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DIVISION: PRE-MEDICAL

ACADEMIC SESSION: 2023-24

PERIODIC ASSESSMENT TEST (PAT)

STUDENT SUPPORT BOOKLET (SSB)

Answer Key (AK) | Standard Hints (SH) | Text Solutions (TS) | Weightage Sheet (WS)

CLASS	XII	COURSE NAME	SANKALP	COURSE CODE	MP
PHASE CODE(S)	01 MP & 02 MP	TOTAL PAGES	12	BATCH CODE(S)	01 MP & 02 MP

Target Examination & Year:

NEET 2024

TEST PATTERN	TEST TYPE	TEST CODE & SEQUENCE
NEET	PART TEST (PT)	PT-4

DATE & DAY:
26TH November 2023 | Sunday

Duration & Time:
200 Minutes | 11:30 AM to 02:50 PM

Contents:

- Weightage Sheet (WS) ✓
- Answer Key (AK) ☐
- Standard Hints (SH) ✓
- Text Solutions (TS) ☐
- Resonance Student's Critical Analysis of Learning for Excellence (ResoSCALE) ☐
- Student Self Assessment Sheet (SAS) ✓
- Video Solutions (VS) ☐

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Kota Study Centre & Registered Corporate Office:
CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005
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APPLY ONLINE

ANSWER KEY (AK)

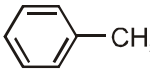
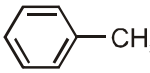
PAPER											
PART-A : CHEMISTRY	Q.No.	1	2	3	4	5	6	7	8	9	10
	Ans.	1	3	4	3	1	4	4	1	2	4
	Q.No.	11	12	13	14	15	16	17	18	19	20
	Ans.	1	1	3	3	4	3	2	3	2	3
	Q.No.	21	22	23	24	25	26	27	28	29	30
	Ans.	4	1	4	2	2	4	1	1	3	3
	Q.No.	31	32	33	34	35	36	37	38	39	40
	Ans.	2	1	4	3	4	3	4	3	3	4
	Q.No.	41	42	43	44	45	46	47	48	49	50
	Ans.	3	2	1	3	4	2	1	1	3	2
PART-B : PHYSICS	Q.No.	51	52	53	54	55	56	57	58	59	60
	Ans.	4	1	3	4	2	1	1	3	3	3
	Q.No.	61	62	63	64	65	66	67	68	69	70
	Ans.	3	4	3	3	4	3	3	1	3	4
	Q.No.	71	72	73	74	75	76	77	78	79	80
	Ans.	3	1	2	2	1	1	3	2	2	1
	Q.No.	81	82	83	84	85	86	87	88	89	90
	Ans.	3	3	3	3	2	1	4	3	2	1
	Q.No.	91	92	93	94	95	96	97	98	99	100
	Ans.	4	3	2/3	3	4	2	3	1	2	3
PART-C : BIOLOGY	Q.No.	101	102	103	104	105	106	107	108	109	110
	Ans.	3	3	2	3	1	2	1	4	3	1
	Q.No.	111	112	113	114	115	116	117	118	119	120
	Ans.	4	2	2	2	2	2	4	3	1	4
	Q.No.	121	122	123	124	125	126	127	128	129	130
	Ans.	4	3	4	3	3	3	2	3	3	2
	Q.No.	131	132	133	134	135	136	137	138	139	140
	Ans.	2	4	3	2	2	2	4	1	4	2
	Q.No.	141	142	143	144	145	146	147	148	149	150
	Ans.	4	4	3	1	4	2	1	4	1	4
	Q.No.	151	152	153	154	155	156	157	158	159	160
	Ans.	2	4	1	1	1	1	3	1	4	2
	Q.No.	161	162	163	164	165	166	167	168	169	170
	Ans.	3	1	3	3	1	2	1	3	1	4
	Q.No.	171	172	173	174	175	176	177	178	179	180
	Ans.	2	3	1	4	1	1	4	3	2	3
	Q.No.	181	182	183	184	185	186	187	188	189	190
	Ans.	4	1	4	4	2	3	2	3	4	4
	Q.No.	191	192	193	194	195	196	197	198	199	200
	Ans.	2	1	2	3	2	3	1	2	3	4

