ENTHUSE COURSE

PHASE : MEG, MER, MES & MEU

TARGET : PRE-MEDICAL 2025

Test Type : **SRG-MAJOR** Test Pattern : **NEET (UG)**

TEST DATE : 18-12-2024

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A.	2	2	1	2	4	1	2	1	4	3	2	2	3	1	3	1	2	1	2	4	1	3	3	4	3	4	4	2	1	1
Q.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	2	2	1	4	1	2	4	4	1	3	1	3	3	2	4	1	4	3	1	3	3	2	1	2	4	4	2	2	2	4
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A.	2	4	3	2	4	2	2	4	3	3	4	2	1	2	1	4	1	4	4	4	2	4	4	2	4	1	2	3	4	1
Q.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	2	4	2	4	3	3	1	4	3	3	4	2	1	1	2	1	2	3	4	2	4	2	4	3	2	3	3	3	3	3
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
A.	2	4	4	2	2	3	1	2	3	3	2	1	4	1	3	3	2	2	1	1	1	2	2	1	3	4	1	4	3	1
Q.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	3	4	1	4	1	1	2	1	4	4	1	3	4	4	3	1	4	3	2	3	4	3	1	4	3	3	1	1	1	4
Q.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200										
A.	4	2	2	3	3	4	2	4	2	4	2	3	3	3	3	2	3	4	1	4										

HINT – SHEET

SUBJECT : PHYSICS

SECTION - A

1. Ans (2)

$$\vec{F}_1 = \frac{k(+10\mu C)(-20\mu C)}{R^2}\{\text{attractive}\}$$

$$\vec{F}_2 = \frac{k}{R^2}\left(\frac{-10\mu C}{2}\right)^2 = \frac{k(+25)(\mu C)^2}{R^2}(\text{Repulsive})$$

$$\frac{|\vec{F}_1|}{|\vec{F}_2|} = \frac{200}{25} = 8:1$$

2. Ans (2)

$V = 12\,x - 3x^2y + 2yz^2$

$\therefore E_x = -\frac{\partial V}{\partial x} = -12 + 6xy$

$E_y = -\frac{\partial V}{\partial y} = 3x^2 - 2z^2$

$E_z = -\frac{\partial V}{\partial z} = -4yz$

$\therefore (1, 0, -2)$

$E_x = -12 + 0 = -12;\ E_y = 3 - 8 = -5;\ E_z = 0$

$\therefore \vec{E}\,(\text{at } 1, 0, -2) = -12\hat{i} - 5\hat{j}$

3. Ans (1)

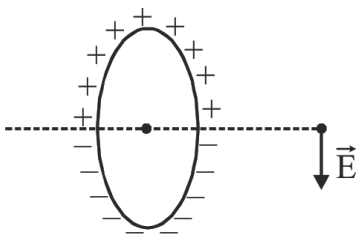
$$E_0 = \frac{2k\lambda}{R}\sin\left(\frac{\pi}{2}\right)$$

$$E_0 = \frac{1}{2\pi\epsilon_0 R}\cdot\frac{q}{\pi R} = \frac{q}{2\pi^2\epsilon_0 R^2}$$

4. Ans (2)

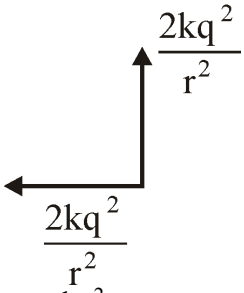
Charged density on surface of charged conductor is inversely proportional to radius of curvature of surface. So, at sharp edges where radius of curvature is small charge density is high and high electric field is present but surface of charged conductor is equipotential.

5. Ans (4)



$\vec{E}$ is perpendicular to axis at all points.

6. Ans (1)



$2\sqrt{2}\frac{kq^2}{r^2} = F_{net}$

7. Ans (2)

$W = q[V_p - V_0]$

$$W = q_0\left[\frac{kQ}{\sqrt{a^2+(\sqrt{8}a)^2}} - \frac{kq}{a}\right]$$

$$W = q_0\left[\frac{kQ}{3a} - \frac{kQ}{a}\right] = \frac{Qq}{4\pi\in_0 a}\left[-\frac{2}{3}\right]$$

$$W = \frac{-Qq_0}{6\pi\in_0 a}$$

8. Ans (1)

The electric potential at any point on the perpendicular bisector of two equal and opposite charges is zero. Therefore, the potential at A and B is zero. Work done in transferring the charge from A to B is given by $W = q \times \Delta V$. But $\Delta V = 0$. Therefore, $W = 0$

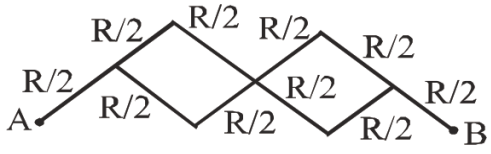
Aliter : V is a function of only X. Hence, the potential gradient which is the electric field is also along X-axis. Since equipotential surfaces are always perpendicular to $\vec{E}$, the yz planes are equipotential surfaces.

