

**Academic Session: 2023-24**
**Test Target**

Class	<b>IX</b>	Exam	<b>SCHOOL   OLYMPIAD   IJSO   NTSE</b>
Course Name & Code	<b>SHARP/MN</b>	Year	<b>2024</b>


**Duration: 1.30 Hrs.**
**Test Structure**

Total Questions	<b>70</b>	Maximum Marks	<b>210</b>
No. of Booklet (Test Paper)	<b>01</b>	No. of Pages (in Booklet)	<b>00</b>

**Subject-wise Breakup**

S.No.	Part	Subject	Type of Question	No. of Ques.	Marking Scheme		
					Full Marks per Qs.	Negative Marking	Total
1 to 25	I	Maths	Single Choice Questions (Only One Correct Option) (MCQ)	25	3	0	75
26 to 35	II	Physics	Single Choice Questions (Only One Correct Option) (MCQ)	10	3	0	30
36 to 45	III	Chemistry	Single Choice Questions (Only One Correct Option) (MCQ)	10	3	0	30
46 to 55	IV	Biology	Single Choice Questions (Only One Correct Option) (MCQ)	10	3	0	30
56 to 70	IV	Mental Ability	Single Choice Questions (Only One Correct Option) (MCQ)	15	3	0	45
<b>Total</b>				<b>70</b>			<b>210</b>

**Important Instructions**

- This booklet is your Question Paper. (यह पुस्तिका आपका प्रश्न-पत्र है)
- Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets in any form are not allowed to be used. (खाली कागज, क्लिप बोर्ड, लघुगणक सारणी, स्लाइड रूल, कैल्कुलेटर, मोबाइल या अन्य किसी इलैक्ट्रॉनिक उपकरण के किसी भी रूप में उपयोग की अनुमति नहीं है)
- Write your **Name & Application Form / Roll Number** in the space provided in the first page of this booklet. (प्रथम पृष्ठ के नीचे दिये गये रिक्त स्थान में अपना **नाम व आवेदन फॉर्म संख्या / अनुक्रमांक** अवश्य भरें)
- Before answering the paper, fill up the required details in the blank space provided in the Objective Response Sheet (ORS). (प्रश्न-पत्र हल करने से पहले, ORS-शीट में दिये गये रिक्त स्थानों में पूछे गये विवरणों को भरें)
- Do not forget to mention your paper code and **Application Form / Roll Number** neatly and clearly in the blank space provided in the Objective Response Sheet (ORS) / Answer Sheet. (ORS-शीट/उत्तर-पुस्तिका में दिये गये रिक्त स्थान में अपने प्रश्न-पत्र का कोड व अपना **आवेदन फॉर्म संख्या / अनुक्रमांक** स्पष्ट रूप से भरना ना भूलें)
- No rough sheets will be provided by the invigilators. All the rough work is to be done in the blank space provided in the question paper. (निरीक्षक के द्वारा कोई रफ शीट नहीं दी जायेगी। रफ कार्य प्रश्न-पत्र में दिये गये खाली स्थान में ही करना है)
- No query related to question paper of any type is to be put to the invigilator. (निरीक्षक से प्रश्न-पत्र से सम्बन्धित किसी प्रकार का कोई प्रश्न ना करें)
- Marks distribution of questions is as follows. (प्रश्नों के अंकों का विवरण निम्न प्रकार से है।)

**Student's Information**
**Name:** \_\_\_\_\_ **Application / Roll No.:** \_\_\_\_\_

**Mobile No.:** \_\_\_\_\_ **Signature:** \_\_\_\_\_



## VISION

Excellence in Career Education

## MISSION

Practice, Persistence and Performance

## VALUES

- Leadership with humane touch at various levels
- Integrity, transparency and openness in all our actions
- Innovation and pursuit of excellence in career education
- Address the needs of students through career oriented initiatives
- Strive to continuously improve our processes and quality of deliverables

## About Resonance

**Established on 11<sup>th</sup> April 2001  
at Kota, Rajasthan**

**Founder: Mr. R. K. Verma (RKV Sir)**  
B.Tech. (IIT-Madras, 1994)  
Managing Director, Head (Academics) & Senior Faculty (Physics)



