is viewed as either an extended G₁ phase, where the cell is neither dividing nor preparing to divide, or a distinct quiescent stage that occurs outside of the cell cycle. Some (like cells, nerve and heart muscle cells), become quiescent when they reach maturity (i.e. when they are terminally differentiated) but continue to perform their main functions for the rest of the organism's life.
- 115) (2) Endemic plants and animals are those species which are restricted to a particular area.
- 116) (1) Fragmentation leads to an increase in the number of plants in a locality but it does not permit the spread of the plant to an entirely new locality. Gemmae are easily carried as they are small and sufficiently buoyant. They spread by water and wind currents to new habitats when detached, and each grows into a new individual immediately.
- 117) (2) A-IV; B-I; C-III; D-II
- 118) (1) Polymerase chain reaction (PCR) is a process used for the amplification (copy-small segments) of DNA. It is a technique for enzymatically replicating DNA without using living organisms, such as E. coli or yeast. It is commonly used in the medical and biological research labs for a variety of tasks, like detection of hereditary diseases, the identification of genetic fingerprints, and diagnosis of infectious diseases, cloning of genes, paternity testing etc.
- 119) (4) In brassicaceae family, flowers are bisexual cruciform corolla, statement 6, tetradynamous, inflorescence typically raceme or corymbose raceme.

- 132) (1) In geometric growth ,if total is plotted against time, an S-shaped or sigmoid curve is obtained .It consist of four parts –lag phase, log phase (exponential phase) phase of diminishing growth and stationary phase (steady growth for organs or organism of indefinite growth).
- 133) (3) Taxonomic studies of all known organisms have led to the development of common categories .Higher the category ,greater is the difficulty of determining the relationship .Phylum includes related classes.
134. (2) Lacto operon (model proposed by Jacob and Monad)produces three enzymes - β – galactodiase (z),permease (y), transacetylase(a). β – Galactosidase (z) is responsible for the splitting of lactose into glucose and galactose. Transacetylase (a) transfers an acetyl CoA to β – Galactosides.
- 135) (3) ATP is the major source of energy for cellular reactions and is commonly known as the energy currency of the cell. This is energy is released during its conversion to ADP. Energy accumulates in ATP in high energy phosphate bonds.

PART-IV ZOOLOGY

- 136) (4)
- 137) (1) (A)-(iii)-(B)-(i)-(C)-(ii)-(D)-(iv)
- 138) (1) Renin is an enzyme that catalyses the formation of angiotensin I. Aldosterone promotes reabsorption of sodium at distal convoluted tubule .Anti –diuretic hormone regulates water reabsorption at the distal convoluted tubule. Angiotensin II is a powerful vasoconstrictor that stimulates the secretion of aldosterone.
- 139) (2) The bone cells present in the spaces called lacunae.
- 140) (4) Corpus callosum connects the left and right sides of the brain allowing for communication between both cerebral hemispheres .The corpus callosum transfers motor, sensory, and cognitive information between the brain hemispheres and also involved in several functions of the body including communication between brain hemispheres ,eye movement ,maintaining the balance of arousal and attention , and tactile localization.
- 141) (4) The signal for parturition after nine months of pregnancy originates from fully developed embryo.
- 142) (4) The heat shock for bacterium is given at 42°C
- 143) (2) Nereis is a genus of polychaete worms in the family nereidae. It possesses setae and parapodia. Parapodia are paired ,lateral appendages extending from the body segments that helps in swimming.
- 144) (4) A-III; B-IV; C-I; D-II
- 145) (2) Migration rate of DNA molecule in a agarose gel electrophoresis depends on its size.
- 146) (3)
- 147) (4)
- 148) (1) Toxins from smoking can cause Oxidative, stress when cells experience exposure to too many free radicals, which are reactive oxygen particle. Oxidative stress can lead to livers damage injury.
- 149) (2) A-IV; B-I; C-III-D-II
- Epinephrine increase heart beat and also called as stress hormone
- Testosterone stimulates muscles growth, as a secondary sex character in males.
- Glucagon leads to breakdown of the glycogen content in liver. It is secreted from the pancreas.
- Atrial Natriuritic Factor decreases blood pressure by vasodilation.
- 150) (1) Since statement (i) and (iv) are correct
- 151) (4)
- 152) (2) Insemination is the process of release of semen during copulation
- 153) : (2) Enzyme have specific site for substrates called active site and substrate also have reactive site. These site are complementary to each other, during reaction these two sites interact with each other.

