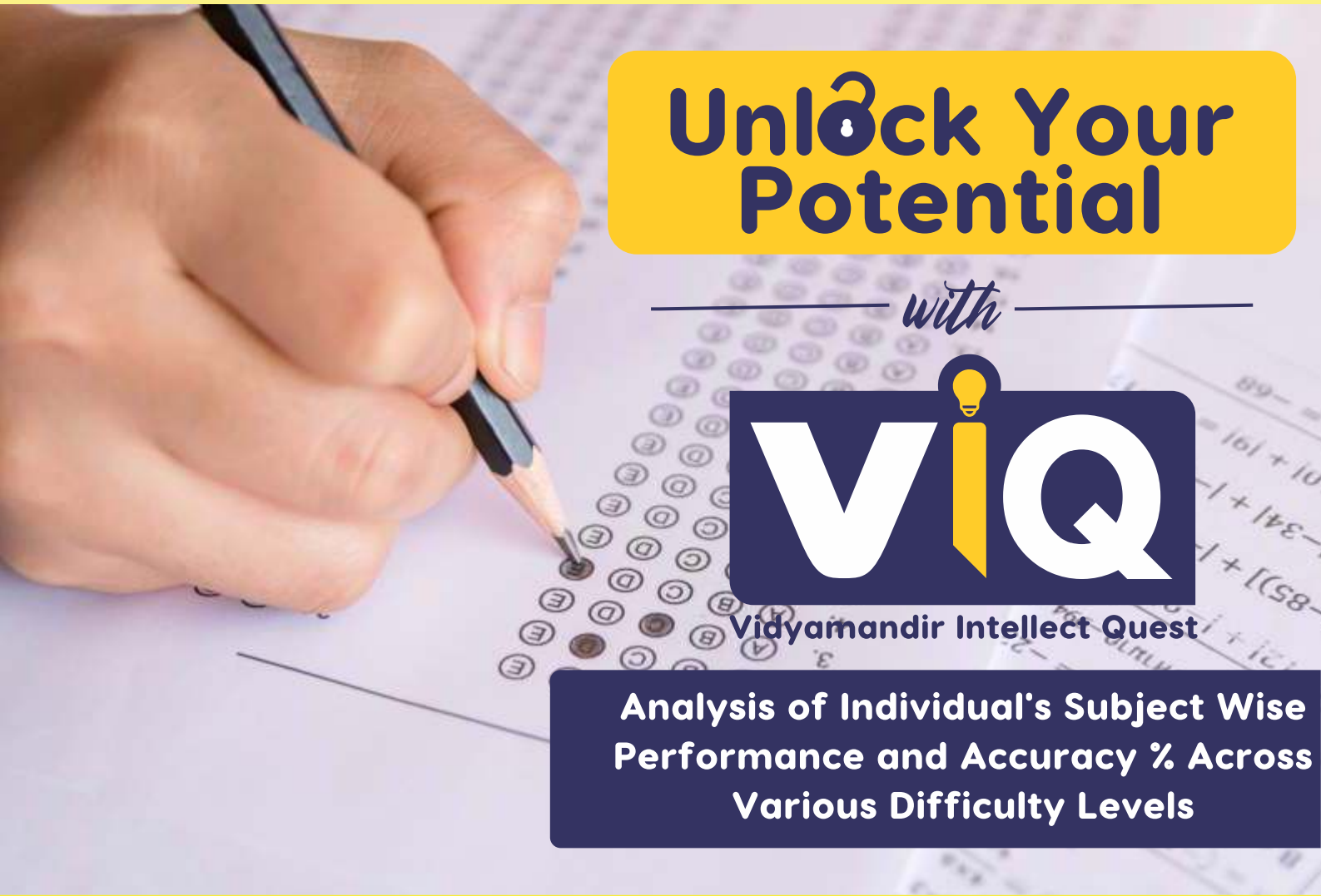
VMC Vidyamandir Classes SINCE 1986

IIT JEE | MEDICAL | FOUNDATION

SAMPLE PAPERS



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FOR STUDENTS CURRENTLY IN CLASS 10th

2 Year Course

JEE (MAIN & ADVANCED)

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Sample Paper	2 Year (JEE)

Duration: 2.5 Hrs **Maximum Marks: 230**

For Students Presently in Class 10th (Stream: Engineering)

PAPER SCHEME:

- This paper contains **45 Objective Type Questions** divided into four sections: **Section - I, Section – II, Section - III** and **Section - IV**
- **Section I** contains **5 Multiple Choice Questions (1-5)** based on **Mental Aptitude**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section II** contains **10 Multiple Choice Questions (6-15)** based on **Science**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section III** contains **20 Multiple Choice Questions (16-35)** based on **Mathematics**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section IV** contains **10 Numerical Value Type Questions (1-10).** The answer to each of these questions ranges from 0 to 99.