Division	Classes	Target Examinations
Pre-Engineering Division	IX, X, XI, XII & XII+	JEE (Advanced)   JEE (Main)   Olympiads
Pre-Medical Division	IX, X, XI, XII & XII+	NEET (UG)   Olympiads
Pre-foundation Career Care Programme Division (PCCP)	V, VI, VII, VIII, IX & X	NTSE   Olympiads   STSE   School & Board Examinations
Commerce & Law Programme Division (CLPD)	XI, XII & XII+	CA   CS   CLAT   B.Com   Board   CUET-UG
Resonance Multiple Examination Division (ResoMEX)	XII+	SSC   BANK   RAILWAYS   NDA   Other Govt. & Private Recruitment Exams
Para-Schooling Programme Division (PSPD)	XI, XII & XII+	Board Exams   CUET-UG   IPMAT   JIPMAT   BITSAT   STSE   UCEED   College Entrance Exam UG & Scholarship Exams
Distance Learning Programme Division (DLPD)	V to XII & XII+	JEE (Main & Advanced)   NEET (UG)   OLYMPIADS   NTSE   BITSAT
e-Learning Programme Division (e-LPD)	V to XII & XII+	JEE (Main & Advanced)   NEET (UG)   OLYMPIADS   NTSE   BITSAT
Reso - International Studies Division	VI to XII & XII+	JEE (Main & Advanced)   NEET (UG)   OLYMPIADS   NTSE   BITSAT Upcoming - SAT   IELTS   GRE   PTE



# Syllabus of Class-VIII\_ Reso NET

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## Mathematics :

- |                                   |                         |
|-----------------------------------|-------------------------|
| ❖ Squares & Square roots          | ❖ Cubes & Cube roots    |
| ❖ Linear equation in one variable | ❖ Quadrilaterals        |
| ❖ Rational numbers                | ❖ Algebraic expressions |
| ❖ Algebraic identities            |                         |

## Physics :

- |            |              |
|------------|--------------|
| ❖ Force    | ❖ Pressure   |
| ❖ Friction | ❖ Sound wave |

## Chemistry :

- |                                 |                         |
|---------------------------------|-------------------------|
| ❖ Synthetic fibres and plastics | ❖ Metals and non-metals |
|---------------------------------|-------------------------|

## Biology :

- |                                    |                                  |
|------------------------------------|----------------------------------|
| ❖ Crop production & management     | ❖ Micro-Organism friend & foe    |
| ❖ Conservation of plants & animals | ❖ Cellular level of organization |

## Mental Ability :

- |                           |                           |
|---------------------------|---------------------------|
| ❖ Number series           | ❖ Alphabet series         |
| ❖ Letter repeating series | ❖ Missing term in figures |
| ❖ Mathematical operations | ❖ Alphabet test           |
| ❖ Coding-decoding         | ❖ Direction sense test    |
| ❖ Seating arrangement     | ❖ Blood relations         |
| ❖ Puzzle test             | ❖ Venn diagram            |

