DISTANCE LEARNING PROGRAMME

(Academic Session : 2019 - 2020)

LEADER TEST SERIES / JOINT PACKAGE COURSE

TARGET : PRE-MEDICAL 2020

Test Type : Unit Test Test # 01 Test Pattern : NEET-UG

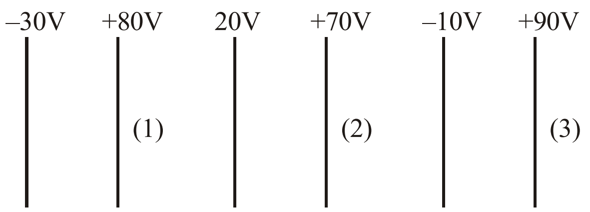
TEST DATE : 07 - 07 - 2019

ANSWER KEY

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

HINT – SHEET

1. Electric field $E = -\left(\frac{dV}{dr}\right)$



For the set of plates as in figure (I)

$$E_1 = -\left[\frac{-300-(+80)}{dr}\right] = \frac{+110}{dr}\,Vm^{-1}$$

Similarly $E_{II} = -\left[\frac{+20-(+70)}{dr}\right] = \frac{+50}{dr}\,Vm^{-1}$

And $E_{III} = -\left[\frac{-10-(+90)}{dr}\right] = \frac{100}{dr}\,Vm^{-1}$

$\therefore\ E_1 > E_2 > E_3$

The order of the pair of plates (for $\vec{E}$ is descending order) is I, III and II.

2. $\frac{dq}{dt} = i$

$$\int_0^Q dq = \int_0^{\pi/2} i\,dt$$

$$Q = \int_0^{\pi/2} 4\sin(2t)\,dt = -\frac{4}{2}(\cos 2t)_0^{\pi/2}$$

$$= -\frac{4}{2}[\cos\pi - \cos 0] = -\frac{4}{2}[-1-1] = 4\,\text{coulomb}$$

3. For balance mg = eE ⇒ E = $\frac{mg}{e}$

Also m = $\frac{4}{3}\pi r^3 d = \frac{4}{3}\times\frac{22}{7}\times(10^{-7})^3\times 1000\,kg$

$$\Rightarrow E = \frac{\frac{4}{3}\times\frac{22}{7}\times(10^{-7})^3\times1000\times10}{1.6\times10^{-19}} = 260\,N/C$$

(g = 10 newton/kg, e = 1.6 × 10^{-19} coulomb)

4. Let A and B be two forces

Greatest resultant = A + B = 10 .....(1)

Least resultant = A – B = 6 .... (2)

Solving (1) & (2) we get A = 8N and B = 2N when each force is increased by 3N

A' = A + 3 = 8 + 3 = 11 N

B' = B + 3 = 2 + 3 = 5 N

As the forces are acting at an angle of 90º

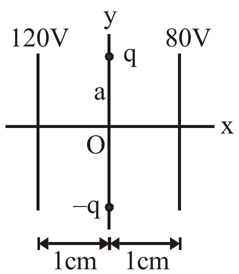
So $R' = \sqrt{A'^2 + B'^2} = \sqrt{(11)^2 + (5)^2} = \sqrt{146}\,N$

5. Flux through curved surface will be equal to flux through flat surface.

6. In case of spherical metal conductor the charge quickly spreads uniformly overthe entire surface because of which charges stay for longer time on the spherical surface. While in case of non-spherical surface, the charge concentration is different at different points due to which the charges do not stay on the surface or longer time.

7. Trailing zeroes will be counted if unit placed.

8.



It may be that charges of same magnitude but opposite sign may have placed on y-axis in such a manner that potential due to them on x-axis is zero, but they will produce electric field in addition to $\frac{120-80}{2} = 20\ V/cm$

9. The dimensions of

$$\frac{EJ^2}{M^5G^2} = \frac{(ML^2T^{-2})(ML^2T^{-1})^2}{M^5(M^{-1}L^3T^{-2})^2} = 1$$

So, it represents dimensions quantity like angle.