MARKING SCHEME:

- **Section I**: For each question, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section II & III**: For each question, **5 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section IV:** For each question, **6 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

SUGGESTIONS:

- *Before starting the paper, spend 2-2.5 minutes to check whether all the pages are in order and report any issue to the invigilator immediately.*
- Try to attempt the Sections in their respective order.
- Do not get stuck on a particular question for more than 2-2.5 minutes. Move on to a new question as there are 45 questions to solve.

SECTION - I [MENTAL APTITUDE]

Direction for (1 – 2)

Some groups of letters are given, all of which except one, share a common similarly while one is different. Choose the odd one out.

1. Choose the odd one out.

(A) HSRI **(B)** MVUN **(C)** OLKP **(D)** PJQX

2. Choose the odd one out.

(A) YDWB **(B)** TKRI **(C)** QNOM **(D)** HLFJ

3. ABCDEFGHIJLKLMNOPQRSTUVWXYZ

If 1st half of the English alphabet is written in backward order, then what will be the 7th letter to the left the 10th letter from your right?

(A) C **(B)** E **(C)** D **(D)** J

4. One morning Udai and Vishal were talking to each other face to face at a crossing. If Vishal's shadow was exactly to the left of Udai, which direction was Udai facing?

(A) East **(B)** West **(C)** North **(D)** South

5. If $-$ means $\div$, $+$ means $\times$, $\div$ means $-$, $\times$ means $+$, then which of the following is correct?

(A) $36-12\times 6\div 3+4=60$ **(B)** $52\div 4+5\times 15-3=37$

(C) $36\times 4-12+5\div 3=420$ **(D)** $43\times 7+5+4-8=25$

SECTION - II [SCIENCE]

6. The rate of change of displacement is called:

(A) Momentum **(B)** Speed **(C)** Velocity **(D)** Acceleration

7. The SI unit of momentum is:

(A) Newton **(B)** Newton - Second **(C)** Dyne **(D)** Dyne - Second

8. When unbalanced forces act on a body, the body?

(A) Must move with uniform velocity **(B)** Must remain at rest

(C) Must experience acceleration **(D)** Must move in a curved path

9. Work done is always:

(A) Scalar quantity **(B)** Vector quantity **(C)** Positive **(D)** Negative

10. The unit of relative density is:

(A) $g\ cm^{-3}$ **(B)** $kg\ m^{-3}$ **(C)** $kgF\ m^{-3}$ **(D)** No unit

11. When magnesium ribbon is burnt in air, the ash formed is:
(A) White **(B)** Green **(C)** Yellow **(D)** Black

12. Baking powder contains sodium hydrogen carbonate and
(A) Tartaric acid **(B)** Washing soda **(C)** Calcium chloride **(D)** Acetic acid

13. $^{78}_{35}X^{2-}$, the number of electrons in this ion is:
(A) 35 **(B)** 78 **(C)** 37 **(D)** 33

14. How many moles of hydroxyl ion present in a sample of 3 moles of aluminium hydroxide?
(A) 1 mole **(B)** 3 moles **(C)** 6 moles **(D)** 9 moles

15. Which of the following shows the electronic configuration of Ca^{2+}?
(A) He **(B)** Ne **(C)** Ar **(D)** F^-

SECTION - III [MATHEMATICS]

16. If $x, x+2$ and $x+4$ are positive prime numbers, then $10x$ is equal to:
(A) 30 **(B)** 50 **(C)** 70 **(D)** Can have many values

17. Select the correct order:
(A) $\frac{7}{8}<\frac{15}{16}<\frac{9}{10}<\frac{39}{40}$ **(B)** $\frac{7}{8}<\frac{39}{40}<\frac{9}{10}<\frac{15}{16}$
(C) $\frac{7}{8}<\frac{9}{10}<\frac{15}{16}<\frac{39}{40}$ **(D)** $\frac{7}{8}<\frac{9}{10}<\frac{39}{40}<\frac{15}{16}$