9. Ans (4)

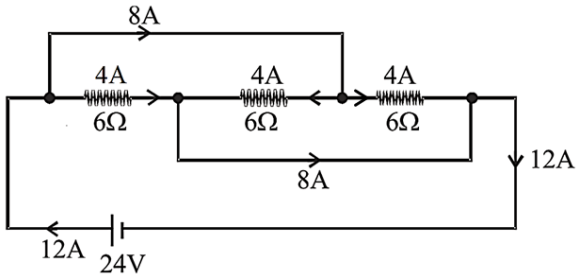
Flux of electric Field $\vec{E}$ through any area Å is defined as $\phi = E.A.\cos\theta$ or $\phi = \vec{E}.\vec{A} = 0$ the lines are parallel to the surface.

11. Ans (2)

Apply folding symmetry



13. Ans (3)



$R_{eq} = 2\Omega$ [All 3 resistances are in parallel]

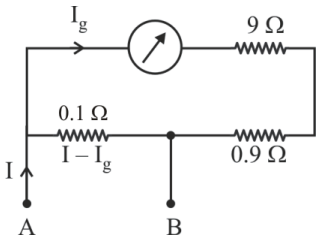
So total current = $\frac{24}{2}$ = 12 Amp.

14. Ans (1)

Temperature coefficient of resistance for manganin and constantan is very small, so their resistance approximately remain constant with change in temperature.

15. Ans (3)

$R = 9 + 0.9 = 9.9\ \Omega$



$(I - I_g) \times 0.1 = I_g \times 9.9$

$0.1\ I = 10\ I_g$

$I = 100 \times 10 \times 10^{-3} = 1A$

16. Ans (1)

$V_A - 2 - 4 - 4 - 2 + 12 = V_f$

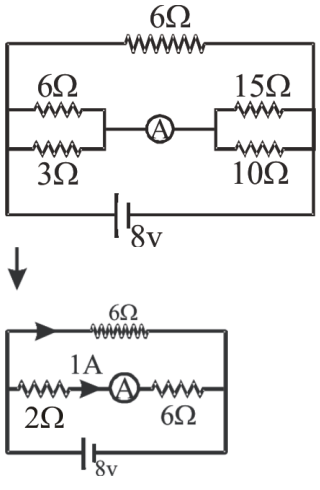
$V_A - V_f = 0 \quad \Rightarrow V_A = V_f$

$V_f - 4 + 4 = V_h \quad \Rightarrow V_f - V_h = 0$

$\Rightarrow V_f = V_h$

$\Rightarrow V_A = V_f = V_h$

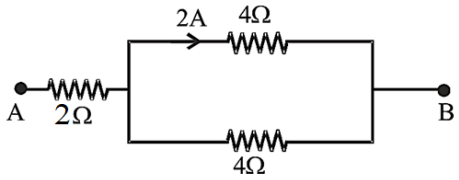
17. Ans (2)



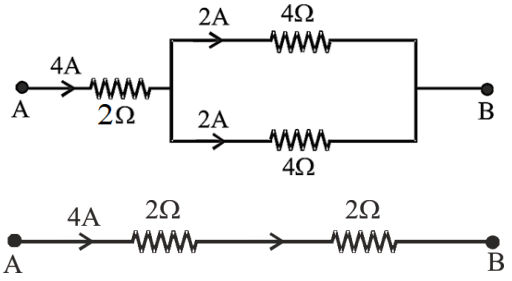
18. Ans (1)

$$E_{eq} = \frac{\frac{E_1}{r_1} - \frac{E_2}{r_2} + \frac{E_3}{r_3}}{\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3}} \Rightarrow \frac{1}{r_{eq}} = \frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3}$$

19. Ans (2)



Since both resistance of 4Ω then current in other 4Ω would be 2A.



$$\boxed{V_A - V_B = 4(2+2) = 4(4) = 16V}$$

20. Ans (4)

$$I_1 = \frac{E}{R_1 + r}, \quad I_2 = \frac{E}{R_2 + r}$$

$$\Rightarrow I_1R_1 + I_1r = I_2R_2 + I_2r$$

$$\Rightarrow r = \frac{I_1R_1 - I_2R_2}{I_2 - I_1}$$

21. Ans (1)

For upper loop. by KVL

$$E_1 + E_2 = i_2x - i_1y$$

$$\Rightarrow E_1 - i_2x + E_2 + i_1y = 0$$

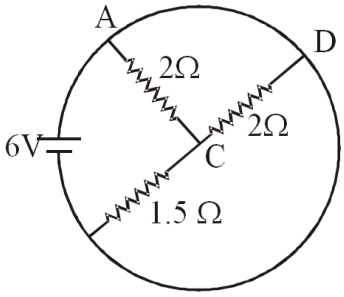
22. Ans (3)

Given circuit is balanced wheat stone bridge.

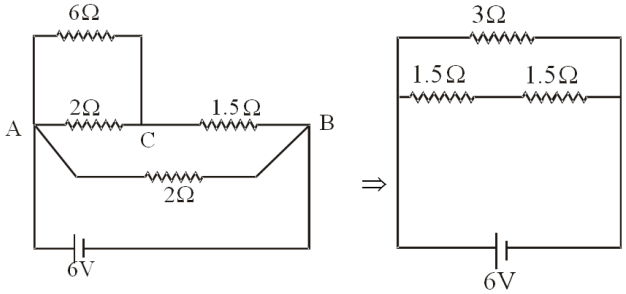
Hence bridge branch can be removed.