1. Factorise  $x^2 - \frac{13}{24}x - \frac{1}{12}$   
 (A)  $\frac{1}{24}(3x-2)(8x+1)$   
 (B)  $\frac{1}{8}(3x-2)(8x+1)$   
 (C)  $\frac{1}{24}(3x+2)(8x+1)$   
 (D)  $\frac{1}{24}(3x-2)(8x-1)$
2. What is the remainder when  $(x^4 + 1)$  is divided by  $(x - 2)$  ?  
 (A) 17 (B) 15  
 (C) 7 (D) 1
3. If  $\frac{(a^2b^3c)^4 \cdot (abc)^3}{(a^3bc^{-1})^2} = \sqrt{a^m b^n c^p}$  then  $m + n + p$  has the value equal to  
 (A) 24 (B) 54  
 (C) 27 (D) 34
4. The value of  $\sqrt{27} - \frac{9}{\sqrt{3}} - 4\sqrt{\frac{1}{9}} + 4\sqrt[3]{\frac{1}{27}}$  will be –  
 (A)  $\sqrt{3}$  (B)  $2\sqrt{3}$   
 (C) 0 (D)  $3\sqrt{3}$
5. Find three consecutive integers such that four times the first plus one-half the second minus twice the third is equal to 24-  
 (A) 11, 12 and 13 (B) 12, 13 and 14  
 (C) 13, 14 and 15 (D) 10, 11 and 12
6. What is the difference between the biggest and the smallest fraction among  $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}$  and  $\frac{5}{6}$  ?  
 (A)  $\frac{1}{6}$  (B)  $\frac{1}{12}$   
 (C)  $\frac{1}{20}$  (D)  $\frac{1}{30}$
7. What number should be subtracted from  $-5$  to get  $\frac{8}{9}$  .  
 (A)  $\frac{-53}{9}$  (B)  $\frac{37}{9}$   
 (C)  $\frac{9}{37}$  (D)  $\frac{-9}{37}$
8. Let  $n$  be a 3 digit number such that  $n =$  sum of the squares of the digits of  $n$ . The number of such  $n$  is  
 (A) 0 (B) 1  
 (C) 2 (D) More than 2
9. The ratio of a two digit number and the sum of its digits is  $4 : 1$ . If the digit in the units place is 3 more than the digit in the tens place, then the number is.  
 (A) 24 (B) 36  
 (C) 27 (D) 34
10. If  $\frac{p}{q} = 1 + \frac{5}{1 + \frac{4}{1 + \frac{3}{1 + \frac{1}{1 + \frac{1}{2}}}}}$  where  $p, q$  have no common factors, then  $p + q$   
 (A) 29 (B) 36  
 (C) 27 (D) 34

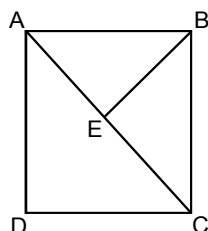
Space For Rough Work

11.  $x$  is  $1\frac{1}{6}$  of  $3\frac{3}{4}$  and  $y$  is  $2\frac{1}{3}$  of  $2\frac{1}{6}$ .

Then

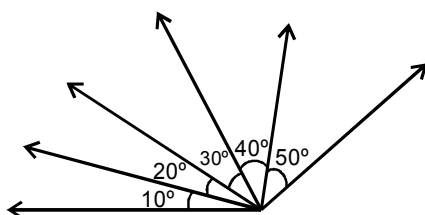
- (A)  $2x = y$  (B)  $y < x$   
(C)  $x < y$  (D)  $x = y$

12. ABCD is a square  $\angle ABE = 2 \angle DAE = 30^\circ$ .  
The sides of the square are 10 cm each.  
Then the length EC is



- (A) greater than 10 cm.  
(B) equal to 10 cm  
(C) Less than 10 cm  
(D) NOT possible to calculate with the given information

13. The number of acute angles formed by the rays at the vertex P is \_\_\_\_\_

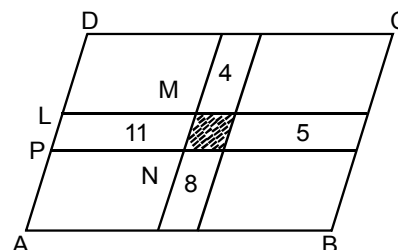


- (A) 9 (B) 10  
(C) 7 (D) 5

14. Find fraction form of rational number 0.37

- (A)  $\frac{37}{100}$  (B)  $\frac{400}{95}$   
(C)  $\frac{433}{99}$  (D)  $\frac{100}{33}$

15. In the adjoining figure ABCD is a parallelogram of perimeter 21. It is subdivided into smaller parallelograms by drawing lines parallel to the sides. The numbers shown are the respective perimeters of the parallelograms in which they are marked. (For example the perimeter of the parallelogram LMNP is 11). Find the perimeter of the shaded parallelogram.