18. If $2^{x+3}-2^x=56$, then $(x+5)=?$
(A) 3 **(B)** 8 **(C)** 7 **(D)** 10

19. A person sells a T.V. at Rs. 10000 making a profit of 25% and a fridge at Rs. 20000 making a loss of 20%, then overall.
(A) Profit is Rs. 3000 **(B)** Loss is Rs. 5000
(C) Loss is Rs. 3000 **(D)** Profit is Rs. 5000

20. A successive discount of 70% and 20% is equal to an overall discount of:
(A) 90% **(B)** 24% **(C)** 74% **(D)** 76%

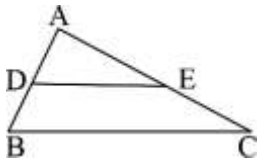
21. If $(x-1)$ divides ax^2+x+3 completely, then 'a' is equal to:
(A) 4 **(B)** –4 **(C)** 3 **(D)** –3

22. If $x+y-1=0$ and $\alpha x+2\beta y-3=0$ represent coincident lines, then $6(\alpha+\beta)$ is equal to:
(A) 18 **(B)** 54 **(C)** 27 **(D)** 9

23. The sum of interior angles of a hexagon is equal to:
(A) 1080° **(B)** 540° **(C)** 360° **(D)** 720°

24. Select the incorrect statement for two congruent triangles.
(A) Areas are equal **(B)** Corresponding altitudes are not equal
(C) Corresponding angles are equal **(D)** Corresponding medians are equal

25. D and E are mid points of sides AB and AC respectively as $(DECB) = 6k$, then $ar(ABC)$ is equal to:

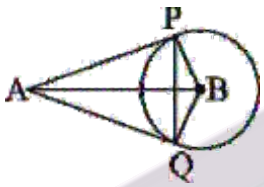


(A) $8k$ **(B)** $12k$ **(C)** $10k$ **(D)** $9k$

26. The length of the altitudes from a vertex of the parallelogram to the other two sides are 10 and 12. If the parallelogram has a perimeter of 176, then find the area.

(A) 240 **(B)** 600 **(C)** 300 **(D)** 480

27. AP and AQ are tangents to a circle and 'B' is the centre. $\angle PAB = 30°$, then $\angle QPB$ is equal to:



(A) 60° **(B)** 45° **(C)** 30° **(D)** 15°

28. Sides of a triangle are 13, 14 and 15, then altitude on side of length 13 is equal to:

(A) $\frac{168}{13}$ **(B)** $\frac{84}{13}$ **(C)** 7 **(D)** $\frac{126}{13}$

29. The first and last term of an A.P. are a and l respectively. If S is the sum of all the terms of A.P. and the common difference is given by $\frac{l^2 - a^2}{k - (l + a)}$, then:

(A) $\frac{k}{S} = 1$ **(B)** $\frac{k}{S} = 2$ **(C)** $3S = k^2$ **(D)** $k^2 + 4S^2 = 3kS$

30. The volume of a cube is V and diagonal is 'd' then:

(A) $d^3 = 27V$ **(B)** $d^3 = 9\sqrt{3}V$ **(C)** $d^3 = 6\sqrt{3}V$ **(D)** $d^3 = 3\sqrt{3}V$

31. The average of five numbers is 10. If one of them is doubled, then average is 12.4. The number which was doubled is equal to:

(A) 10 **(B)** 12 **(C)** 14 **(D)** 8

32. If $\sin\theta + \cos\theta = \sqrt{2}$, then $\tan\theta$ is equal to: $[0° < \theta < 90°]$

(A) $\sqrt{3}$ **(B)** $\frac{1}{\sqrt{3}}$ **(C)** 1 **(D)** 2

33. A bag has 3 red balls and x blue balls. The probability of getting blue ball is $\frac{3}{4}$, then 'x' is equal to:

(A) 3 **(B)** 6 **(C)** 9 **(D)** 7

34. Which of the following statements must be true for a kite?

(A) Diagonals bisect each other **(B)** Diagonals are perpendicular to each other
(C) Each pair of adjacent sides are equal **(D)** Both pair of opposite sides are equal

35. The distance of line $6x + 8y = 10$ from origin is equal to:

(A) 2 **(B)** 1 **(C)** 3 **(D)** 4

SECTION - IV [NUMERICAL VALUE TYPE QUESTION]

This Section contains 10 Integer-Type Questions. Each question has an integer answer between 0 and 99. Enter the correct Numerical Value.