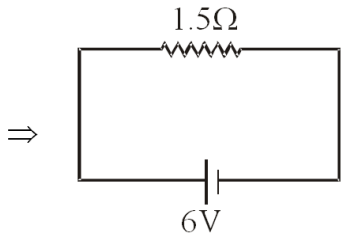
then $R_{eq} = (5 + 7)\ P\ (10 + 14) = \frac{12 \times 24}{12 + 24} = 8\ \Omega$

23. Ans (3)



On redrawing the diagram, we get $I = \frac{6}{1.5} = 4A$





24. Ans (4)

$$I = \frac{20 - 2}{2 + 1 + 2 + 3 + 1} = 2A$$

$$0 + 2 \times 1 + 2 + 2 \times 3 = V_B$$

$$V_B = 10\ V$$

25. Ans (3)

The four plates are alternately connected and form three capacitors in parallel. The capacity of each capacitor is ($\varepsilon_0 A/d$). Hence, the net capacitance between A and B is given by

$$C_{AB} = C + C + C = \frac{3\varepsilon_0 A}{d}$$

26. Ans (4)

The given circuit is equivalent to Wheatstone bridge. When the bridge is balanced the upper two condensers between A and B will be in series. Their resultant would be :

$$\frac{1}{C'} = \frac{1}{10} + \frac{1}{10} = \frac{2}{10} \quad \text{or} \quad C' = 5\mu F$$

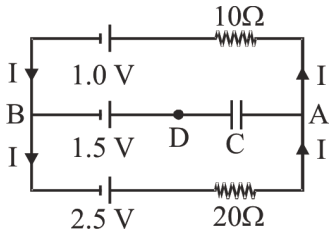
Similarly, the lower two condensers between A and B are also in series. Then, the resultant capacitance would be :

$$\frac{1}{C''} = \frac{1}{10} + \frac{1}{10} = \frac{2}{10} \quad \text{or} \quad C'' = 5\mu F$$

The capacitors C' and C'' will then be in parallel. Hence, the effective capacitance between A and B will be :

$$C = C' + C'' = 5 + 5 = 10\mu F$$

27. Ans (4)



Current I is given by

$$20I + 10I = 2.5 - 1.0 \quad \text{or} \quad I = \frac{1}{20} \text{ amp}$$

$\therefore \quad V_A - V_B = 2.5 - I \times 20 = 1.5$ volt

But $(V_A - V_D) + (V_D - V_B) = V_A - V_B = 1.5$

Since, there is no current through 1.5 volt cell, so,

$$V_D - V_B = 1.5 \text{ volt}$$

Hence, $\quad V_A - V_D = 0$ volt

28. Ans (2)

$$V = \frac{C_1V_1 + C_2V_2}{C_1 + C_2} \Rightarrow V = \frac{C_1V}{C_1 + C_2}$$

29. Ans (1)

$$V_1 = \frac{Kq}{r} = 10 \text{ V}$$

$$V_2 = \frac{KQ}{R} = \frac{K\,8q}{2r}$$

$$= \frac{4Kq}{r}$$

$$= 4 \times 10 \text{ V}$$

$$= 40 \text{ V}$$

30. Ans (1)

Wheatstone bridge

31. Ans (2)

$$i_1 = \frac{V}{2R} e^{-\frac{t}{6RC}}$$

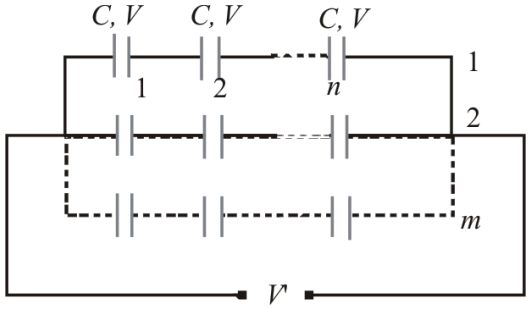
$$i_2 = \frac{V}{R} e^{-\frac{t}{RC}}$$

$$\frac{i_1}{i_2} = \frac{1}{2} e^{\frac{5t}{6RC}} \Rightarrow T \uparrow \quad \Rightarrow \frac{i_1}{i_2} \uparrow$$

32. Ans (2)

Suppose C = 8 μF , C' = 16μF and V = 250 V,

V' = 1000V



Suppose m rows of given capacitors are connected in parallel and each row contains n capacitors then potential difference across each capacitor $V = \frac{V'}{n}$ and equivalent capacitance of network $C' = \frac{mC}{n}$ on putting the values we get n = 4 and m = 8

$\therefore$ Total capacitors = $n \times m = 4 \times 8 = 32$

Short Trick : For such type of problems number of capacitors $= \frac{C'}{C} \times \left(\frac{V'}{V}\right)^2 = \frac{16}{8}\left(\frac{1000}{250}\right)^2 = 32$