- (A) 4 (B) 15  
(C) 7 (D) 12

16. If  $\frac{p}{a} + \frac{q}{b} + \frac{r}{c} = 1$  and  $\frac{a}{p} + \frac{b}{q} + \frac{c}{r} = 0$  then the

value of  $\frac{p^2}{a^2} + \frac{q^2}{b^2} + \frac{r^2}{c^2}$  is :

- (A) 0 (B) -11  
(C) 9 (D) 1

17. If  $a = 2012$ ,  $b = 2011$ ,  $c = 2010$  then the value of  $a^2 + b^2 + c^2 - ab - bc - ca$  is :

- (A) 0 (B) 2012  
(C) 3 (D) 4024

18. Three teams of wood-cutters take part in a competition. The first and the third teams put together produced twice the amount cut by the second team. The second and the third team put together yielded a three-fold output as compared with the first team. Which of the teams won the competition?

- (A) first team (B) second team  
(C) third team (D) there is a tie

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19. In following couples which rational numbers are equal :
- (A)  $-\frac{9}{13}$  and  $\frac{8}{-12}$  (B)  $-\frac{32}{-40}$  and  $\frac{40}{50}$
- (C)  $-\frac{7}{21}$  and  $\frac{3}{9}$  (D)  $-\frac{8}{-14}$  and  $\frac{13}{21}$
20.  $1.7 \times 1.7 + 0.7 \times 0.7 - 2 \times 1.7 \times 0.7 =$
- (A) 1 (B) 2  
(C) 0 (D) -1
21. If  $\frac{\sqrt{1296}}{x} = \frac{x}{2.25}$  then value of x is
- (A) 0.9 (B) 0.09  
(C) 9 (D) 1.9
22. Three angles of quadrilateral are in the ratio 3 : 4 : 5. The difference of the least and the greatest of these angles is  $45^\circ$ . All the four angles of the quadrilateral are \_\_\_\_.
- (A)  $63^\circ, 84^\circ, 105^\circ, 108^\circ$   
(B)  $60^\circ, 75^\circ, 120^\circ, 105^\circ$   
(C)  $65^\circ, 80^\circ, 100^\circ, 110^\circ$   
(D)  $85^\circ, 95^\circ, 100^\circ, 130^\circ$
23. The diagonals of a parallelogram ABCD intersect at O. If  $\angle BOC = 90^\circ$  and  $\angle BDC = 50^\circ$ , then  $\angle ACD$  is \_\_\_\_
- (A)  $10^\circ$  (B)  $40^\circ$   
(C)  $50^\circ$  (D)  $90^\circ$
24. Multiplicative inverse of  $\frac{3}{5}$  is :
- (A) 1 (B) 0  
(C)  $-\frac{3}{5}$  (D)  $\frac{5}{3}$
25. The diagonals of a quadrilateral are equal and bisect each other. The quadrilateral has to be:
- (A) any parallelogram (B) any rectangle  
(C) any trapezium (D) any rhombus
26. Force is a :
- (A) Vector quantity (B) Scalar quantity  
(C) Both (A) & (B) (D) None of these
27. On drawing water from a well, a force of \_\_\_\_\_ is applied on the rope.
- (A) pull (B) push  
(C) push or pull (D) none of these
28. A camel can walk/run in deserts very easily as compared to horse, donkey etc, because its :
- (A) feet are smaller (B) weight is lesser  
(C) feet are broader (D) body is heavier
29. The atmosphere exerts a pressure P on the surface of earth. Here P is equal to
- (A)  $1.01 \times 10^5 \text{ Nm}^{-2}$   
(B)  $1.01 \times 10^{-5} \text{ Nm}^{-2}$   
(C)  $1.01 \times 10^7 \text{ Nm}^{-2}$   
(D)  $1.01 \times 10^{-7} \text{ Nm}^{-2}$
30. Forces of adhesion are caused due to :
- (A) Magnetic attractions  
(B) Gravitational attractions  
(C) Electrostatic attractions  
(D) Frictional forces
31. A ball is thrown vertically upwards. Force of friction offered by wind to the ball will act :
- (A) downwards  
(B) upwards  
(C) perpendicular to the direction of motion of force  
(D) none of these
32. The frequency of the object making 10 oscillations in 1 second is equal to
- (A) 1 Hz. (B) 5 Hz.  
(C) 8 Hz. (D) 10 Hz.
33. We are unable to hear the sound
- (A) of an electric bell.  
(B) inside an evacuated glass jar.  
(C) having frequency of 100 Hz.  
(D) through water.