10. The net flux through each closed surface is determined by the net charge inside

$$\phi_{S_1} = \frac{(+Q-3Q)}{\varepsilon_0} = \frac{-2Q}{\varepsilon_0}$$

$$\phi_{S_2} = \frac{(+Q+2Q-3Q)}{\varepsilon_0} = 0$$

$$\phi_{S_3} = \frac{(+2Q-3Q)}{\varepsilon_0} = -\frac{Q}{\varepsilon_0}$$

$$\phi_{S_4} = +\frac{Q}{\varepsilon_0}$$

11. The cork floats motionless if the weight of the cork is equal to electrostatic force due to uniformly charged plane of earth's surface

mg = F_e = QE

Since earth is considered as infinite that

$$E = \frac{\sigma}{2\varepsilon_0}$$

$$mg = \frac{\sigma}{2\varepsilon_0}Q$$

$$\sigma = \frac{2\varepsilon_0 mg}{Q} = \frac{2\times8.85\times10^{-12}\times10^{-3}\times9.8}{1\times10^{-8}}$$

= 17.3 × 10^{-8} C/m²

12. $\cos^{-}\left(-\frac{1}{2}\right) = \theta$

$\cos\theta = -\frac{1}{2}$

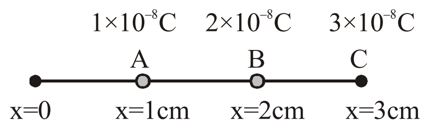
θ > 90°

θ = 120°

as cos (120) = –sin(90+30) = –sin30 = $-\frac{1}{2}$

13. The potential energy of the system of charges relative to infinite separation is

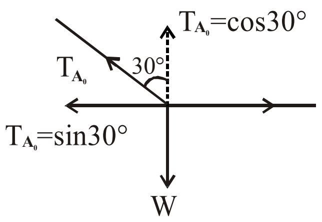
$$U = \frac{1}{4\pi\varepsilon_0}\left[\frac{q_Aq_B}{AB} + \frac{q_Bq_C}{BC} + \frac{q_Aq_C}{AC}\right] = 8.55\times10^{-4}J$$



$$U = \frac{9\times10^9\times10^{-16}}{10^{-2}}\left(\frac{1\times2}{1} + \frac{2\times3}{1} + \frac{1\times3}{2}\right)$$

= 9 × 10^{-5} (9.5) = 85.5 × 10^{-5} = 8.55 × 10^{-4} J

14.

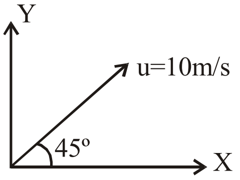


$T_{A_0/2} = 30$ $\quad\quad$ $T_{A_0}\cos30° = W$

$T_{A_0} = 60\,N$ $\quad\quad$ $60\frac{\sqrt{3}}{2} = W$

$W = 30\sqrt{3}\,N$

15. $a_x = \frac{qE}{m} = \frac{10^{-6}\times2\times10^{7}}{2} = 10\ m/s^2$



Time of flight $T = \frac{2u\sin\theta}{g} = \frac{2\times10\times\frac{1}{\sqrt{2}}}{10} = \sqrt{2}\,s$

Hence, Range $R = u_xT + \frac{1}{2}a_xT^2$

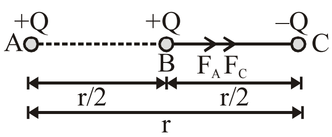
$R = 10\cos45° \times T + \frac{1}{2}a_xT^2$

$\frac{10}{\sqrt{2}}\times\sqrt{2}+\frac{1}{2}\times10\times2 = 20m$

(use $g = 10\ m/s^2$)

16. Initially, force between A and C

$F = k\frac{Q^2}{r^2}$



When a similar sphere B having charge +Q is kept at the mid point of line joining A and C, then

Net force on B is $F_{net} = F_A + F_C$

$= k\frac{Q^2}{(r/2)^2}+\frac{kQ^2}{(r/2)^2}$

$= 8\,\frac{kQ^2}{r^2} = 8F$

(direction is shown in figure)

17. because dimension of resistance is $[ML^2T^{-3}A^{-2}]$

18. Force of repulsion between the charges,

$F = \frac{9\times10^9\times40\times40\times10^{-12}}{(0.9)^2} = \frac{160}{9}N$

Since F > mg, so string always remains tight at any position even if velocity of bob is zero.So minimum speed at lowest point will be such that it is sufficient to take particle to highest point, i.e., velocity becomes zero at highest point.