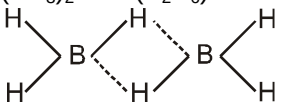
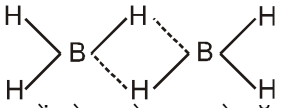
STUDENT'S SPACE

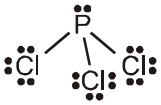
PAPER

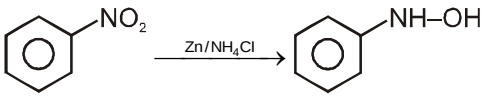
PART-A: CHEMISTRY

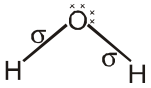
23. BF_4^- hybridisation sp^3, tetrahedral structure.
NH_4^+ hybridisation sp^3, tetrahedral structure.
BF_4^- संकरण sp^3, चतुष्फलकीय संरचना
NH_4^+ संकरण sp^3, चतुष्फलकीय संरचना

24.  compound is most basic due to localized lone pair of electron on nitorgen atom while other compounds have delocalized lone pair of electron.
 यौगिक में नाइट्रोजन परमाणु पर स्थानीकृत एकांकी इलेक्ट्रॉन युग्म उपस्थित होने के कारण अधिक क्षारीय है। जबकि अन्य यौगिकों में विस्थानीकृत एकांकी इलेक्ट्रॉन युग्म है।

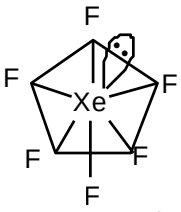
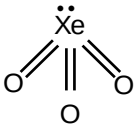
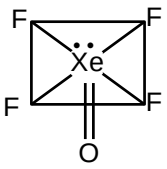
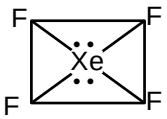
25. $(BH_3)_2$ or (B_2H_6)

It contains two 3 centre-2 electron bonds.
$(BH_3)_2$ या (B_2H_6)

इसमें दो 3 केन्द्र-2 इलेक्ट्रॉन बंध होते है।

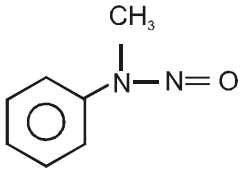
26. PCl_3 

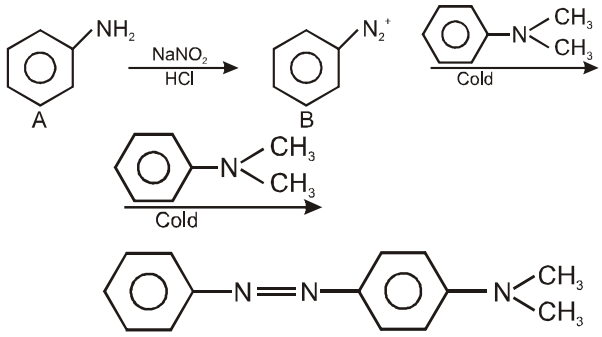
27. 

28. 

29. Electrophiles are electron deficient species. Among the given, $H_3O^{\oplus}$ has lone pair of electrons for donation, thus it is not electron deficient and hence, does not behave like an electrophile.
इलेक्ट्रॉनस्नेही सामान्यतः इलेक्ट्रॉन न्यून स्पीशीज होती है। इनमें से, $H_3O^{\oplus}$ के पास दान करने के लिए एकाकी इलेक्ट्रॉन युग्म उपस्थित है। इसलिए यह एक इलेक्ट्रॉन न्यून स्पीशीज नहीं है तथा यह एक इलेक्ट्रॉनस्नेही की तरह व्यवहार नहीं करेगी।

31. $XeF_6 \longrightarrow sp^3d^3 \longrightarrow$ distorted octahedral विकृत अष्टफलकीय

$XeO_3 \longrightarrow sp^3 \longrightarrow$ pyramidal पिरामिडीय

$XeF_4 \longrightarrow sp^3d^2 \longrightarrow$ square pyramidal वर्ग पिरामिडीय

$XeF_4 \longrightarrow sp^3d^2 \longrightarrow$ square planar वर्ग समतलीय


32. 