33. Ans (1)

$$V_R = \frac{V_0}{4} = V_0 e^{-\frac{1}{RC}} \Rightarrow \frac{1}{4} = e^{-\frac{1}{10}}$$

$$\Rightarrow \quad 4 = e^{\frac{1}{10}} \Rightarrow \log_e 4 = \frac{t}{10} \Rightarrow t = 10 \log 4 = 13.86 \text{ s}$$

$(RC = 2.5 \times 10^6 \times 4 \times 10^{-6} = 10)$

34. Ans (4)

$q = C_0V \qquad q = C_0\left(\frac{4}{3}\right)V'$

$C_0V = C_0\frac{4}{3}V'$

$V' = \frac{3V}{4}$

SECTION - B

36. Ans (2)

$V_0 = V_{\text{due to complete sphere}} - V_{\text{due to removed part}}$

$$V_0 = \frac{3K\left(\rho.\frac{4}{3}\pi R^3\right)}{2R} - \frac{K\left(\rho.\frac{4}{3}\pi\left(\frac{R}{2}\right)^3\right)}{\frac{R}{2}}$$

$$V_0 = \frac{5\rho \cdot R^2}{12\varepsilon_0}$$

37. Ans (4)

$$E_I = \frac{\sigma}{2\varepsilon_0}(-\hat{i}) + \frac{2\sigma}{2\varepsilon_0}(-\hat{i}) + \frac{5\sigma}{2\varepsilon_0}(+\hat{i})$$

$$E_I = \frac{\sigma}{\varepsilon_0}(\hat{i})$$

$$E_{II} = \frac{\sigma}{2\varepsilon_0}(\hat{i}) + \frac{2\sigma}{2\varepsilon_0}(-\hat{i}) + \frac{5\sigma}{2\varepsilon_0}(+\hat{i})$$

$$E_{II} = \frac{2\sigma}{\varepsilon_0}(\hat{i})$$

$$E_{III} = \frac{\sigma}{2\varepsilon_0}(+\hat{i}) + \frac{2\sigma}{2\varepsilon_0}(+\hat{i}) + \frac{5\sigma}{2\varepsilon_0}(+\hat{i})$$

$$E_{III} = \frac{4\sigma}{\varepsilon_0}(\hat{i})$$

$$E_{IV} = \frac{\sigma}{2\varepsilon_0}(+\hat{i}) + \frac{2\sigma}{2\varepsilon_0}(+\hat{i}) + \frac{5\sigma}{2\varepsilon_0}(-\hat{i})$$

$$E_{IV} = -\frac{\sigma}{\varepsilon_0}(\hat{i})$$

38. Ans (4)

Let q charge flows into earth

Potential of B shell

$$V_2 = \frac{KQ}{2R} + \frac{K\left(\frac{Q}{3} - q\right)}{2R} + \frac{K(-2Q)}{3R} = 0$$

$\Rightarrow q = 0$

39. Ans (1)

Consider a spherical symmetric surface

$\phi = \phi_0 r^4$

$Q = \in_0 \phi_0 r^4$ [From Gauss' Theorem]

$$\rho = \frac{dQ}{dV} = \frac{dQ}{4\pi r^2 dr} = \frac{\in_0 \phi_0 4r^3}{4\pi r^2} \Rightarrow \rho = \frac{\in_0 \phi_0 r}{\pi}$$

40. Ans (3)

$W_{AB} = q\,(V_B - V_A)_{\text{dipole}}$

42. Ans (3)

$R_{AD} = \frac{5}{6}R = \frac{5}{6} \times 6\Omega = 5\Omega$

$\Rightarrow$ Total current $= \frac{25V}{5\Omega} = 5A$

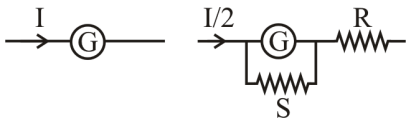
43. Ans (3)

$P = \frac{V^2}{R_{eq}}$; $(R_{eq})_1 = 1\Omega$; $(R_{eq})_2 = \frac{1}{2}\Omega = 0.5\Omega$

$(R_{eq})_3 = 1.5\Omega$

$\Rightarrow P\ \alpha \frac{1}{R_{eq}} \Rightarrow P_2 > P_1 > P_3$ $\{\because V = 3 \text{ volt}\}$

44. Ans (2)



For making current half ; resistance of circuit should be double i.e., 2G

Hence $2G = \frac{GS}{G+S} + R$

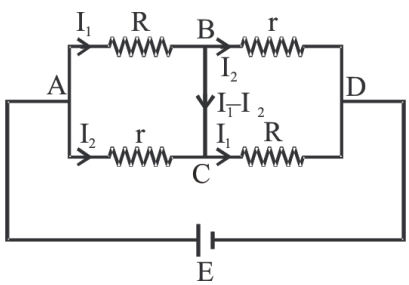
$$R = 2G - \frac{GS}{G+S} = \frac{2G(G+S) - GS}{(G+S)}$$

$$R = \frac{G(2G+S)}{(G+S)}$$

45. Ans (4)

Equivalent resistance $= 2\left(\frac{rR}{r+R}\right) = \frac{2rR}{r+R}$

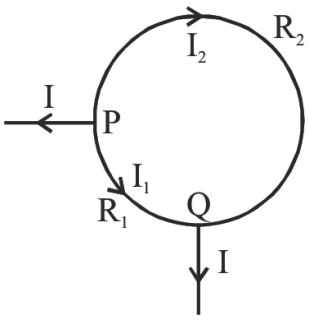
$I_1 + I_2 = \frac{E(r+R)}{2rR}$ $\qquad I_1 = \frac{E}{2R}, \quad I_2 = \frac{E}{2r}$