For this $u_{min} = \sqrt{4gl} = \sqrt{4\times10\times0.9} = 6\,m/s$

20. Pont P lies at equatorial positions of dipole 1 and 2 and axial osition of dipole 3.

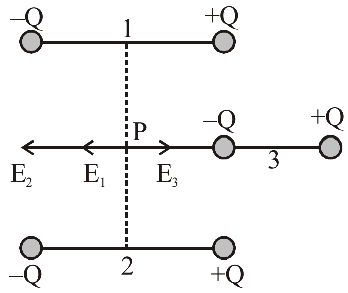
Hence field at P due to dipole 1

$E_1 = \frac{k.p}{x^3}$ (towards left) due to dipole 2

$E_2 = \frac{k.p}{x^2}$ (towards left) due to dipole 3

$E_3 = \frac{k(2p)}{x^3}$ (toward righ)

So net field at P will be zero.



21. If $\vec{a}$ is perpendicular to $\vec{b}$

$\vec{a}.\vec{b} = 0$

$3 + \lambda + 6 = 0$

$\lambda = -9$

22. $\frac{mv^2}{r} = q\frac{\lambda}{2\pi\varepsilon_0 r} \Rightarrow v = \sqrt{\frac{q\lambda}{2\pi\varepsilon_0 m}} = \sqrt{\frac{2kq\lambda}{m}}$

$T = \frac{2\pi r}{v} = 2\pi r\sqrt{\frac{m}{2kq\lambda}}$

23. The electric field E at any point on an equipotential surface acts perpendicular to it. Therefore, it cannot have any component parallel (tangential) to the surface.

24. $\vec{b} = \hat{i} + \hat{j}$

component of $\vec{a}$ along $\vec{b}$

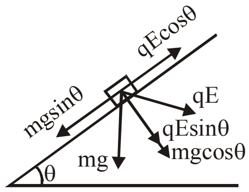
$$a\cos\theta\,\hat{b} = \left(\frac{\vec{a}.\vec{b}}{b}\right)\hat{b}$$

$$= \frac{(2\hat{i}+3\hat{j}).(\hat{i}+\hat{j})}{\sqrt{1^2+1^2}} \cdot \frac{(\hat{i}+\hat{j})}{\sqrt{1^2+1^2}}$$

$$= \frac{2+3}{2}(\hat{i}+\hat{j})$$

$$= \frac{5}{2}(\hat{i}+\hat{j})$$

25.



$N = mg\cos\theta + qE\sin\theta$

$mg\sin\theta = qE\cos\theta + \mu(mg\cos\theta + qE\sin\theta)$

$$\Rightarrow q = \frac{mg(1-\mu)}{E(1+\mu)} \quad (\text{for } \theta = 45^\circ,\ \sin\theta = \cos\theta)$$

$$= \frac{1\times 10(1-0.5)}{100(1+0.5)} = \frac{10\times 0.5}{100\times 1.5} = 3.3\times 10^{-2}\,C$$

26. Potential at large distances (∞) is $V\infty = 0$. Potential at the surface of the sphere V_s

$$= \frac{1}{4\pi\varepsilon_0}\frac{Q}{R}.$$

The potential at the centre of the spherical shell

$$V_{centre} = \frac{3}{2}\frac{1}{4\pi\varepsilon_0}\times\frac{Q}{R}$$

Kinetic energy at the surface $= -q\,(V_s - V_\infty)$

i.e., $(KE)_s = -q \times \frac{1}{4\pi\varepsilon_0}\times\frac{Q}{R}$

Kinetic energy at the centre,

$$(KE)_C = -q(V_C - V_\infty) = -q\,\frac{3}{2}\frac{1}{4\pi\varepsilon_0}\times\frac{Q}{R}$$

$$\frac{(KE)_{centre}}{(KE)_{surface}} = \frac{3}{2}\frac{(1/2)mv_c^2}{(1/2)mv^2} = \frac{3}{2}$$

