CLASSROOM CONTACT PROGRAMME

(Academic Session : 2024 - 2025)

ENTHUSE COURSE

PHASE : MEA,B,C,D,L,M,N,O,P & MEQ

TARGET : PRE-MEDICAL 2025

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

TEST DATE : 25-12-2024

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.	1	2	4	3	3	4	4	4	2	3	4	4	4	3	3	2	4	3	2	3	3	1	3	1	4	1	1	3	2	4
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.	4	4	3	2	4	4	2	1	1	3	4	3	2	2	1	4	4	2	1	3	2	3	4	2	1	3	4	1	3	2
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.	1	1	4	2	3	4	1	4	2	2	1	3	2	3	4	3	1	2	2	2	1	3	4	4	4	1	2	3	2	2
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.	3	3	1	2	2	1	3	1	3	1	1	2	4	2	3	4	1	1	3	4	1	2	4	4	1	3	3	4	1	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	2	4	2	2	4	4	4	4	3	1	2	3	1	1	3	3	4	3	2	2	3	2	3	3	4	3	3	2	3
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	1	1	3	1	4	1	3	4	2	3	1	3	4	2	4	3	1	2	3	4	2	2	2	2	2	3	1	3	3
Q.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200										
A.	1	4	1	1	4	3	1	1	3	2	1	3	1	1	3	4	3	4	4	2										

HINT – SHEET

SUBJECT : PHYSICS

SECTION - A

1. Ans (1)

$$\phi_{med} = \frac{\phi_{air}}{\epsilon_r} \Rightarrow \epsilon_r = \frac{\phi_{air}}{\phi_{med}} = \frac{5}{3}$$

2. Ans (2)

For equilibrium of any one charge at corner,

Net repulsion by other three charge = Attraction by q

3. Ans (4)

Electric field intensity at a point on the exis of a uniformly charged ring is given by

$$E = \frac{qr}{4\pi\varepsilon_0(R^2 + r^2)^{3/2}}$$

where r is the distance of the point from the centre of the ring (radius R).

For this intensity to be maximum,

$$\frac{dE}{dr} = 0$$

$$\text{Now } \frac{dE}{dr} = \frac{q}{4\pi\varepsilon_0}\left[(R^2 + r^2)^{-3/2} + r\left(-\frac{3}{2}\right)(R^2 + r^2)^{-3/2}(2r)\right] = 0$$

$$\Rightarrow \frac{q}{4\pi\varepsilon_0}(R^2 + r^2)^{-5/2}[(R^2 + r^2) - 3r^2] = 0$$

$$(R^2 + r^2) - 3r^2 = 0$$

$$\text{or } r = \frac{R}{\sqrt{2}} = \frac{0.24}{1.414} = 0.17 \text{ m}$$

4. Ans (3)

$u_y = v_0 \Rightarrow u_y = v_y = v_0 \quad [\because a_y = 0]$

$v_x^2 = u_x^2 + 2a_x(x_0) \Rightarrow v_x^2 = 0 + \frac{2qE}{m}x_0 \Rightarrow v_x = v_0$

$\therefore$ Speed $= \sqrt{v_x^2 + v_y^2} = \sqrt{2}\,v_0$

$$a_n = \frac{qE_0}{m}\frac{v_0}{\sqrt{v_x^2 + v_0^2}}$$

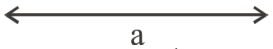
$$R = \frac{v^2}{a_n} = \frac{[m^2v_0^2 + 2qE_0mx_0]^{3/2}}{qE_0v_0m^2} = 4\sqrt{2}x_0; \therefore \text{ (C)}$$

5. Ans (3)

Using energy conservation:

$KE_i + PE_i = KE_f + PE_f$

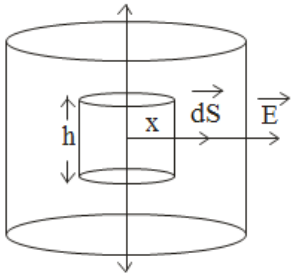
$\vec{P}_1 = P\hat{i}$ $\qquad$ $\vec{P}_2 = -P\hat{i}$



$$O + \frac{2KP}{a^3} \times P = \frac{1}{2}mv^2 \times 2 + 0$$

$$V = \sqrt{\frac{2P^2}{4\pi\varepsilon_0 a^3 m}} = \frac{P}{a}\sqrt{\frac{1}{2\pi\varepsilon_0 am}}$$