35. 

46. Incorrect statement.
(i) $H_2^{\oplus}$ ion have 1 electron
(ii) $O_2^{\oplus}$ ion is paramagnetic
(iii) species $O_2^{\oplus}$ O_2 O_2^- O_2^{2-}

2.5 2 1.5 1

(iv) EC of C_2 is

$(\sigma 1s)^2 (\sigma^* 1s)^2 (\sigma 2s)^2 (\pi^* 2s)^2 (\pi 2p_x^2 = 2py^2)$

47. If both assertion and reason are true and reason is the correct explanation of assertion.

यदि कथन तथा कारण दोनो सही हैं तथा कारण कथन की सही व्याख्या करता है।

48. $\underbrace{\sigma 1s^2\ \sigma^* 1s^2\ \sigma 2s^2\ \sigma^* 2s^2\ \sigma 2p_z^2\ \begin{matrix}\pi 2p_x^2 \\ \pi 2p_y^2\end{matrix}\ \begin{matrix}\pi^* 2p_x^2 \\ \pi^* 2p_y^1\end{matrix}\ \sigma 2p_z^0}_{\text{For } O_2^-}$

50. p-Hydroxybenzene sulphonic acid is more stable than the ortho isomer, but the energy of activation for its formation is higher. So when temperature is increased , o-hydroxybenzene sulphonic acid is converted to the more stable p-isomer.

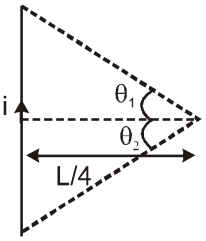
In the sulphonation of phenol, o-hydroxy benzene sulphonic acid is the kinetically controlled product and p-hydroxybenzene sulphonic acid is the thermodynamically controlled product.

p-हाइड्रोक्सीबेन्जीन सल्फोनिक अम्ल ऑर्थो समावयवी से अधिक स्थायी है किन्तु इसकी निर्माण की सक्रियण ऊर्जा उच्च है। इसलिए जब ताप बढ़ाते है, तो o-हाइड्रोक्सीबेन्जीन सल्फोनिक अम्ल अधिक स्थायी p-समावयवी में बदल जाता है

फिनॉल के सल्फोनिकरण में o-हाइड्रोक्सीबेन्जीन सल्फोनिक अम्ल गतिक्रिय नियंत्रित उत्पाद तथा p-हाइड्रोक्सीबेन्जीन उष्मागतिकीय नियंत्रित उत्पाद है।

PART-B: PHYSICS

52. $B = \frac{\mu_0 i}{4\pi R}(\sin\theta_1 + \sin\theta_2)$



$\sin\theta_2$

$=$

$$\frac{L/2}{\sqrt{(L/2)^2+(L/4)^2}} = \frac{1}{2(\sqrt{1/4+1/16})} = \frac{4}{2\sqrt{5}}$$

$$\Rightarrow B = \frac{\mu_0 i}{4\pi R}\left(\frac{2\times 4}{2\sqrt{5}}\right)\ B = \frac{4\mu_0 i}{\sqrt{5}\pi L}$$