$\Rightarrow v_c = \sqrt{1.5}\,v$

27. MI $\qquad I = MR^2$

$$\frac{\Delta I}{I}\times 100 = \pm\left(\frac{\Delta M}{M}\times 100 + \frac{2\Delta R}{R}\times 100\right)$$

$= \pm\,(1 + 2\times 0.5)$

$= \pm\,2\%$

28. No field inside the hollow conducting sphere.

29. **Zero error :**

Least count of circular scale $= \frac{1}{50} = 0.02$ mm

Reading of main scale = 0.0 cm

Number of division coincied = 4

reading of circular scale = 4×0.02

Zero error = 0.08 mm = +0.008 cm

For diameter sphere :

Reading of main scale = 1.1 cm

Number of division coincied = 14

reading of circular scale = 14×0.02 = 0.28 mm

= 0.028 cm

Reading = 1.128 cm

Diameter = Reading – zero error

= 1.128 – 0.008 = 1.120 cm

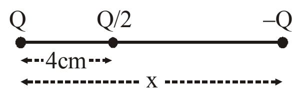
30. $A = 5t^2 + 4t + 8$

$$\frac{dA}{dt} = 10t + 4$$

t = 3 sec t

$$\frac{dA}{dt} = 10\times 3 + 4 = 34$$

31.



$$\frac{kQ^2}{2\times 4} - \frac{kQ^2}{x} - \frac{kQ^2}{2(x-4)} = 0$$

$$\Rightarrow \frac{1}{8} - \frac{1}{x} - \frac{1}{2(x-4)} = 0$$

$\Rightarrow x(x-4) - 8x(x-4) - 4x = 0$

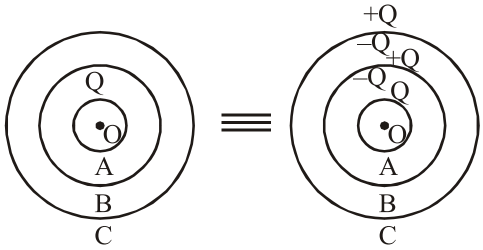
$\Rightarrow x^2 - 16x + 32 = 0 \Rightarrow x \simeq 13$ cm

32. $\vec{\tau} = \vec{r} \times \vec{F} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 3 & 2 & 3 \\ 2 & -3 & 4 \end{vmatrix}$

$= [(2\times4)-(3\times-3)]\hat{i} + [(2\times3)-(3\times4)]\hat{j}$

$+[(3\times-3)-(2\times2)]\hat{k} = 17\hat{i} - 6\hat{j} - 13\hat{k}$

33. The facing surfaces have equal and opposite charges.



34.
$$\begin{array}{r} 1.26 \\ +\,2.3 \\ \hline 3.56 \\ \hline \end{array}$$

Rounding off to 1 decimal place we get 3.6.
In addition or subtraction the number of decimal places in the result should be equal to the number of decimal places of that term in the operation which contain lesser number of decimal places. e.g. 12.587 – 12.5 = 0.087 = 0.1 ($\because$ second term contain lesser i.e. one decimal place)

35. Let $T \propto P^a d^b E^c$

Writing dimensions on both sides.

$[M^0L^0T] = [ML^{-1}T^{-2}]^a[ML^{-3}]^b[ML^2T^{-2}]^c$

$[M^0L^0T] = M^{a+b+c}\ L^{-a-3b+2c}T^{-2a-2c}$

Thus,

a + b + c = 0, –a – 3b + 2c = 0, –2a – 2c = 1

On solving these equation, we get

$a = \frac{-5}{6}$, $b = \frac{1}{2}$ and $c = \frac{1}{3}$

36. because electric field applies the force on electron in the direction opposite to its motion.