$\Rightarrow I_1 - I_2 = \frac{E}{2R} - \frac{E}{2r} = \frac{E(r-R)}{2rR}$, Here $R > r$

As $I_1 < I_2 \Rightarrow$ current flows from C to B

46. Ans (1)



$\because R \alpha \ell$

$$\frac{R_1}{R_2} = \frac{\frac{\ell}{4}}{\frac{3\ell}{4}} = \frac{1}{3}$$

$R_{total} = 10\Omega$

$R_1 : R_2 = 1 : 3$

$$R_1 = \frac{1}{4} \times 10 = \frac{10}{4}\Omega \quad R_2 = \frac{3}{4} \times 10 = \frac{30}{4}\Omega$$

$$R_{PQ} = \frac{R_1 R_2}{R_1 + R_2} = \frac{\frac{10}{4} \times \frac{30}{4}}{10} = \frac{30}{16}\Omega$$

$$I_{total} = \frac{3}{\frac{30}{16} + 1} = \frac{48}{46} = \frac{24}{23}A$$

$$\frac{I_1}{I_2} = \frac{R_2}{R_1} = \frac{3}{1}$$

$$I_1 = \frac{3}{4}I = \frac{3}{4} \times \frac{24}{23} = \frac{18}{23}A$$

$$I_2 = \frac{1}{4}I = \frac{1}{4} \times \frac{24}{23} = \frac{6}{23}A$$

47. Ans (4)

$$\frac{Q}{2}\left|\frac{3Q}{2}\right. \qquad \left.\frac{-3Q}{2}\right|\frac{Q}{2}$$

$\Rightarrow$ Charge flow $= \frac{3Q}{2}$

48. Ans (3)

Initially potential difference across both the capacitor is same hence energy of the system is

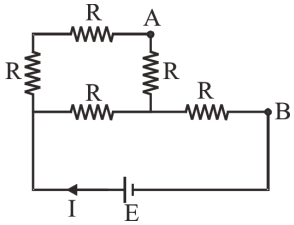
$$U_1 = \frac{1}{2}CV^2 + \frac{1}{2}CV^2 = CV^2 ...(i)$$

In the second case when key K is opened and dielectric medium is filled between the plates, capacitance of both the capacitors becomes 3C, while potential difference across A is V and potential difference across B is $\frac{V}{3}$ hence energy of the system now is

$$U_2 = \frac{1}{2}(3C)V^2 + \frac{1}{2}(3C)\left(\frac{V}{3}\right)^2 = \frac{10}{6}CV^2 ...(ii)$$

So, $\frac{U_1}{U_2} = \frac{3}{5}$

49. Ans (1)



$$I = \frac{E}{R_{eq}} \quad \ldots\ldots(i)$$

Given that, $R = 3\Omega$ and

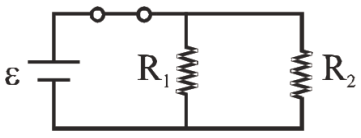
$V_A - V_B = 10$ V $\quad \ldots\ldots(ii)$

From (i) and (ii)

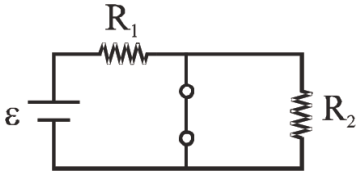
$E = 14$ V

50. Ans (3)

At $t = 0$,



$$i_{t=0} = \frac{\varepsilon(R_1 + R_2)}{R_1 R_2}$$



$$i_{t=0} = \frac{\varepsilon}{R_1}$$

SUBJECT : CHEMISTRY

SECTION - A

51. Ans (3)

NCERT-XII Part-I, Pg. # 112

53. Ans (1)

	A(g) +	2B(g) ⟶	C(g) +	D(g)
at t = 0	0.6	0.8	0	0
at time t	0.6-p	0.8−2p	p	p
	0.6−0.2	0.8−2×0.2	0.2	
	0.4	0.4		

$r_1 = K(0.6)(0.8)^2$

$r_2 = K(0.4)(0.4)^2$

$$\frac{r_2}{r_1} = \frac{K \times 0.4 \times 0.4 \times 0.4}{K \times 0.6 \times 0.8 \times 0.8} = \frac{4}{24} = \frac{1}{6}$$

$$\frac{r_2}{r_1} = \frac{1}{6}$$

56. Ans (4)

$2A + 3B \longrightarrow$ product

A in Excess then Rate law

Rate = $k[B]^n$ given $Rate_1 = k[0.1]^n$

given $Rate_2 = 2$ $Rate_1 = k[0.4]^n$

From (1) and (2) $n = \frac{1}{2}$

then Rate law $\frac{dx}{dt} = K[B]^{\frac{1}{2}}$

57. Ans (2)

The value of rate constant of a pseudo first order reaction depends on temperature as well as on concentration of reactant present in excess, e.g., hydrolysis of ethyl acetate.