- 154) (4) Progestasert and LNG_20 are hormone releasing IUDs.
- 155) (3) (A)- (III) B- (IV) C- (I) D- (II)
The correct match of the hominids and their brain sizes are
Homo habilis – 650-800 c.c
Homo neanderthalensis -140 c.c
Homo erectus -900 c.c
Homo sapiens -1350 c.c
- 156) (2) Ciliated columnar epithelium is usually found in the respiratory tract and fallopian tubes.
- 157) (4) A-(III) B-(IV) C- (I) D- (II)
- 158) (4)
- 159) (1)
- 160) (1)
- 161) (1) IUDs increase phagocytosis of sperm within the uterus. The IUDs require non-surgical intervention for their in the uterine cavity.
- 162) (1) Transgenic plants are the ones generated by introducing foreign DNA into a cell and regenerating a plant from that cell.
- 163) (1) Sponges are multicellular but they have cellular level of body organization i.e., true tissue ,movable parts ,or appendages are not formed .Although ,there is some physiological division of labour, accompanied with structural differentiation amongst body cells .But here, similar cells are arranged neither in permanent layer nor masses to form tissues.
- 164) (3) Adenosine deaminase deficiency can be permanently cured by gene therapy at early embryonic stages.
- 165) (A)-(IV), (B)-(I), (C)-(II)-(D)-(III)
- 166) (2)
- 167) (3) The ascending limb of Henel's loop is impermeable to water but allows transport of electrolytes like sodium .So, the filtrate gets diluted.
- 168) (2) Restriction enzyme cut the strand of DNA a little away from the centre the same palindromic sites and not from the centre, but between the same two bases on the opposite strands, then single stranded portions are left at the ends. These Overhanging stretches on each strand are called sticky ends so the correct option is (2).
- 169)
- 170) (2)
- 171) (1) The number of floating ribs in human body is two pairs. They are not connected to either the sternum or the cartilage of another rib. Their main function is to protect the kidneys.
- 172) (2) Presence of milk producing glands are the most unique mammalian characteristics. Homeothermy is the phenomenon whereby warm blooded animals, birds and mammals can maintain a constant body temperature .Four chambered heart is observed in bird and mammals. Rib cage occurs in all vertebrates.
- 173) (2) A-(ii),(B)-(i),(C)-(iv),(D)-(iii)
- 174) (2) The ovulation (ovulatory phase) is followed by the luteal phase (latter phase of the menstrual cycle) during which the remaining parts of the Graafian follicle transform as the corpus luteum, which produces progesterone. So progesterone is highest at luteal phase.
- 175) (2) The amount of the filtrate formed by the kidneys per minute is called glomerular filtration rate (GFR) .GFR in a healthy individual is approximately 125 ml/minute .i.e. 180 litres per day
- 176) (2) Cancer shows metastasis i.e. that it spreads from where it started to a distant part of the body.
- 177) (4) Neurons are excitable cells. Excitability is the ability of nerve cells to generate an electrical impulse in response to stimulus .When a nerve fibre receives stimulus, the potential across the membrane is reversed at the point of excitation .It means ,the inner side of plasma membrane of the outer side of plasma membrane. This change in polarity is called action potential. This condition of reverse polarity is said to be depolarised.
- 178) (2) (A)-(iv),(B)-(i),(C)-(ii)-(D)-(iii)
- 179) (3) Taq polymerase catalyse the extension of primer end on the template DNA in a PCR reaction.
- 180) (3) The theory of natural selection was given by Charles Darwin.



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