37. 38.7
If the digit to be rounded off is more than 5, then the preceding digit is increased by one. e.g. 6.87≈ 6.9.
If the digit to be rounded off is less than 5, then the preceding digit is left unchanged. e.g. 3.94 ≈ 3.9

38. Total enclosed charge q = 100 Q coulomb

$\phi_E = \frac{q}{\varepsilon_0} = \frac{100Q}{\varepsilon_0}$

39. The electric field at a point x is

$E(x) = -\frac{dV(x)}{dx} = -\frac{d}{dx}[4(1+x^2)] = -8x$

The electric field and hence force on a positive charge of 1C, is in negative x-axis direction.
($\because$ F = qE)

40. $\vec{A}\times\vec{B}$ is $\perp$ to plane of $\vec{A}$ and $\vec{B}$

41. Metal plate acts as an equipotential surface, therefore the field lines should enter normal to the surface of the metal plate.

42. $g = \frac{4\pi^2 l}{T^2}$

$\frac{\Delta g}{g}\times100 = \frac{\Delta l}{l}\times100 + 2\frac{\Delta T}{T}\times100$

Δl and ΔT are minimum for option (4) and also maximum number of observations are taken in option (4) only.

43. Distance between A(1, 2, 4) and B(3, 2, 1)

$r = \sqrt{(3-1)^2+(2-2)^2+(1-4)^2} = \sqrt{13}$

$V = \frac{1}{4\pi\epsilon_0}\frac{Q}{r} = \frac{9\times10^9\times2\times10^{-8}}{\sqrt{13}} = 50\,\text{volt}$

$E = \frac{1}{4\pi\epsilon_0}\frac{Q}{r^2} = \frac{9\times10^9\times2\times10^{-8}}{13} = \frac{180}{13}N/C$

Unit vector along AB, $\hat{r} = \frac{2\hat{i}-3\hat{k}}{\sqrt{13}}$

$\vec{E} = E\hat{r} = \frac{180}{13\sqrt{13}}(2\hat{i}-3\hat{k})$

44. At t = 1

$x_A = 4$, $x_B = 7$

$y_A = 3$, $y_B = 7$

distance = $\sqrt{(7-4)^2+(7-3)^2}$ = 5

45. $V = 4 + 5x^2$

(i) x = 1, $V_1 = 9$

x = –2, $V_2 = 24$

$V_2 - V_1 = 15$ V, (i) is O.K.

(ii) $E_x = -\frac{dV}{dx} = -10x$

at x = –1m, E = 10 NC

F = qE = 1 × 10 = 10N, (ii) is O.K.

(iii) $\vec{F} = q\vec{E} = -10x\hat{i} = 10\hat{i}N$, (iii) is O.K.

46. It is a covalent solid in which constituent particles are atoms.

47. $\eta = \dfrac{n \times \frac{4}{3}\pi r^3}{V} = \dfrac{2 \times \frac{4}{3}\pi\left(\frac{\sqrt{3}a}{4}\right)^3}{a^3} = \dfrac{\sqrt{3}\pi}{8}$

48. No. of NaCl molecules in 2g amount is

$= \dfrac{2}{58.5} \times 6.02 \times 10^{23}$

No. of NaCl unit cells in a unit cell = 4

$\therefore$ No. of NaCl unit cells in 2 g

$= \dfrac{2 \times 6.02 \times 10^{23}}{58.5 \times 4}$

$= 5.14 \times 10^{21}$

49. Effective no. of corner atoms (A)

$= 8 \times \dfrac{1}{8} = 1 = X$

Effective no. of face centred atom (B)

$= \dfrac{1}{2} \times 6 = 3 = Y$

Thus composition = AB_3

50. In FCC structure

(a) Tetrahedral voids = 8

(b) Co-ordination no. = 12

(c) Face centres = $6 \times \dfrac{1}{2} = 3$

% contribution = $\dfrac{3}{4} \times 100 = 75\%$

(d) Each THV formed by 1 corner and 3 face centres.