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*Space For Rough Work*



34. When we play mridangam, we strike the  
(A) string.  
(B) membrane.  
(C) air-column.  
(D) whole instrument.
35. Sound is produced by vibrations in a medium which are carried in  
(A) downward direction only.  
(B) opposite direction only.  
(C) upward direction only.  
(D) all directions.
36. Rayon was obtained by the chemical treatment of  
(A) paper. (B) wood pulp.  
(C) fruit pulp. (D) cloth.
37. Parachutes and ropes used for climbing a mountain are made of  
(A) rayon. (B) polyester.  
(C) acrylic. (D) nylon.
38. Metals found in free state are known to be in  
(A) solid state. (B) liquid state.  
(C) gaseous state. (D) native state.
39. The thin wire seen inside the bulb is made of  
(A) tungsten. (B) nickel.  
(C) tin. (D) silver.
40. One of the best solution to get rid of non - biodegradable wastes is \_\_\_\_\_  
(A) burning (B) dumping  
(C) burying (D) recycling
41. Which of the following is / are non biodegradable waste :  
(A) Metal (B) Diamond  
(C) Plastic toys (D) All
42. The reaction of acids with a base to form salt and water is termed as  
(A) oxidation. (B) reduction.  
(C) neutralization. (D) crystallisation.
43. An example of physical change is  
(A) rusting of iron.  
(B) dissolution of sugar in water.  
(C) cooking of food.  
(D) burning of magnesium ribbon.
44. Gold is mixed with copper to :  
(A) make gold soft  
(B) make gold hard  
(C) make gold more yellowish  
(D) give gold lustre
45. The process of giving a coating of \_\_\_\_\_ to copper or brass is called tinning.  
(A) zinc (B) copper  
(C) tin (D) iron
46. Fertilisers are used to improve crop yields, as they  
(A) are rich in inorganic nutrients.  
(B) are rich in organic nutrients.  
(C) are rich in humus.  
(D) are rich in chemicals that kill weeds.
47. The micro-organism used in the preparation of idli, dosa, bread, etc., is  
(A) bacteria. (B) virus.  
(C) algae (D) yeast.
48. Separation of chaff from grains occur through  
(A) Winnowing (B) Ploughing  
(C) Broadcasting (D) None of these
49. Continuous growing of crops make the soil poorer and less-fertile, we can replenish soil by following method-  
(A) Crop-rotation  
(B) Using weedicides  
(C) Levelling  
(D) Ploughing
50. An unicellular micro-organism is  
(A) protozoa. (B) mould.  
(C) mushroom. (D) rhizopus.

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*Space For Rough Work*

51. The first Reserve Forest of India is  
(A) Satpura national park.  
(B) Panchmarhi park.  
(C) Kaziranga sanctuary.  
(D) Great Biosphere Reserve.

52. Removal of weeds is necessary for plant growth because weeds  
(A) compete with crop for nutrition.  
(B) cause diseases in crop.  
(C) delay the harvesting time of the crop.  
(D) attract the insects and birds towards the crop.

53. The simplest protozoan is  
(A) Amoeba. (B) Paramecium.  
(C) Euglena. (D) Plasmodium.

54. The activity not prohibited in a protected area meant for protection of plants and animals is  
(A) hunting. (B) poaching.  
(C) cultivation. (D) tourism.

55. Ploughs are used for  
(A) harvesting. (B) tilling.  
(C) irrigation. (D) sowing.

56. Pointing to a photograph of a girl, Rajan said "She has no sisters or daughters but her mother is the only daughter of my mother." How is the girl in the photograph related with Rajan's mother?  
(A) Sister-in-law  
(B) Grand daughter  
(C) Daughter-in-law  
(D) Cannot be determined

**Directions (57) :** Read the given information carefully and answer the questions that follow.  
Ratan, Anil, Pinku and Gaurav are brothers of Rakhi, Sangeeta, Pooja and Saroj, not necessarily in that order. Each boy has one sister and the names of brothers and sisters do not begin with the same letter. Pinku and Gaurav are not Saroj's or Sangeeta's brothers. Saroj is not Ratan's sister.