53. $P = \frac{h}{\lambda}, E = \frac{hc}{\lambda} \Rightarrow E = Pc.$

57. $W = MB(\cos\theta_1 - \cos\theta_2) = MB(\cos 0^o - \cos 60^o)$

$$= MB\left(1-\frac{1}{2}\right) = \frac{MB}{2}$$

and एवं $\tau = MB\sin\theta = MB\sin 60^o = MB\frac{\sqrt{3}}{2}$

$$\therefore \tau = \left(\frac{MB}{2}\right)\sqrt{3} \Rightarrow \tau = \sqrt{3}\,W$$

58. Work function कार्य फलन

$W_0 = h\nu_0 = 6.6\times 10^{-34}\times 1.6\times 10^{15}$

$= 1.056\times 10^{-18} J = 6.6 eV$

From

$E = W_0 + K_{max} \Rightarrow K_{max} = E - W_0 = 1.4 eV$

60. Given $\Rightarrow$ $V = 200 volt,\ Q = 0.1C$

As energy $U = \frac{QV}{2}, U = \frac{0.1\times 200}{2} = 10 Joule$

दिया है $\Rightarrow$ $V = 200 volt,\ Q = 0.1C$

क्योंकि ऊर्जा $U = \frac{QV}{2}, U = \frac{0.1\times 200}{2} = 10 J$

62. $B_1 = \frac{2M}{x^3}$ and $B_2 = \frac{M}{y^3}$

As $B_1 = B_2$

Hence अतः $\frac{2M}{x^3} = \frac{M}{y^3}$ or $\frac{x^3}{y^3} = 2$ or $\frac{x}{y} = 2^{1/3}$

63. $V_0 = V_{rms} \times \sqrt{2} = 220 \times \sqrt{2} = 310$

64. $\lambda = \frac{h}{\sqrt{2mQV}} = \frac{6.6 \times 10^{-34}}{\sqrt{2 \times 9.1 \times 10^{-31} \times 1.6 \times 10^{-19} \times 100}}$

$= 1.23\,\text{Å}$

65. Provided length of magnet is <<the distance.

यदि चुम्बक की लम्बाई << प्रेक्षण बिन्दु की दूरी तब

$B \propto \frac{1}{R^3}$

66. Light wavesप्रकाश तरंगें

68. Here $E_0 = 100\,\text{V/m}, B_0 = 0.265\,\text{A/m}.$

$\therefore$ Maximum rate of energy flow

$S = E_0 \times B_0$

$= 100 \times .265 = 26.5 \frac{W}{m^2}$

यहाँ $E_0 = 100\,\text{V/m}, B_0 = 0.265\,\text{A/m}$

$\therefore$ ऊर्जा प्रवाह की अधिकतम दर $S = E_0 \times B_0$

$= 100 \times .265 = 26.5 \frac{W}{m^2}$

69. For the ionization of second He electron. He^+ will act as hydrogen like atom.

Hence ionization potential

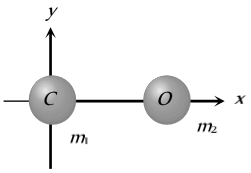
$= Z^2 \times 13.6\,\text{volt} = (2)^2 \times 13.6 = 54.4\,\text{V}$

दूसरे He इलेक्ट्रॉन को बाहर निकालने की स्थिति में He^+ आयन हाइड्रोजन तुल्य परमाणु की तरह व्यवहार करेगा। अतः आयनन विभव

$= Z^2 \times 13.6\,\text{volt} = (2)^2 \times 13.6 = 54.4\,\text{V}$

70. $\because P = Vi\cos\phi, \therefore P \propto \cos\phi$

71.