58. Ans (2)

For zero order:

$$\frac{t_x}{t_y} = \frac{x}{y}$$

$$\frac{t_{1/8}}{t_{15/16}} = \frac{1}{8} \times \frac{16}{15}$$

$$\frac{t_{1/8}}{t_{15/16}} = \frac{2}{15}$$

60. Ans (4)

ΔH is positive and second step is slow step which has high activation energy.

61. Ans (2)

For first order reaction $t_{1/2} = \frac{1}{3.33} t_{90\%}$

63. Ans (3)

$$\frac{M}{m} = \left(\frac{n_{solute}}{V_{solution(L)}}\right)\left(\frac{m_{solvent\ (Kg)}}{n_{solute}}\right)$$

$$= \frac{1.4}{1.5/1.5} = 1.4 \text{ kg/L}$$

64. Ans (2)

$$m = \frac{x_{solute}}{x_{solvent}} \times \frac{1000}{(M_w)_{solvent}}$$

$$2 = \frac{x}{1-x} \times \frac{1000}{18}$$

$36 - 36x = 1000\ x$

$36 = 1036\ x$

$$x = \frac{36}{1036} = 0.0348$$

69. Ans (3)

$\pi = iCRT$

$$4.926 = \left(\frac{1.74}{174} \times \frac{1000}{100}\right) \times 0.0821 \times 300 \times i$$

$i = 2$

$i = 1 + \alpha\ (n - 1)$

$2 = 1 + \alpha\ (3 - 1)$

$$\alpha = \frac{1}{2} = 0.5$$

$\alpha = 50\%$

72. Ans (2)

NCERT-XII, Part-I, Pg # 67

73. Ans (1)

NCERT Pg#86 to 89

76. Ans (4)

$$\alpha = \frac{7.8}{390} = 2 \times 10^{-2}$$

$K_a = C\alpha^2 = 0.04 \times (2 \times 10^{-2})^2 = 16 \times 10^{-6}$

$pK_a = 6 - \log 16 = 6 - 4 \log 2 = 6 - 4 \times 0.3 = 4.8$

79. Ans (4)

The half reactions are

$$[Fe(s) \longrightarrow Fe^{2+}(aq) + 2e^-] \times 2$$

$O_2(g) + 4H^+ + 4e^- \longrightarrow 2H_2O$

$2Fe(s) + O_2(g) + 4H^+ \longrightarrow 2Fe^{2+}(aq) + 2H_2O(\ell)$

$$E = 1.67 - \frac{0.059}{4} \log \frac{(10^{-3})^2}{(10^{-3})^4 (0.1)} = 1.57V$$

80. Ans (4)

$E^{o}_{cell} = -0.16 - 0.34 = -0.50$ V

$\Delta G^{\circ} = -nF.E^{o}_{cell}$

$\Delta G^{o} = \dfrac{-6 \times 96500 \times (-0.50)}{1000}$ kJ

$\Delta G^{o} = 289.5$ kJ

81. Ans (2)

(A)

aq. NaCl

anode cathode

$2Cl^{-} \rightarrow Cl_2 + 2e^{-}$ $2H_2O + 2e^{-} \rightarrow H_2 + 2OH^{-}$

(B)

dil. H_2SO_4

anode cathode

$2H_2O \rightarrow O_2 + 4H^{+} + 4e^{-}$ $[2H_2O + 2e^{-} \rightarrow H_2 + 2OH^{-}] \times 2$

(C)

conc. H_2SO_4

anode cathode

$SO_4^{-2} \rightarrow S_2O_8^{-2} + 2e^{-}$ $2H^{+} + 2e^{-} \rightarrow H_2$

(D)

molten NaB_6

anode cathode

$2Br^{-} \rightarrow Br_2 + 2e^{-}$ $2Na^{+} + 2e^{-} \rightarrow 2Na$

83. Ans (4)

Dil. H_2SO_4 do not acts as oxidising agent which prevent oxidation of Fe^{+2} into Fe^{+3}. While concentrated H_2SO_4 will oxidise Fe^{+2} into Fe^{+3}

84. Ans (2)

$Fe(OH)_3$ is lyophobic sol so can be prepared by special method.