6. Ans (4)



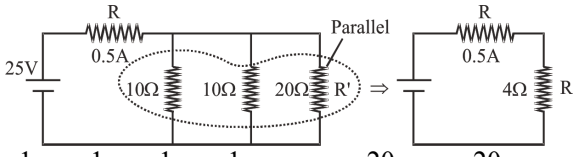
$$\int E ds\cos 0 = \frac{q}{\varepsilon_0}$$

$$\Rightarrow E.2\pi xh = \frac{\rho \times \pi x^2 h}{\varepsilon_0}$$

$$\Rightarrow E = \frac{\rho x}{2\varepsilon_0}$$

$$\Rightarrow E = \frac{\rho}{2\varepsilon_0} \times \frac{2\varepsilon_0}{\rho} = 1$$

7. Ans (4)



$$\frac{1}{R'} = \frac{1}{10} + \frac{1}{10} + \frac{1}{20} \Rightarrow R' = \frac{20}{5} = 4\Omega \frac{20}{5} = 4\Omega$$

Now using ohm's law $i = \frac{25}{R + R'} \Rightarrow 0.5 = \frac{25}{R + 4}$

$$\Rightarrow R + 4 = \frac{25}{0.5} = 50$$

$$\Rightarrow R = 50 - 4 = 46\ \Omega$$

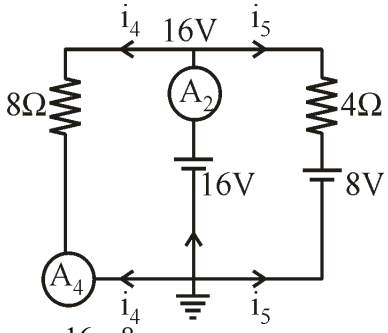
Current through 20Ω resistor $=$

$$\frac{0.5 \times 5}{20 + 5} = \frac{2.5}{25} = 0.1A$$

Potential difference across middle resistor =

Potential difference across $20\Omega = 20 \times 0.1 = 2V$

8. Ans (4)

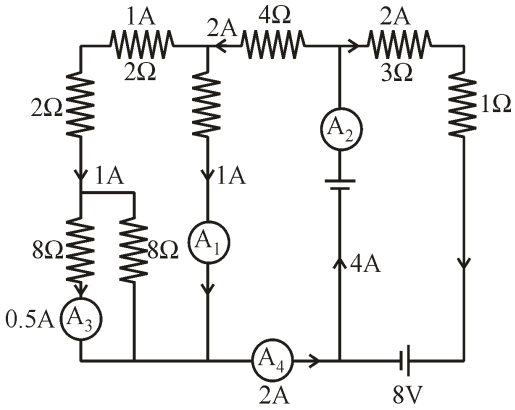


$$i_5 = \frac{16 - 8}{4} = 2A$$

$$i_4 = \frac{16 - 0}{8} = 2A$$

A_4 will show 2A; A_2 will show 2+2 = 4A

Redraw in expanded form.



Current A_4 can now be redistributed as per KCL, this gives;

Current show by ammeter

$A_1 \Rightarrow 1A$

$A_3 \Rightarrow 0.5A$

Hence readings shown will be

$A_1 \Rightarrow 1A$; $A_2 \Rightarrow 4A$; $A_3 \Rightarrow 0.5$;

$A_4 \Rightarrow 2A$

9. Ans (2)

$V = E - Ir$

$I = 0, V = E = 2$ Volt

emf = 2V

If $V = 0, E - Ir = 0$

$Ir = E$

$5(r) = 2$

$r = 2/5 = 0.4\ \Omega$

When current 1A

$V = 2 - 1 \times 0.4$

$= 1.6$ V

10. Ans (3)

To check correctness of reading, examiner estimated the value of unknown resistance × fresh reading :

Reading 1 : $X = R \times \frac{(100 - \ell_1)}{\ell_1}$

$500 \times \frac{60}{40} = 750\Omega$

Reading 2 : $X = 375 \times \frac{67}{33} = 727\Omega$

Reading 3 : $X = 200 \times \frac{79}{21} = 752\Omega$

Reading 4 : $X = 100 \times \frac{82}{18} = 455\Omega$

Thus 4th reading suggested that it was manipulated.

11. Ans (4)

$G = \frac{RS}{R - S}$

$G_1 = \frac{(3300)(80)}{(3300 - 80)} \approx 82\Omega$

$G_2 = \frac{(5000)(80)}{(5000 - 80)} \approx 81\Omega$

$G = \frac{G_1 + G_2}{2} \approx 80\Omega$

12. Ans (4)

After closing the switch inner sphere is grounded.