$m_1 = 12,\ m_2 = 16$

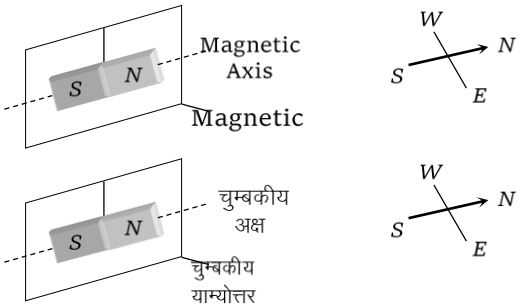
$\vec{r}_1 = 0\hat{i} + 0\hat{j}, r_2 = 1.1\hat{i} + 0\hat{j}$

$\vec{r} = \frac{m_1 \vec{r}_1 + m_2 \vec{r}_2}{m_1 + m_2}$

$\vec{r} = \frac{16 \times 1.1}{28}\hat{i} = 0.63\hat{i}$ अर्थात् कार्बन परमाणु से

i.e. 0.63Å

72.



74. The applied voltage is given by

$V = \sqrt{V_R^2 + V_L^2}$

$V = \sqrt{(200)^2 + (150)^2} = 250\,\text{volt}$

आरोपित वोल्टेज $V = \sqrt{V_R^2 + V_L^2}$

$V = \sqrt{(200)^2 + (150)^2} = 250\,\text{volt}$

76. $\nu_{\gamma-\text{rays}} > \nu_{\text{UV-rays}} > \nu_{\text{Blue light}} > \nu_{\text{Infrared rays}}$

$\nu_{\gamma-\text{किरणे}} > \nu_{\text{न्ट.किरणें}} > \nu_{\text{नीला प्रकाश}} > \nu_{\text{अवरक्त किरणें}}$

77. At the time t = 0, e is max and is equal to E, but current i is zero.

As the time passes, current through the circuit increases but induced emf decreases.

t = 0 पर e अधिकतम है एवं यह E के बराबर है परन्तु धारा शून्य है

जैसे-जैसे समय गुजरता है, परिपथ से प्रवाहित धारा बढ़ती है परन्तु प्रेरित वि. वा. बल घटता है।

79. By inserting the dielectric slab. Capacitance (i.e. ability to hold the charge) increases. In the presence of battery more charge is supplied from battery.

परावैद्युत पट्टी रखने पर धारिता (अर्थात आवेश ग्रहण करने की क्षमता) बढ़ जाती है, बैटरी की उपस्थिति में बैटरी से अतिरिक्त आवेश प्रदान किया जायेगा।

80. $e = -\frac{d\phi}{dt} = \frac{-3B_0A_0}{t}$

85. $e = -\frac{N(B_2 - B_1)A\cos\theta}{\Delta t}$

$= -\frac{50(0.35 - 0.10) \times \pi(3 \times 10^{-2})^2 \times \cos 0^o}{2 \times 10^{-3}}$

$= 17.7\ V$.

87. Induced charge doesn't depend upon the speed of magnet.

प्रेरित आवेश का मान चुम्बक की चाल पर निर्भर नहीं करता है।

88. Rate of decay of current between t = 5 ms to 6 ms $= \frac{di}{dt} = -(\text{Slope of the line BC})$

$= -\left(\frac{5}{1 \times 10^{-3}}\right) = -5 \times 10^3\ A/s.$ Hence induced emf $e = -L\frac{di}{dt} = -4.6 \times (-5 \times 10^3) = 23 \times 10^3\ V.$

समयान्तराल t = 5 ms से 6 ms में धारा घटने की दर $= \frac{di}{dt}$ = – (सरल रेखा BC की ढाल)

$= -\left(\frac{5}{1 \times 10^{-3}}\right) = -5 \times 10^3\ A/s$ इसलिए प्रेरित वि. वा. बल $e = -L\frac{di}{dt} = -4.6 \times (-5 \times 10^3) = 23 \times 10^3\ V$

90. Impedance of LCR circuit will be minimum at resonant frequency so $\nu_0 = \frac{1}{2\pi\sqrt{LC}}$

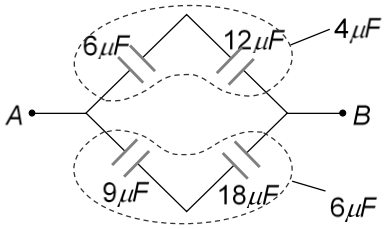
$= \frac{1}{2\pi\sqrt{1 \times 10^{-3} \times 0.1 \times 10^{-6}}} = \frac{10^5}{2\pi}\ Hz$