57. Pooja's brother is  
(A) Ratan (B) Anil  
(C) Pinku (D) Gaurav

**Directions (58 to 59) :** Two groups of letters to the left side of the sign :: are associated with each other following same rule. You have to select one group of letters from the given alternative that will replace the sign : and form the same association with the group given to the right of sign ::

58. 121 : 12 :: 25 : ?  
(A) 1 (B) 2  
(C) 6 (D) 7

59. 01 : 08 :: 16 : ?  
(A) 25 (B) 125  
(C) 64 (D) 27

60. While facing East you turn to your left and walk 10 m; then turn to your left and walk 10 m, and now you turn 45° towards your right and go straight to cover 25 m. Now, in which direction are you from your starting point?  
(A) North-East (B) South-West  
(C) South-East (D) North-West

61. If **rains** is called **pink**, **pink** is called **cloud**, **cloud** is called **water**, **water** is called **breeze** and **breeze** is called **moon**. What do you wash your hands with ?  
(A) Water (B) Rain  
(C) Breeze (D) Moon

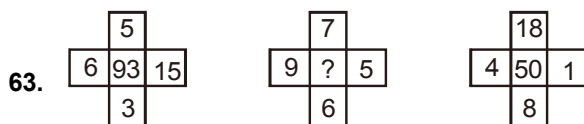
62. In a certain code **DELHI** is written as **29874** **CULCUTTA** is written as **35835661** then the word **CALICUT** will be coded as :  
(A) 3185463 (B) 3184635  
(C) 3184563 (D) 3184356

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**Direction :** Find the missing number in figure/series



- (A) 5 (B) 19  
(C) 27 (D) 89

64. 111, 114, 120, 123, 129, ?

- (A) 136 (B) 138  
(C) 141 (D) 145

65. 0, 6, 20, 42, 72, ?

- (A) 106 (B) 112  
(C) 110 (D) 108

66. Arrange the following group such that when arranged in a specific order, meaningful word is formed.

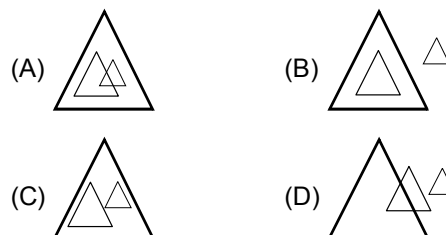
**R A C E T**  
**1 2 3 4 5**

- (A) 1, 2, 3, 4, 5 (B) 3, 2, 1, 4, 5  
(C) 5, 2, 3, 4, 1 (D) 5, 1, 2, 3, 4

67. Given interchanges : signs + and  $\times$  ; numbers 1 and 3.

- (A)  $31 + 34 \times 31 = 1085$   
(B)  $31 + 34 \times 31 = 395$   
(C)  $13 + 34 \times 13 = 195$   
(D)  $31 + 14 \times 13 = 213$

68. Which of the following represents the relationship between animals, elephants and lions ?



**Directions : (69 to 70)**

- (i) J, K, L, M, N, O, P, and Q are sitting in a line facing towards East.  
(ii) J is fourth to the right of N.  
(iii) Q is fourth to the left of M.  
(iv) L and O are not at the ends and are neighbours of K and P respectively.  
(v) Q is next to the left of J and J is the neighbour of K.

69. What is the position of O ?

- (A) To the right of N  
(B) Next to the right of L  
(C) Next to the right of M  
(D) Between P and J