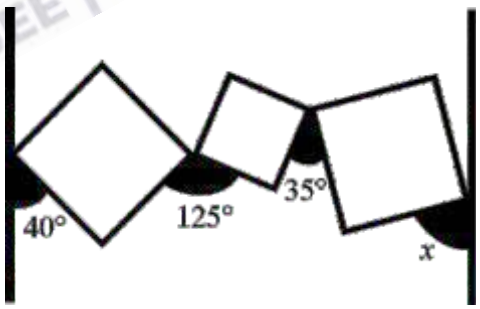
1. Let $P(x)=x^4+ax^3+bx^2+cx+d$. $P(1)=1, P(2)=2, P(3)=3$ and $P(4)=4$, then $P(5)$ is equal to _____ .

2. If a, b and c are positive numbers such that $x^3-6x^2-37x-30=(x+a)(x+b)(x-c)$, then value of $a+b+c$ is equal to _____ .

3. If $\alpha^2=10\alpha-12, \beta^2=15\beta-27$ and $\alpha>\beta$, then the value of $3\left(\frac{2\beta+3\alpha}{\alpha\beta}\right)$ is _____ .

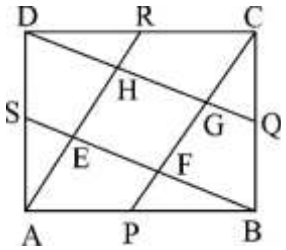
4. If $5\le x\le 10$, then the value of $\sqrt{x+3-4\sqrt{x-1}}+\sqrt{x+8-6\sqrt{x-1}}$ is equal to _____.

5. As shown in the diagram below, there lie 3 squares between 2 parallel lines such that each pair (line, square) or (square, square) just meet at a vertex. Find the measure of angle x in degrees.



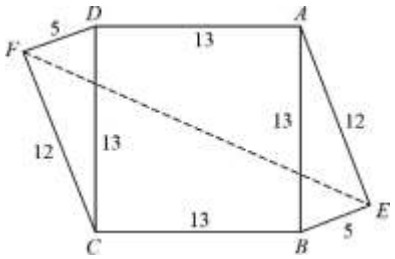
6. The perimeter and area of an isosceles triangle are 50 cm and 60 cm^2. If equal sides of triangle are smaller than the third side then largest side of triangle is equal to _____ .
(All sides of triangle are integers)

7. $ABCD$ is a square of side length 20 m. P, Q, R and S are mid points of sides of $ABCD$ as shown. Joining PC, QD, RA and SB we get a new quadrilateral $EFGH$, then the area of $EFGH$ is equal to _____.

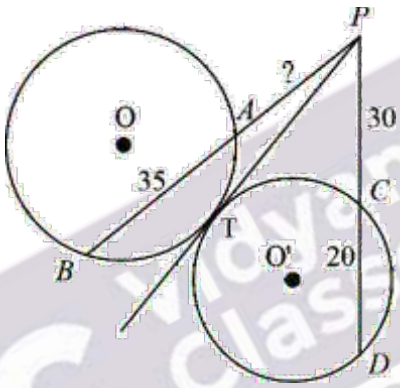


8. If $\frac{\sin^4 x}{3}+\frac{\cos^4 x}{2}=\frac{1}{5}$, then $6(\text{cosec}^2 x+\sec^2 x)$ is equal to _____.

9. $ABCD$ is a square with AB = 13. Points E and F are exterior to $ABCD$ such that BE = DF = 5 and AE = CF = 12. If the length EF can be represented as $a\sqrt{b}$, where a and b are positive integers and b is not divisible by the square of any prime, then find ab.



10. In the diagram, line segment PT is tangent to both circle O and circle O'. Given the following three lengths: $AB = 35, PC = 30, CD = 20$, what is PA?