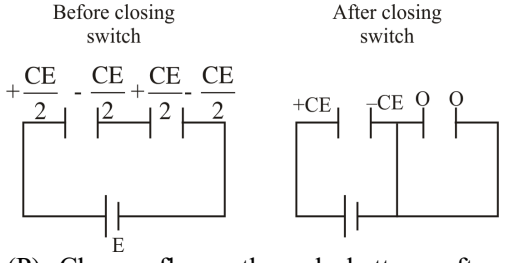
Hence $V_{inner} = 0$

Let after closing the switch, charge on inner sphere be q then

$V_{inner} = \frac{Kq}{R} + \frac{KQ}{3R} = 0$

$q = \frac{-Q}{3}$

13. Ans (4)



(P) Charge flown through battery after closing switch = (CE/2)

(Q) $(W.D)_{battery} = \left(\frac{CE}{2}\right) \times E = \left(\frac{CE^2}{2}\right)$

(R) Charge on capacitor A on closing switch = CE

(S) $(WD)_{Battery} = \Delta U + Heat$

$\frac{CE^2}{2} = \left[\frac{1}{2}CE^2 - \frac{1}{2}\frac{CE^2}{4} \times 2\right] + Heat$

$\Rightarrow Heat = \frac{CE^2}{4}$

14. Ans (3)

$\because$ All resistors are in parallel

$R_{Net} = R/3 \Rightarrow \tau = \frac{RC}{3}$

$Q = CV\left[1 - e^{\frac{-t}{RC} \times 3}\right]$

15. Ans (3)

It's charging circuit so

$V_C = V\left[1 - e^{-\frac{t}{R_C}}\right]$

$V_C = 63\ \%$ of V

So, $t = \tau = RC$

As per

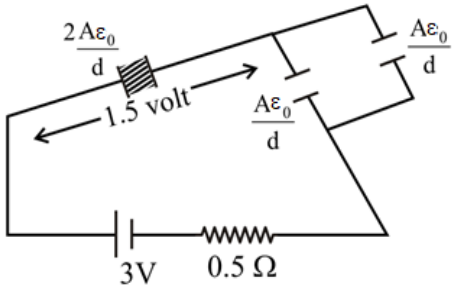
Graph V = 100

$10 \times 10^{-6} = 10 \times C$

$C = 1\ \mu F$

16. Ans (2)

$E_{net} = \frac{E_1 r_2 + E_2 r_1}{r_1 + r_2} = 3volt$



$U = \frac{1}{2}CV^2 = \frac{1}{2} \times \frac{2A\varepsilon_0}{d} \times (1.5)^2 = \frac{9}{4}\frac{A\varepsilon_0}{d}$

17. Ans (4)

$\lambda = \frac{v}{n} \Rightarrow \frac{\lambda_A}{\lambda_B} = \frac{v_A}{v_B} \times \frac{n_B}{n_A}$

$\frac{\lambda_A}{\lambda_B} = \sqrt{\frac{\mu_B}{\mu_A}} \times \frac{n_B}{n_A} \quad \left[v = \sqrt{\frac{T}{\mu}}\right]$

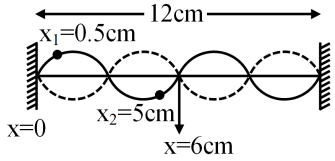
$\frac{\lambda_A}{\lambda_B} = \frac{1}{\sqrt{n}} \times \frac{1}{1/k} = \frac{k}{\sqrt{n}}$

18. Ans (3)

$$\frac{1}{2(n_1 \sim n_2)} = 0.2 \Rightarrow \frac{1}{(n_1 \sim n_2)} = 0.4$$

So Beats freq. $= n_1 \sim n_2 = \frac{1}{0.4} = 2.5$ Hz

19. Ans (2)

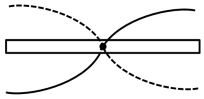


$k = \frac{2\pi}{\lambda} = \frac{\pi}{3}$

$\Rightarrow \lambda = 6$ cm

Both particle are in opposite phase so $\Delta\phi = \pi$

20. Ans (3)

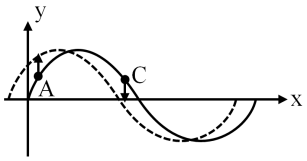


$L = \lambda/2 = 100$ cm

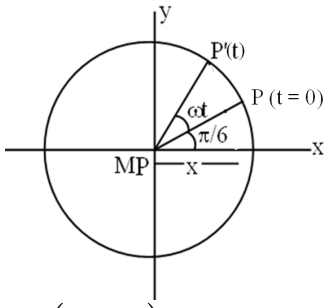
$\Rightarrow \lambda = 2$m

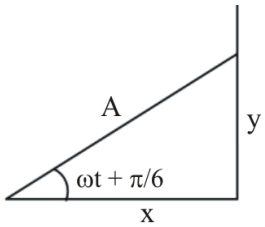
$v = n\lambda = 2550 \times 2 = 5100$ m/s