51. Metal excess defect is non-stoichiometric defect.

52. $2r_+ + 2r_- = \sqrt{3}\,a$ (BCC)

$r^+ = \dfrac{\sqrt{3}a}{2} - r_-$

$= \dfrac{1.732 \times 120}{2} - 55 = 48.92$ pm

53. For octahedral void $\dfrac{r_{void}}{r_{anion}} = 0.414$

54. Na^+ and Cl^- both have coordination number 6.

55. .....ABC....ABC.... represents FCC unit cell and in FCC

No. of atom = 4 and no. of THV = 8

57. For simple cubic structure.

$r = \dfrac{a}{2}$

$r = \dfrac{0.236}{2} = 0.118\,\text{nm}$

58. $d = \dfrac{ZM}{a^3 N_A}$

for fcc structure Z = 4

$3.19 = \dfrac{4 \times M}{(0.559 \times 10^{-7})^3 \times 6.02 \times 10^{23}}$

M = 83.9

59. In ZnS crystal S^{-2} ions form crystal lattice and Zn^{+2} occupy 50% tetrahedral voids atternatively.

61. Total positive charge = Total negative charge

Since in cyrstal 180 copper ions are present along with 200 S^{-2} ions.

$\therefore$ 2x + (180 – x) = 200

[Let x is the number of Cu^{+2} ions]

x = 200 – 180 = 20

% of Cu^{+2} ions = $\dfrac{20}{180} \times 100 = 11.11\%$

64. In NaCl crystal -

$2(r_+ + r_-) = a$

$\therefore$ a = 2(95 + 181) = 552 pm

65. Number of P atoms = $8 \times \dfrac{1}{8} = 1$

Number of Q atoms = 1 × 1 = 1

$\therefore$ Formula of compound is PQ and in this bcc type crystal co-ordination number of P and Q both are 8.

66. $d = \dfrac{Z \times M}{N_A \times a^3}$

$\Rightarrow M = \dfrac{6.8 \times 6.02 \times 10^{23} \times (290 \times 10^{-10})^3}{2}$

M = 49.92

Number of atoms in 200g of element

$= \dfrac{200}{49.92} \times 6.02 \times 10^{23} = 24.12 \times 10^{23}$

70. Total energy of electron = $\frac{-12.08}{2} = -6.04eV$

$\therefore$ orbit of electron = 3(Second excited state)

71. $E = \frac{hc}{\lambda}$

$= \frac{6.62\times10^{-34}\times3\times10^{8}}{242\times10^{-9}}$ = 8.207×10^{-19} J

72. ΔE_{max} then v_{max}

$E_4 - E_1 = 12.75$ eV, $E_2 - E_1 = 10.2$ eV

$E_4 - E_2 = 2.55$ eV

73. $r \propto n^2$

$\frac{r_2}{r_3} = \frac{(2)^2}{(3)_3}$

$\frac{R}{r_3} = \frac{4}{9}$

$r_3 = \frac{9R}{4}$

75. Max. no. of orbitals in a shell = $n^2 = (3)^2 = 9$

77. $\because$ PE = –2K.E.

When K.E. = x, P.E. = –2x

and when K.E. = $\frac{x}{4}$, P.E. = $-2\left(\frac{x}{4}\right)$

$= -\frac{x}{2}$

$\therefore$ change in P.E. = $-\frac{x}{2}-(-2x)$

$= \frac{3}{2}x$

78. $\frac{1}{\lambda_{min}} = R(3)^2\left(\frac{1}{9}-\frac{1}{\infty}\right) = R$

or, $\lambda_{min} = \frac{1}{R} = P(\text{given})$

and $\frac{1}{\lambda_{max}} = R(2)^2\left(\frac{1}{4}-\frac{1}{9}\right) = \frac{5R}{9}$