अनुनाद आवृत्ति पर परिपथ की प्रतिबाधा न्यूनतम होगी इसलिए $\nu_0 = \frac{1}{2\pi\sqrt{LC}}$

$= \frac{1}{2\pi\sqrt{1 \times 10^{-3} \times 0.1 \times 10^{-6}}} = \frac{10^5}{2\pi}\ Hz$

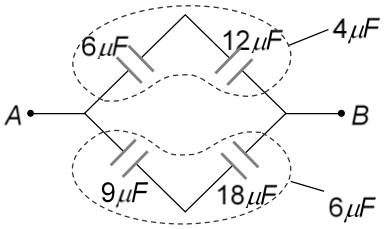
92. α-rays α-किरणें

95. Given circuit can be drawn as follows. It is a balance whetstone bridge type network, hence 24 μF capacitor can be neglected



Equivalent capacitance between A and B = 4 + 6 = 10μF.

दिये गये परिपथ को निम्न प्रकार पुनः बनाया जा सकता है यह एक संतुलित व्हीटस्टोन सेतु है, अतः 24 μF धारिता वाले संधारित्र को हटाया जा सकता है



A और B के मध्य तुल्य धारिता = 4 + 6 = 10μF

97. $\nu_0 = \frac{1}{2\pi\sqrt{LC}} = \frac{1}{2 \times 3.14\sqrt{5 \times 10^{-4} \times 20 \times 10^{-6}}}$