21. Ans (3)



22. Ans (1)





$$\cos\left(\omega t + \frac{\pi}{6}\right) = \frac{x}{A}$$

$$x = A\cos\left(\omega t + \frac{\pi}{6}\right)$$

$$x = 6\cos\left(\frac{2\pi}{4}t + \frac{\pi}{6}\right)$$

$$x = 6\cos\left(\frac{\pi}{2}t + \frac{\pi}{6}\right)$$

23. Ans (3)

We know that

$(N + 1)\, T_s = N\, T_\ell$

$(N + 1)4 = N \times 4.2$

$4N + 4 = 4.2\, N$

$0.2\, N = 4$

$N = 20$

$\therefore$ Pendulum 'x' will vibrate

$(N + 1) = 20 + 1 = 21$

24. Ans (1)

Time taken to travel from extreme to mean position is $= \frac{T}{4}$

Time taken to travel from mean position to $\frac{A}{2}$ is $\frac{T}{12}$

Total time $t = \frac{T}{4} + \frac{T}{12} = \frac{T}{3}$

$$\boxed{t = \frac{2\pi}{3}\sqrt{\frac{\ell}{g}}} \quad \left(\because T = 2\pi\sqrt{\frac{\ell}{g}}\right)$$

25. Ans (4)

$$Q = \frac{K\gamma}{\gamma - 1}$$

$$Q = \frac{K\frac{C_P}{C_V}}{\frac{C_P}{C_V} - 1}$$

$$Q = \frac{KC_P}{C_P - C_V}$$

$$= \frac{KnC_P\Delta T}{nC_P\Delta T - nC_V\Delta T}$$

$$Q = \frac{KQ}{Q - \Delta U} \qquad [Q = W + \Delta U]$$

$$Q = \frac{KQ}{W}$$

$K = W$

26. Ans (1)

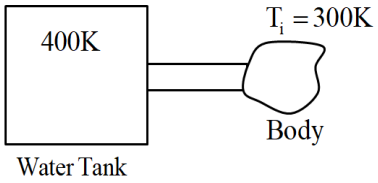
$4\pi r^2 \longrightarrow \sigma AT^4$

$1 \longrightarrow \frac{\sigma AT^4}{4\pi r^2}$

$\pi r_0^2 \longrightarrow \frac{\pi r_0^2 \sigma \left(4\pi R^2\right) T^4}{4\pi r^2}$

$= \frac{\sigma\pi r_0^2 R^2 T^4}{r^2}$

27. Ans (1)



Suppose only inter mediate time temperature of

Body is T

$$\frac{dQ}{dt} = \frac{KA}{L}(400 - T)$$

$$ms.\left(\frac{-dT}{dt}\right) = K\frac{A}{L}(400 - T)$$

$$-\frac{dT}{dt} = \frac{KA}{mLS}(400 - T)$$

$$\int_{300}^{T} \frac{dT}{400 - T} = -0.25\int_{0}^{t} dt$$

$$\ln(400 - T)\Big|_{300}^{T} = -0.25t$$

$$\ln\left(\frac{400 - T}{400 - 300}\right) = -0.25t$$

$$400 - T = 100e^{-0.25t}$$

$$T = 400 - 100\, e^{-0.25t}$$

Hint : At $t = \infty$, temp of body should be 400 K

$\therefore$ Option (1) is correct

28. Ans (3)

Heat given by water $Q_1 = 10 \times 1 \times 10 = 100$ cal

Heat taken by ice $Q_2 = 10 \times 0.5 \times 20 + 10 \times 80$

$= 900$ cal

Here, heat available Q_1 only provide heat required to increase temperature of ice from -20^oC to 0^oC, so final mixture is "10 gm ice and 10 gm water at 0^oC".