or $\lambda_{max} = \frac{9}{5R} = \frac{9}{5}P$

79. P.E. = –2(K.E.) and K.E. = $-E_T$

and $E_T = -13.6 \times \frac{Z^2}{n^2}eV$

80. $v \propto \frac{Z}{n}$

$\frac{v_H}{v_{Li^{+2}}} = \frac{\frac{1}{3}}{\frac{3}{2}} = \frac{2}{9}$

81. $\lambda = \frac{h}{\sqrt{2mqV}}$

For Be^{+3} ion m = 9 m_p and q = 3e

For proton m = m_p and q = e

$\frac{\lambda_{Be^{+3}}}{\lambda_p} = \frac{\sqrt{m_p\times e}}{\sqrt{9m_p\times3e}} = \frac{1}{3\sqrt{3}}$

84. $\frac{1}{\lambda_{max}} = R(2)^2\left(\frac{1}{1}-\frac{1}{4}\right) = 3R$

$\therefore \lambda_{max} = \frac{1}{3R}$

85. $\lambda = \frac{h}{mv} = \frac{6.63\times10^{-34}}{10^{-6}\times10}$

$= 6.63 \times 10^{-29}$ m

87. PE = $2E_T = 2 \times -13.6 \times \frac{Z^2}{n^2}eV$

$\because$ n = 4 (given)

$\therefore$ P.E. = $-2 \times 13.6 \times \frac{1}{16} = -1.7$ eV

90. $\because$ I.P. = 270 eV

$\therefore E_1 = -270$ eV

and –30 eV = $-270 \times \frac{1}{n^2}$

$\Rightarrow n^2 = 9$ and n = 3

91. NCERT (XII) Pg. # 21
92. NCERT (XII) Pg. # 20,21
93. NCERT (XII) Pg. # 20
94. NCERT (XII) Pg. # 30
95. NCERT (XII) Pg. # 22
96. NCERT (XII) Pg. # 23
97. NCERT (XII) Pg. # 28,29
98. NCERT (XII) Pg. # 21
100. NCERT (XII) Pg. # 21
101. NCERT (XII) Pg. # 24
102. NCERT (XII) Pg. # 25
104. NCERT (XII) Pg. # 27
105. NCERT (XII) Pg. # 27
106. NCERT (XII) Pg. # 28
107. NCERT (XII) Pg. # 23
108. NCERT (XII) Pg. # 23
109. NCERT (XII) Pg. # 21
110. NCERT (XII) Pg. # 25,27
115. NCERT (XII) Pg. # 35
117. NCERT (XII) Pg. # 35
118. NCERT (XII) Pg. # 35
120. NCERT (XII) Pg. # 34
122. NCERT (XII) Pg. # 35
126. NCERT (XII) Pg. # 34
127. NCERT (XII) Pg. # 35
129. NCERT (XII) Pg. # 37
131. NCERT (XII) Pg. # 37
132. NCERT (XII) Pg. # 37
133. NCERT (XII) Pg. # 37
134. NCERT (XII) Pg. # 34
136. NCERT (XII) Pg. # 44
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152. NCERT (XII) Pg. # 61
153. NCERT (XII) Pg. # 50
154. NCERT (XII) Pg. # 57
156. NCERT (XII) Pg. # 45
159. NCERT (XII) Pg. # 54
160. NCERT (XII) Pg. # 54
161. NCERT (XII) Pg. # 54
162. NCERT (XII) Pg. # 54
163. NCERT (XII) Pg. # 52
166. NCERT (XII) Pg. # 51
169. NCERT (XII) Pg. # 53
170. NCERT (XII) Pg. # 54
171. NCERT (XII) Pg. # 58,60,61
172. NCERT (XII) Pg. # 60
173. NCERT (XII) Pg. # 60
174. NCERT (XII) Pg. # 62
175. NCERT (XII) Pg. # 61
176. NCERT (XII) Pg. # 64
177. NCERT (XII) Pg. # 60
178. NCERT (XII) Pg. # 60
179. NCERT (XII) Pg. # 60
180. NCERT (XII) Pg. # 64