85. Ans (4)

$CuSO_{4(s)} + 5H_2O_{(\ell)} \longrightarrow CuSO_4.5H_2O_{(s)}$ is an example of $\Delta_{Hydration}$ H° of $CuSO_4$

SECTION - B

86. Ans (1)

Ref NCERT

87. Ans (2)

$-\dfrac{d[Cr_2O_7^{2-}]}{dt} = -\dfrac{1}{3}\dfrac{d[HNO_2]}{dt}$

$-\dfrac{d[HNO_2]}{dt} = 3 \times \left(-\dfrac{d[Cr_2O_7^{2-}]}{dt}\right)$

$= 3 \times 2.4 \times 10^{-4}$

$= 7.2 \times 10^{-4}$ mol $L^{-1}s^{-1}$

88. Ans (3)

(Step-2) $R = k[CHCl_3]\,[Cl]$

(Step-1) $k_{eq} = \dfrac{[Cl]^2}{[Cl_2]} \Rightarrow [Cl] = (k_{eq}[Cl_2])^{1/2}$

$\therefore$ $R = (k\,k_{eq})\,[CHCl_3]\,[Cl_2]^{1/2}$

89. Ans (4)

$\log K = \log A - \left(\dfrac{Ea}{2.303R}\right)\dfrac{1}{T}$

90. Ans (1)

$\log \dfrac{k_2}{k_1} = \dfrac{E_a}{2.303R}\left(\dfrac{1}{T_1} - \dfrac{1}{T_2}\right)$

$\dfrac{k_2}{k_1} = \dfrac{r_2}{r_1} = 3$ (given)

$T_1 = 300$ K

$T_2 = 310$ K

$R = 2$ cal K^{-1} mol^{-1}

$\log(3) = \dfrac{E_a}{2.303R}\left(\dfrac{1}{300} - \dfrac{1}{310}\right)$

$E_a = \dfrac{2.303 \times 2 \times 300 \times 310 \times 0.48}{10}$

$= 20.5$ kcal mol^{-1}

91. Ans (2)

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92. Ans (4)

According to Henry's law

$P = K_H X$

X = mole fraction of dissolved gas in liquid.

K_H = Henry's constant

at STP, P = 1atm

0.2 molal H_2S gas dissolved in 1kg of water

so moles of water = $\frac{1000}{18}$

moles of H_2S = 0.2

$X_{H_2S} = \frac{0.2}{0.2 + 55.55} = 0.00359$

Now $P = k_H X_{H_2S}$

$K_H = \frac{1}{0.00359} = 278.5$ bar

95. Ans (3)

$P_T = P_A^\circ x_A + P_B^\circ x_B$

$P_T = 45 \times \frac{1}{3} + 36 \times \frac{2}{3}$

$P_T = 15 + 24 = 39$

$P_{obs} > P_{theoritical}$

Therefore positive deviation from Raoult's law (minimum boiling azeotrope)

96. Ans (3)

Fact

97. Ans (1)

$\Lambda_m^\infty(AB_2) = \lambda_{A^{+2}}^\infty + 2\lambda_{B^-}^\infty$

$= 120 + 2 \times 76.5$

$\Lambda_m^\infty(AB_2) = 273 \ Scm^2mol^{-1}$

99. Ans (3)

3^{rd} half cell = 1^{st} half cell + 2^{nd} half cell

$\Delta G_3^o = \Delta G_1^o + \Delta G_2^o$

$-n_3 F E_3^o = -n_1 F E_1^o - n_2 F E_2^o$

$E_3^o = \frac{n_1 E_1^o + n_2 E_2^o}{n_3} = \frac{2 \times (-1.18) + 1 \times (1.51)}{3}$

$= \frac{-2.36 + 1.51}{3} = -0.28$ Volt

SUBJECT : BOTANY

SECTION - A

101. Ans (4)

NCERT-XI/pg.73,Fig.5.13 (d)/para 5.5

102. Ans (2)

Seven. Axile placentation is found in Lemon, *Tulipa*, Cotton, *Atropa*, *Capsicum, Petunia, Asparagus.*

103. Ans (1)

NCERT Pg. # 67

104. Ans (1)

NCERT-XI Pg#76-77

105. Ans (2)

NCERT-XI Pg#78

106. Ans (1)

NCERT-XI Pg#76

107. Ans (2)

NCERT-XI Pg#65,66

108. Ans (3)

NCERT-XI Pg#69

109. Ans (4)

NCERT-XI Pg#71

110. Ans (2)

NCERT-XI, Pg. # 67

111. Ans (4)

NCERT-XI, Pg. # 70

112. Ans (2)

NCERT-XI, Pg. # 61

113. Ans (4)

NCERT XI Pg. # 65 (E), 64 (H)