29. Ans (2)

$$\gamma_{mix} = \frac{n_1C_{P_1} + n_2C_{P_2}}{n_1C_{v_1} + n_2C_{v_2}}$$

$$1 + \frac{2}{f_{mix}} = \frac{n\left(\frac{5}{2}R\right) + \frac{n}{2}\left(\frac{7R}{2}\right)}{n\left(\frac{3R}{2}\right) + \frac{n}{2}\left(\frac{5R}{2}\right)}$$

$$1 + \frac{2}{f_{mix}} = \frac{\frac{5}{2} + \frac{7}{4}}{\frac{3}{2} + \frac{5}{4}} = \frac{17}{11}$$

$$f_{mix} = \frac{11}{3}$$

30. Ans (4)

$$W = \frac{R(T_i - T_f)}{\gamma - 1} \Rightarrow 6R = \frac{R(T - T_f)}{\left(\frac{5}{3} - 1\right)}$$

$\Rightarrow T_f = (T - 4)K$

31. Ans (4)

For path *ab*: $(\Delta U)_{ab} = 7000$ J

By using $\Delta U = \mu C_V \Delta T$

$$7000 = \mu \times \frac{5}{2}R \times 700 \Rightarrow \mu = 0.48$$

For path *ca*:

$(\Delta Q)_{ca} = (\Delta U)_{ca} + (\Delta W)_{ca}$ ...(i)

$\because$ $(\Delta U)_{ab} + (\Delta U)_{bc} + (\Delta U)_{ca} = 0$

$\therefore$ $7000 + 0 + (\Delta U)_{ca} = 0 \Rightarrow (\Delta U)_{ca} = -7000$ J ...(ii)

Also $(\Delta W)_{ca} = P_1(V_1 - V_2) = \mu R(T_1 - T_2)$

$= 0.48 \times 8.31 \times (300 - 1000) = -2792.16$ J ....(iii)

on solving equations (i), (ii) and (iii)

$(\Delta Q)_{ca} = -7000 - 2792.16 = -9792.16$ J

$= -9800$ J

32. Ans (4)

$$\mu_1 + \mu_2 = \mu_1' + \mu_2'$$

$$\frac{P_1V}{RT_1} + \frac{P_2V}{RT_2} = \frac{PV}{RT} + \frac{PV}{RT}$$

$$\frac{P_1}{T_1} + \frac{P_2}{T_2} = \frac{2P}{T}$$

$$\frac{P}{T} = \frac{P_1}{2T_1} + \frac{P_2}{2T_2}$$

33. Ans (3)

$(\Delta L)_{\text{due to temp}} = (\Delta L)_{\text{due to compressive force}}$

$$L\alpha T = \frac{FL}{AY}$$

$$\alpha = \frac{F}{\pi r^2 Y\, T}$$

$$\gamma = 3\alpha = \frac{3F}{\pi r^2 Y\, T}$$

34. Ans (2)

(a) $K.E = \frac{3}{2}kT$ does not depends on mass of gas molecule

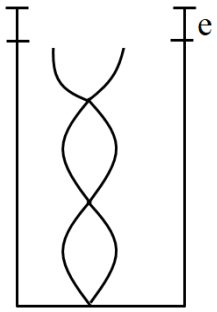
(b) $v_{rms} = \sqrt{\frac{3RT}{M_W}}$

(c) $PV = \frac{mRT}{M_W}$

(d) $n = \frac{m}{M_W} = \frac{N}{N_A}$

35. Ans (4)

$\lambda = \frac{V}{f} = \frac{340}{340} = 1m = 100cm$



As the pipe is closed so its resonating length is

$\frac{\lambda}{4}, \frac{3\lambda}{4}, \frac{5\lambda}{4}, \frac{7\lambda}{4}$

$\frac{5\lambda}{4}$ is closed to length of pipe

= 120 cm

L + e = 125 cm

e = 125 − 120 = 5 cm

After pouring water the 1st resonance is obtained at 120 − 70 = 50 cm from lower end.

Distance between two consecutive resonance points = 50 cm

Maximum length of water columns

= 120−20 = 100 cm

SECTION - B

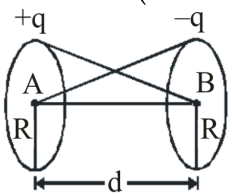
36. Ans (4)

V_A = (potential due to charge +q on ring A)

+ (potential due to charge −q on ring B)

$V_A = \frac{1}{4\pi\varepsilon_0}\left(\frac{q}{R} - \frac{q}{d_1}\right)$; $d_1 = \sqrt{R^2 + d^2}$

$= \frac{1}{4\pi\varepsilon_0}\left(\frac{q}{R} - \frac{q}{\sqrt{R^2 + d^2}}\right)$



similarly,

$V_B = \frac{1}{4\pi\varepsilon_0}\left(-\frac{q}{R} + \frac{q}{\sqrt{R^2 + d^2}}\right)$