End of Sample Paper | 2 Year (JEE)

Answer Key | 2 Year (JEE) | Sample Paper

MENTAL APTITUDE

1	2	3	4	5
D	C	C	C	B

SCIENCE

6	7	8	9	10	11	12	13	14	15
C	B	C	A	D	A	A	C	D	C

MATHEMATICS

16	17	18	19	20	21	22	23	24	25
A	C	B	C	D	B	C	D	B	A
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
D	C	A	B	D	B	C	C	B	B

NUMERICAL VALUE TYPE QUESTION

1	2	3	4	5	6	7	8	9	10
29	14	05	01	70	24	80	25	34	25

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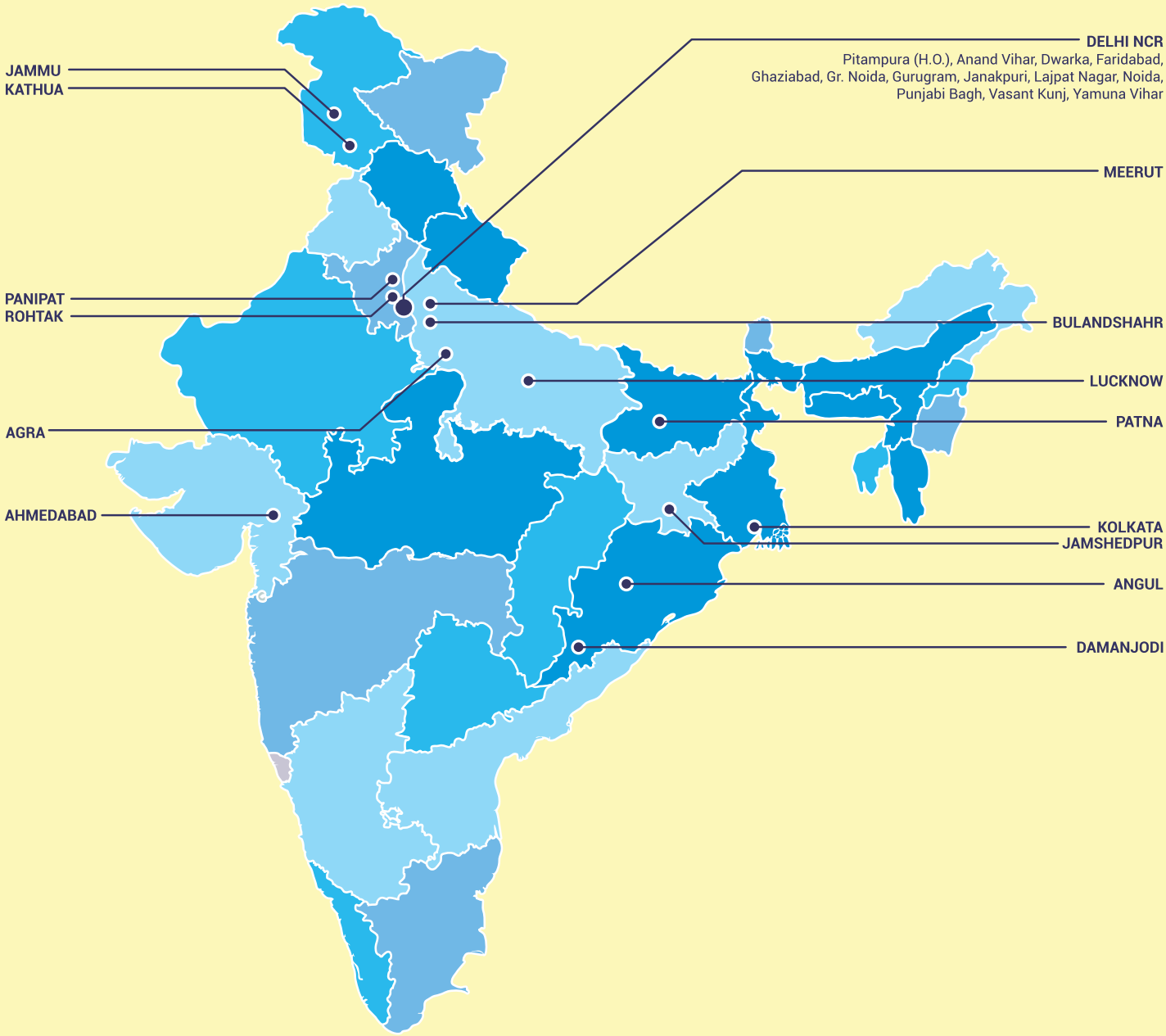

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