114. Ans (3)

Module-4 (Plant anatomy) Pg # 67

115. Ans (2)

NCERT-XI Pg. # 89, Last Para

116. Ans (3)

NCERT (XI) Pg. # 89

117. Ans (3)

NCERT (XI) Pg. # 89

118. Ans (3)

NCERT (XI) Pg. # 91, 93

119. Ans (3)
NCERT-XI Pg # 90

120. Ans (3)
NCERT XI Pg # 88

121. Ans (2)
NCERT (XIth) Pg. # 89

122. Ans (4)
NCERT-XI, Pg. # 74

123. Ans (4)
NCERT-XI Page No. 93

124. Ans (2)
NCERT-XI Page No. 93

125. Ans (2)
NCERT-XI, Pg # 91

126. Ans (3)
Module

127. Ans (1)
NCERT XII_Pg. No. 11

128. Ans (2)
NCERT XII_Pg. No.11

129. Ans (3)
NCERT-XII, Pg #13

130. Ans (3)
NCERT XII, Pg. # 07

131. Ans (2)
NCERT XII Pg. # 22, 23, 24, 25

132. Ans (1)
NCERT XII, module

133. Ans (4)
NCERT XII Pg. #

134. Ans (1)
NCERT XII Pg. # 33 (Hindi)

135. Ans (3)
NCERT Pg.# 20

SECTION - B

136. Ans (3)
NCERT-XI/pg.79, Fig. 5.21(f)

137. Ans (2)
NCERT XI, Pg. # 71

138. Ans (2)
NCERT-XI Pg#77

139. Ans (1)
NCERT-XI, Pg. # 68

140. Ans (1)
NCERT-XI, Pg. # 72
Chilli, Tomato and Mustard

141. Ans (1)
NCERT (XI) Pg. # 90

142. Ans (2)
NCERT (XI) Pg. # 90

143. Ans (2)
NCERT XI, Pg. # 90

144. Ans (1)
NCERT XI Pg. # 74

145. Ans (3)
NCERT XII_Pg. No. 13

146. Ans (4)
NCERT XII_Pg. No. 15

147. Ans (1)
NCERT-XII, Pg # 13

148. Ans (4)
NCERT-XII, Pg# 9,17,20,21

149. Ans (3)
NCERT Pg.# 22

150. Ans (1)
NCERT Pg.# 21, 22

SUBJECT : ZOOLOGY

SECTION - A

151. Ans (3)
NCERT-XII, Pg. # 49(E), 53(H), Fig. 3.8

152. Ans (4)
NCERT XII Pg # 30 (E)

153. **Ans (1)**
NCERT XII Pg # 34, fig # 2.9

154. **Ans (4)**
NCERT (XIIth) Pg. # 33 (E)

155. **Ans (1)**
NCERT XII Pg # 37 (E)

156. **Ans (1)**
NCERT Pg. # 35 (E)

157. **Ans (2)**
NCERT XII Pg. 30 (E)

158. **Ans (1)**
NCERT Pg.# 38 (E)

159. **Ans (4)**
NCERT XII Pg # 33

160. **Ans (4)**
NCERT (XII^{th}) Pg. # 31

161. **Ans (1)**
NCERT (XIIth) Pg. # 31 (E)

162. **Ans (3)**
NCERT Pg. # 30 (E), 32(H)

163. **Ans (4)**
NCERT (XII) Pg. # 34, 35 (E)

164. **Ans (4)**
NCERT XII - Pg # 26 (E)

165. **Ans (3)**
NCERT Pg # 27 (E)

166. **Ans (1)**
NCERT (XII) (E) Pg. # 30 (E)

167. **Ans (4)**
NCERT (XII) Pg. # 30

168. **Ans (3)**
NCERT Pg. # 31

169. **Ans (2)**
NCERT Pg # 37 (E)

170. **Ans (3)**
NCERT P.no. 31 (E)

171. **Ans (4)**
NCERT, Pg. # 27 (E)

172. **Ans (3)**
NCERT–XII, Pg. # 37 (E)

173. **Ans (1)**
NCERT–XII, Pg. # 38 (E)

174. **Ans (4)**
NCERT XII pg # 48 (E)

175. **Ans (3)**
NCERT (XII) Pg. No. # 44 (E)

176. **Ans (3)**
NCERT XII, Pg # 48 (E)

177. **Ans (1)**
NCERT Pg. # 44 (E)

178. **Ans (1)**
OLD-NCERT-XII, Pg. # 48 (E)

179. **Ans (1)**
NCERT-XII, Pg. # 44 (E)

180. **Ans (4)**
NCERT XII, Pg # 44 (E)

181. **Ans (4)**
NCERT XII Pg # 45 (E), Fig 3.4 (b)

182. **Ans (2)**
NCERT XII Pg # 44, 45 (E)

183. **Ans (2)**
NCERT (XII) Page # 44, 45, 46 (E)

184. **Ans (3)**
NCERT, Pg # 44 (E)

185. **Ans (3)**
NCERT Pg. # 44 (E)

SECTION (B)

186. **Ans (4)**
NCERT Page # 44 (E)

187. **Ans (2)**
NCERT, Pg. # 44 (E)

188. Ans (4)
NCERT Pg No # 45 (E)

189. Ans (2)
NCERT-XII, Pg # 48 (E)

190. Ans (4)
NCERT (XIIth) Pg. # 44, 45 fig. # 3.1(a), (b), 3.2, 3.3

191. Ans (2)
NCERT Pg.# 27 (E)

192. Ans (3)
NCERT XII Pg.# 38 (E)

193. Ans (3)
NCERT XII, Page # 30 (E)

194. Ans (3)
NCERT-XII, Pg # 38 (E)

195. Ans (3)
NCERT (XII) Pg. # 38 (E)

196. Ans (2)
NCERT (XII) Pg. # 32, 33 (E)

197. Ans (3)
XIIth NCERT Pg. No. 32 (E)

198. Ans (4)
NCERT (XIIth) Pg. # 31 (E)

199. Ans (1)
NCERT (XIIth) Pg. # 30 (E)

200. Ans (4)
NCERT (XII) (E) Pg.# 36 (E) fig # 2.11