Potential difference $V_A - V_B$

$= \frac{1}{4\pi\varepsilon_0}\frac{q}{R} + \frac{1}{4\pi\varepsilon_0}\frac{q}{R} - \frac{1}{4\pi\varepsilon_0}\frac{q}{\sqrt{R^2 + d^2}} - \frac{1}{4\pi\varepsilon_0}\frac{q}{\sqrt{R^2 + d^2}}$

$= \frac{1}{2\pi\varepsilon_0}\left(\frac{q}{R} - \frac{q}{\sqrt{R^2 + d^2}}\right)$

37. Ans (2)

Field due to complete sphere at B will be

$E' = \frac{kQ}{4R^2} = \frac{\rho R}{12\varepsilon_0}$

Field due to half sphere at B will be E

$\therefore$ Net field at B = $\frac{\rho R}{12\varepsilon_0} - E$

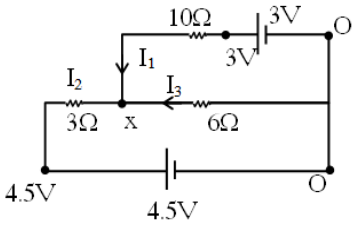
38. Ans (1)

(Properties of conductor)

Statement − I, true as body of conductor acts as equipotential surface.

Statement − 2 True, as conductor is equipotential. Tangential component of electric field should be zero. Therefore electric field should be perpendicular to surface.

39. Ans (1)



NODAL METHOD

$\frac{3-x}{10} + \frac{4.5-x}{3} + \frac{0-x}{6} = 0$

$\frac{9-3x+45-10x-5x}{30} = 0$

$\therefore$ x = 3 volts $\therefore$ $I_1 = \frac{3-3}{10}$

= 0

40. Ans (3)

V = iR

$3 = 3 \times R \Rightarrow R = 1\Omega$

41. Ans (4)

Q = constant. $U = \frac{Q^2}{2C}$; C↑ ; U↓

42. Ans (3)

$C = C_1 + C_2$

$= \frac{6\epsilon_0 A}{2d} + \frac{\epsilon_a A/2}{\frac{d}{2\times 6} + \frac{d}{2\times 3}} = \frac{5\epsilon_0 A}{d}$

43. Ans (2)

$$\frac{1}{C_{net}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \ldots\ldots + \frac{1}{C_7}$$

$$\frac{1}{C_{net}} = \frac{1}{C} + \frac{2}{C} + \frac{3}{C} + \frac{4}{C} + \frac{5}{C} + \frac{6}{C} + \frac{7}{C} = \frac{28}{C}$$

So $C_{net} = \frac{C}{28}$

44. Ans (2)

$$\frac{3v}{2\ell_0} = \frac{5v}{4\ell_C} \Rightarrow \frac{\ell_0}{\ell_C} = \frac{6}{5}$$

$$\frac{f_0}{f_C} = \frac{\frac{v}{2\ell_0}}{\frac{v}{4\ell_C}} = \frac{2\ell_C}{\ell_0} = \frac{2\times 5}{6} = \frac{5}{3}$$

45. Ans (1)

$I \propto a^2n^2$

46. Ans (4)

The period of liquid executing SHM in a U-tube does not depends upon the density of the liquid. Therefore, time period will be the same, when mercury is filled up to the same height as the water in the U-tube.

Now, as the pendulum oscillates, it drags air along with it. Therefore, it's kinetic energy is dissipated in overcoming viscous drag due to air and hence, it's amplitude goes on decreasing.

47. Ans (4)

Given condition $|v| = |a|$

$\omega\sqrt{A^2 - x^2} = \omega^2 x$

$\omega x = \sqrt{A^2 - x^2}$

$\frac{2\pi}{T} \times 4 = \sqrt{5^2 - 4^2}$

$T = \frac{8\pi}{3}$ sec

48. Ans (2)

$U_1 = a + bP_1V_1$

$U_2 = a + bP_2V_2$

$\Delta U = b(P_2V_2 - P_1V_1)$ ____(1)

and for adiabatic process

$\Delta U = -W = \frac{P_2V_2 - P_1V_1}{\gamma - 1}$ _____(2)

From (1) and (2)

$\gamma = \frac{b+1}{b}$

49. Ans (1)

Since $A_1B_1 > A_2B_2$

So $L_1 > L_2$

and slope $\propto \frac{1}{\text{specific heat capacity}}$

So, $C_1 < C_2$

50. Ans (3)

$W_C = W_{AB} + W_{BC} + W_{CD} + W_{DA}$

$W_C = 0 + \mu R(T_C - T_B) + 0 + \mu R(T_A - T_D)$

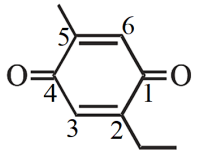
$W_C = \mu R[T_C - T_B + T_A - T_D] = 6 \times \frac{25}{3} \times 800$