70. Which of the following is true ?

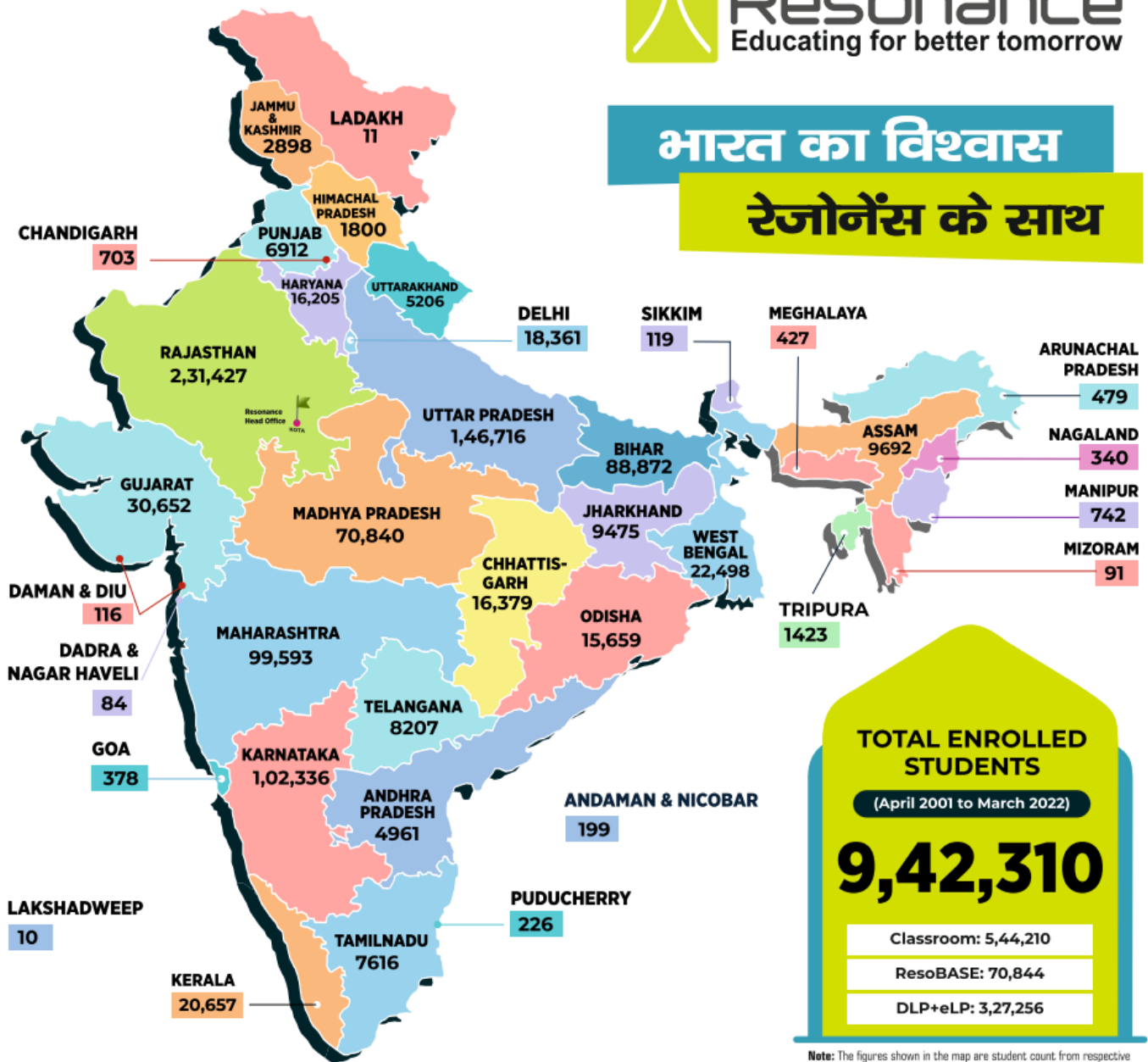
- (A) P is the neighbour of Q and J  
(B) L is next to the right of J  
(C) N is at left end  
(D) M is next to the left of K

## ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	A	B	C	A	A	A	A	B	A	C	B	A	A	C
Ques.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	D	C	C	B	A	C	A	B	D	B	A	A	C	A	D
Ques.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	A	D	B	B	D	B	D	D	A	D	D	C	B	B	C
Ques.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	A	D	A	A	A	A	A	A	D	B	B	D	C	B	D
Ques.	61	62	63	64	65	66	67	68	69	70					
Ans.	C	D	D	C	C	D	B	C	A	C					