$\nu_0 = \frac{10^4}{6.28} = 1592\ Hz$

98. $\lambda = \frac{c}{\nu} = \frac{3 \times 10^8}{8.2 \times 10^6} = 36.5\ m$

100. Charges developed are same so

$C_1V_1 = C_2V_2 \Rightarrow \frac{V_1}{V_2} = 2$

$V_1 + V_2 = 120 \Rightarrow V_1 = 80\ volts$

उत्पन्न आवेश समान होगा

अतः $C_1V_1 = C_2V_2 \Rightarrow \frac{V_1}{V_2} = 2$

$V_1 + V_2 = 120 \Rightarrow V_1 = 80\ volts$

---- TEXT SOLUTIONS (TS) END ----

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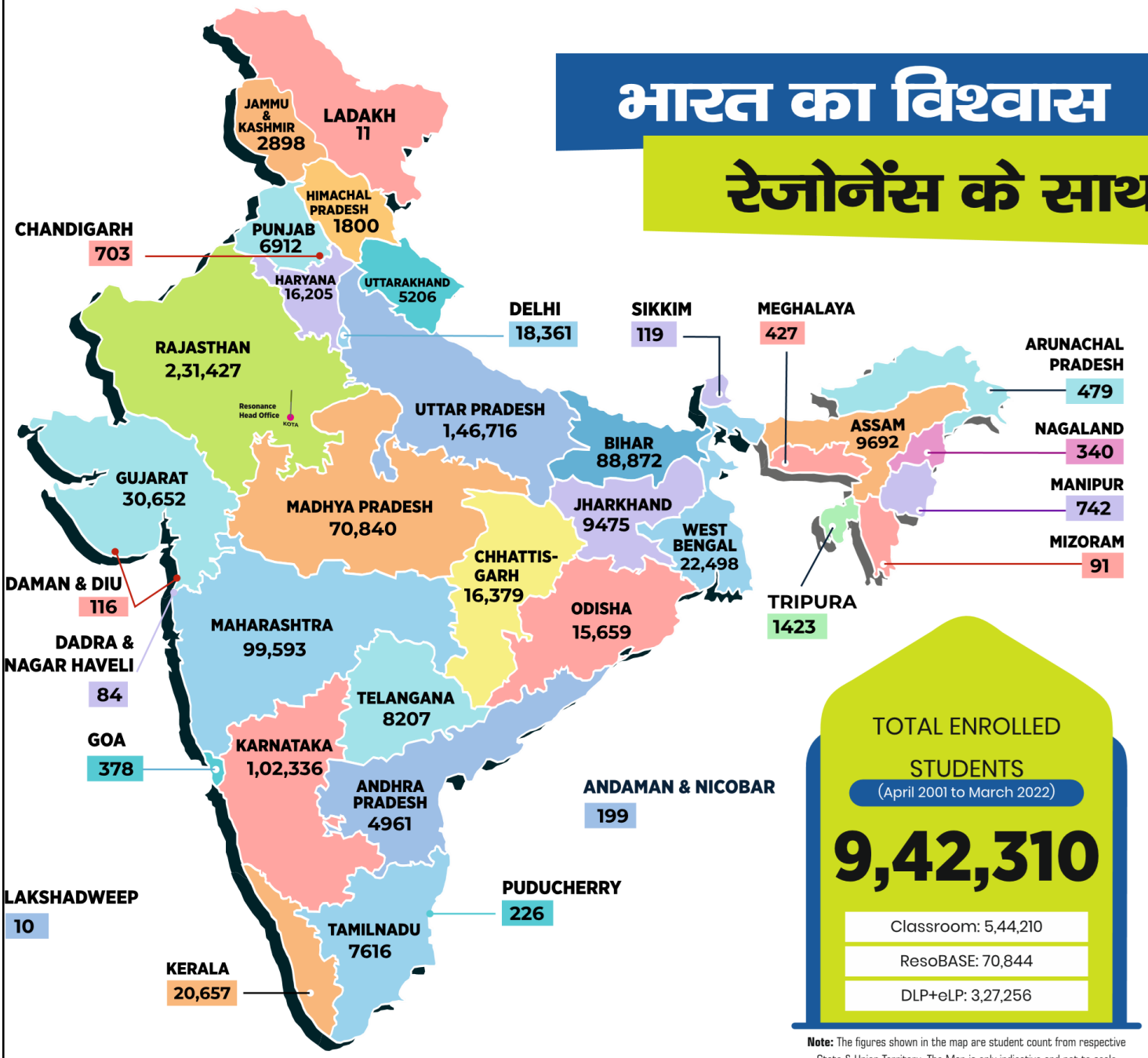

TOTAL ENROLLED STUDENTS
(April 2001 to March 2022)

9,42,310

- Classroom: 5,44,210
- ResoBASE: 70,844
- DLP+eLP: 3,27,256

Note: The figures shown in the map are student count from respective State & Union Territory. The Map is only indicative and not to scale

Resonance : The Legacy of 21 Years (2001-2022) of Academic Excellence

- **JEE (Adv.) / IIT-JEE** ▸ **50 हजार +** SELECTIONS SINCE 2002
  229 AIRs in TOP-100 (Classroom + DLP)
- **JEE (Main) / AIEEE** ▸ **2.40 लाख+** SELECTIONS SINCE 2009
  136 AIRs in TOP-100 (Classroom + DLP)
- **NEET (UG) / AIPMT** ▸ **19 हजार+** SELECTIONS SINCE 2012
  19 AIRs in TOP-100 (Classroom + DLP)

- **NTSE** SINCE 2006 ▸ **2440** Scholars
- **KVPY** SINCE 2006 ▸ **2859** Fellowship Winners
- **OLYMPIADS** SINCE 2006 ▸ **52** Medalists (Gold/Silver/ Bronze) in International Olympiads
- **CA & CS** SINCE 2013 ▸ **4179** Selections — 5 Times AIR-1 in CA & CS Exams
- **CLAT, SET & GPTU** SINCE 2014 ▸ **77** Selections — AIR-1 in GPTU