$= 40$ kJ

SUBJECT : CHEMISTRY

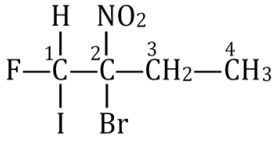
SECTION - A

51. Ans (2)



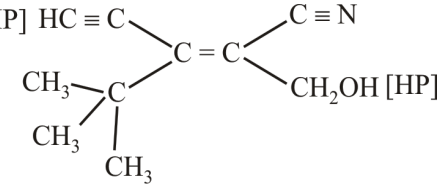
2-Ethyl-5-methylcyclohexa-2, 5-diene-1, 4-dione

52. Ans (3)



53. Ans (4)

[HP]



E-isomer

55. Ans (1)

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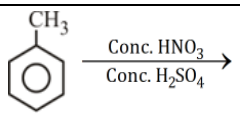
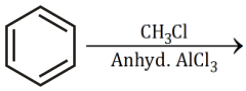
59. Ans (3)

Dehydration of alcohol ∝ stability of carbocation

63. Ans (4)

(a)		(q)	Nitration
(b)	$CH_3-COOK \xrightarrow{\text{electrolysis}}$	(p)	Kolbe's electrolysis
(c)	$CH_3-Br \xrightarrow[\text{Dryether}]{Na}$	(r)	Wurtz reaction
(d)		(s)	Friedal-craft alkylation

65. Ans (3)

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66. Ans (4)

NCERT XI Pg. # 353

67. Ans (1)

$$\% \text{ of Br} = \frac{\text{At wt of Br}}{\text{wt of AgBr}} \times \frac{m}{w} \times 100$$

$$= \frac{80}{188} \times \frac{0.12}{0.15} \times 100$$

$$= 34.04\%$$

69. Ans (2)

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

70. Ans (2)

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72. Ans (3)

From slow step $r = k_3[Q]^2 (P)$ ...(i)

from reversible step $k_c = \frac{k_1}{k_2} = \frac{[Q]^2}{[P]}$ ...(ii)

from (i) & (ii) $r = k_3 . \frac{k_1}{k_2}[P]^2$

74. Ans (3)

Raoult's law is followed by ideal solution.

75. Ans (4)

For non-ideal solution $\Delta S_{mix} > 0$

76. Ans (3)

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

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

77. Ans (1)

$\because \quad \alpha = \frac{i-1}{2-1}$ or $0.8 = \frac{i-1}{2-1} \Rightarrow i = 1.8$

Now $\Delta T_f = K_f \times \text{Molality} \times i$

$= 1.86 \times 0.5 \times 1.8 = 1.674$

freezing point of solution

$= 273 - 1.674 = 271.326$ K

80. Ans (2)

For $A_xB_y \longrightarrow xA^{+y} + yB^{-x}$

$\Lambda^o_M(A_xB_y) = x\Lambda^o_M(A^{y+}) + y\Lambda^o_M(B^{x-})$ ...(1)

$\Lambda^o_{eq}(A_xB_y) = \Lambda^o_{eq}(A^{y+}) + \Lambda^o_{eq}(B^{x-})$ ...(1)

83. 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

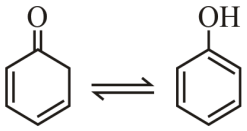
87. Ans (2)

Stability of $C^{\oplus} \propto pK_a \propto \frac{1}{K_a}$

Stability of $C^o \propto$ +M / Resonance / +H.C. / +I

Stability of $C^- \propto$ −M / Resonance / −I

88. Ans (3)



Aromatic

89. Ans (2)

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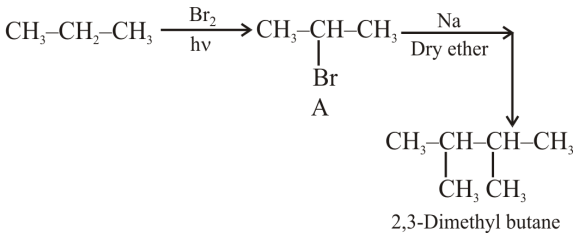
90. Ans (2)

Na in liq NH_3

92. Ans (3)



2,3-Dimethyl butane

93. Ans (1)

Chlorine is an electron withdrawing group but it is ortho, para directing in electrophilic aromatic substitution because Inductive effect of chlorine destabilises the intermediate carbocation formed during the electrophilic substitution, however due to the more pronounced resonance effect, the halogen stabilises the carbocation at ortho and para positions.