**भारत का विश्वास**

**रेजोनेंस के साथ**



**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**

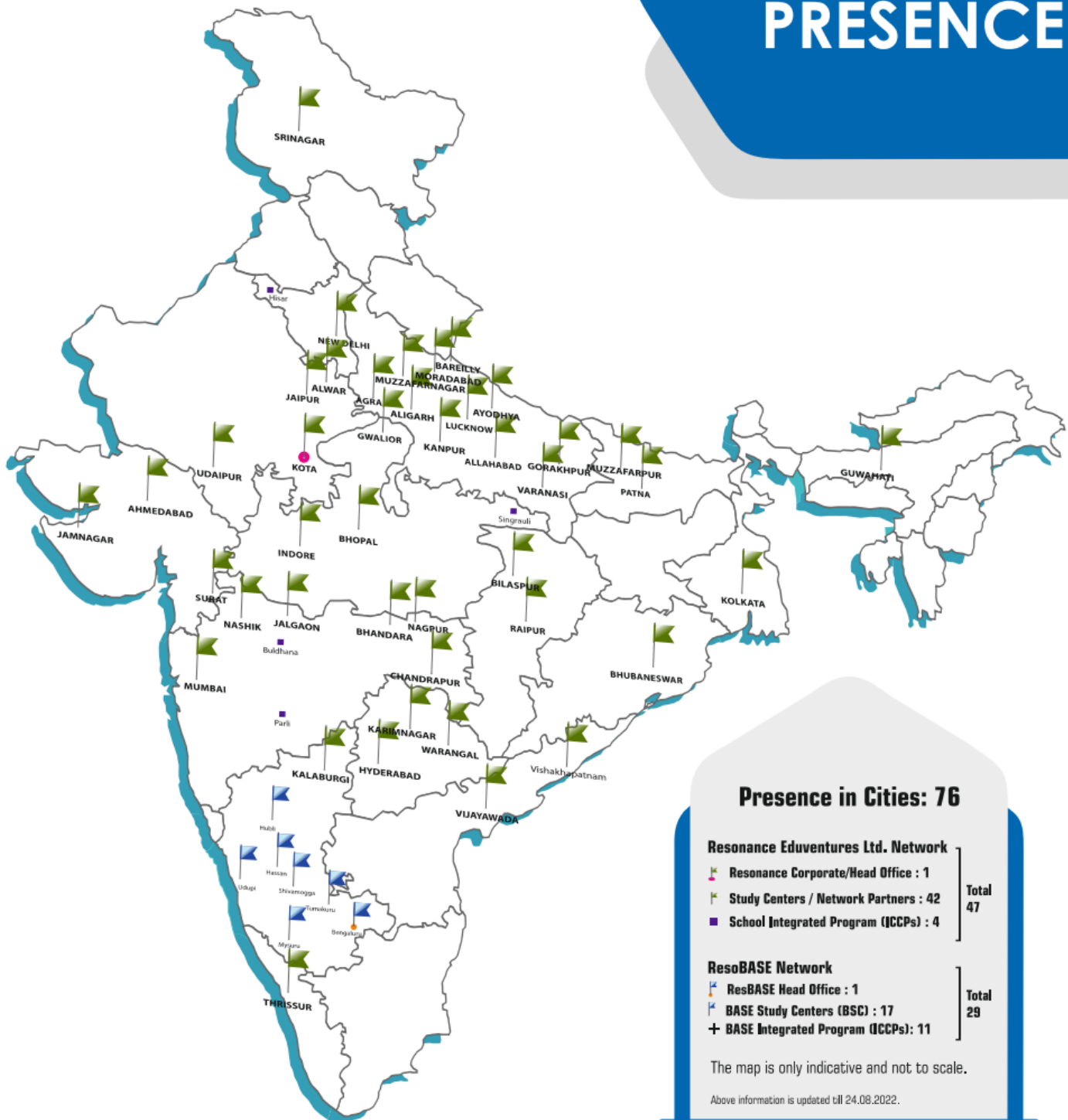


**CLAT, SET  
& GPTU**  
SINCE 2014

► **77**  
Selections

**AIR-1 in GPTU**

# PAN INDIA PRESENCE



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