95. Ans (2)

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

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

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

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

SUBJECT : BOTANY

SECTION - A

101. Ans (1)
NCERT XI, Pg # 150

102. Ans (2)
NCERT XI, Pg # 139

103. Ans (4)
NCERT Pg. # 140-141

104. Ans (2)
NCERT XI, Pg # 140

105. Ans (3)
NCERT XI Pg.# 143, 144

106. Ans (4)
NCERT XI, Pg # 160

107. Ans (1)
NCERT XI, Pg # 156

108. Ans (1)
NCERT XI, Pg # 156

109. Ans (3)
NCERT Pg # 164

110. Ans (4)
NCERT Pg. # 156,159,160

111. Ans (1)
NCERT XI, Pg # 157

112. Ans (2)
NCERT XI, Pg # 177

113. Ans (4)
NCERT XI, Pg # 173

114. Ans (4)
NCERT XI, Pg # 174

115. Ans (1)
NCERT XI, Pg # 172

116. Ans (3)
NCERT XI, Pg # 170

117. Ans (3)
NCERT-XI Pg. # 177

118. Ans (4)
NCERT XI Pg.# 169, 172, 174

119. Ans (1)
NCERT XI, Pg # 64

120. Ans (3)
NCERT XI, Pg. # 67

121. Ans (2)
NCERT XI, Pg # 61

122. Ans (2)
NCERT XI, Pg # 64

123. Ans (4)
NCERT XI, Pg # 62, 63, 64

124. Ans (2)
NCERT Pg. No. 64

125. Ans (2)
NCERT XI, Pg # 73

126. Ans (4)
NCERT XI Pg. No. # 62

127. Ans (4)
NCERT, Pg. # 72

128. Ans (4)
NCERT-XI, Pg. # 77

129. Ans (4)
NCERT-XI, Pg. # 76

130. Ans (3)
NCERT-XI Pg. # 75

131. Ans (1)
NCERT (XII) Pg. # 15

133. Ans (3)
NCERT (XIIth) Pg. # 6, 9, 19

134. Ans (1)
XII NCERT Pg # 10, 11

135. Ans (1)
NCERT-XII, Pg.# 10, 11

SECTION - B

136. Ans (3)
NCERT XI, Pg # 145

137. Ans (3)
NCERT XI, Pg # 142

138. Ans (4)
NCERT, Pg. # 137, 138

139. Ans (3)
NCERT Pg # 145

140. Ans (2)
NCERT XI, Pg # 159

141. Ans (2)
NCERT XI, Pg # 177

142. Ans (3)
NCERT XI, Pg # 64

143. Ans (2)
NCERT XI, Pg # 65

144. Ans (3)
NCERT XI, Pg # 62

145. Ans (3)
NCERT XI Pg. No. # 73

146. Ans (4)
NCERT XI, Pg # 74

147. Ans (3)
NCERT XI, Pg # 73

148. Ans (3)
NCERT (XII) Pg. # 3, 5

149. Ans (2)
XII NCERT Pg # 6

150. Ans (3)
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SUBJECT : ZOOLOGY

SECTION - A

154. Ans (3)
NCERT, Pg # 231

156. Ans (4)
NCERT, Pg # 319

157. Ans (1)
NCERT Pg # 334 (E)

158. Ans (3)
NCERT, Pg. # 338

159. Ans (4)
NCERT, Pg. # 335

160. Ans (2)
NCERT - XIth Pg. No.

164. Ans (4)
NCERT Pg. # 244

165. Ans (2)
NCERT Pg. No. # 310, 311

166. Ans (4)
NCERT XII Pg. # 306, 309 (Fig. 20.5)

167. Ans (3)
NCERT, Pg # 225

169. Ans (2)
NCERT-XI, Pg.# 312

171. Ans (4)
NCERT, Pg. # 227

172. **Ans (2)**
NCERT Pg. No. # 218

173. **Ans (2)**
NCERT Page No. # 225 (E/H)

179. **Ans (3)**
NCERT XII - Pg. No - 27

181. **Ans (1)**
NCERT Pg#61

SECTION - B

187. **Ans (1)**
NCERT-XII, Pg. # 42

191. **Ans (1)**
NCERT, Pg # 222

192. **Ans (3)**
NCERT, Pg # 226

194. **Ans (1)**
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195. **Ans (3)**
NCERT-XI, Pg. # 242

198. **Ans (4)**
NCERT Pg. # 321

199. **Ans (4)**
NCERT XI Pg.# 236