SAMPLE PAPER

NAT — National Admission Test

VIQ — Vidyamandir Intellect Quest

VIN it — VMC INternational Incentive Test

FOR STUDENTS CURRENTLY IN CLASS

7TH | **1+4 YEAR PROGRAM** | **PRE-FOUNDATION**

WHY VMC ?

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Sample Paper - 5 Year Program

Admission & Scholarship Test

Duration : 3.0 Hrs | **Maximum Marks: 305**

PAPER SCHEME :

- The paper contains **60 Objective Type Questions** divided into three sections: **Section - I, Section – II and Section – III.**

- **Section I** contains **10 Multiple Choice Questions (1-10)** 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 **35 Multiple Choice Questions (11-45)** based on Mathematics. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

- **Section III** contains **15 Multiple Choice Questions (46-60)** based on Science. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

MARKING SCHEME :

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

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

- **Section III** : For each question, **6 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
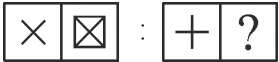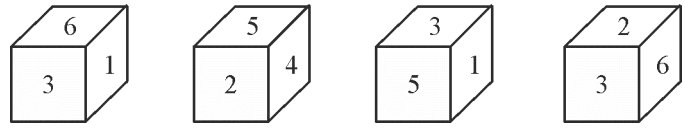
GENERAL INSTRUCTIONS :

- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET.** IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.

- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.

- The use of log tables, calculator and any other electronic device is strictly prohibited.

- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.

- No one will be permitted to leave the examination hall before the end of the test.

- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

SUGGESTIONS:

- *Before starting the paper, spend 2-3 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 3-4 minutes. Move on to a new question as there are 60 questions to solve.

SECTION - I [MENTAL APTITUDE]

1. If 4th January 2008 falls on Friday, what day of week will fall on 4th January 2009?
   (A) Monday (B) Friday (C) Wednesday (D) Sunday

2. If '+' means 'x', 'x' means '$-$', '$-$' means '$\div$' and '$\div$' means '+', then $18 \div 4 + 3 \times 2 - 2 = ?$
   (A) 45 (B) 48 (C) 29 (D) 39

3. If Lamp A is less bright than Lamp B; Lamp B is brighter than Lamp C; Lamp C is as bright as Lamp D; Lamp B is brighter than Lamp D; Lamp D is brighter than Lamp A; then which lamp is the brightest?
   (A) Lamp A (B) Lamp B (C) Lamp C (D) Lamp D

4. Find the missing figure (?).

   $\boxed{\times} \boxed{\boxtimes} : \boxed{+} \boxed{?}$

   (A) ⊕ (B) ⊠ (C) ◇ (D) ⊞

5. If JK : QR, then:
   (A) ST : UW (B) WX : ZY (C) CF : JL (D) BC : IJ

6. If A is B's brother, B is C's sister and C is D's father, then D is A's:
   (A) Brother (B) Sister (C) Wife (D) None of these

7. Four positions of a dice is given. The number opposite to 3 is:

   (A) 2 (B) 3 (C) 4 (D) 6

8. Which of the following numbers does not fit in the given series?
   0, 1, 3, 6, 10, 15, 21, 28, 37, 45
   (A) 0 (B) 21 (C) 37 (D) 45

9. In the sequence of numbers 5, 8, 13 X, 34, 55, 89, the value of X is:
   (A) 29 (B) 23 (C) 21 (D) 20

10. Which one is the same as Basket, Pail and Pan?
    (A) Knife (B) Spoon (C) Fork (D) Bowl

SECTION - II [MATHEMATICS]

11. For any two rational numbers x and y which of the following are correct, if x is positive and y is negative?

    (1) $x < y$ (2) $x = y$ (3) $x > y$

    (A)   Only 1 and 2 are correct   **(B)**   Only 2 and 3 are correct
    (C)   Only 3 is correct   **(D)**   All 1, 2 and 3 are correct

12. Which pair of numbers does not have a product equal to 36?

    (A) $\{-4, -9\}$ **(B)** $\{-3, -12\}$ **(C)** $\left\{\dfrac{1}{2}, -72\right\}$ **(D)** $\{1, 36\}$

13. Which of the following statements is true?
    (A)   1 and -1 are additive inverse
    (B)   Zero has no reciprocal
    (C)   The product of two rational numbers is a rational number
    (D)   All of the above

14. If p : when a positive integer and a negative integer are added we always get a negative integer and q : when two negative integers are added, we get a positive integer, then:
    (A)   Both p and q are true   **(B)** p is true and q is false
    (C) p is false, and q is true   **(D)**   Both p and q are false

15. The value of $|7| + |5| - |7| - |-3|$, where $|\bullet|$ is the absolute value of an integer is :
    (A)   0   **(B)**   1   **(C)**   2   **(D)**   3

16. A tank contains 500 litres of water. Due to a small hole in the tank, the quantity of water is decreasing at the rate of 9 litres every hour. What will be the quantity of water in the tank after 10 hours?
    (A)   410 litres   **(B)**   491 litres   **(C)**   400 litres   **(D)**   90 litres

17. Which integer is the additive inverse of itself ?
    (A) -1 **(B)**   1   **(C)**   0   **(D)**   2

18. The value of $3\dfrac{4}{5} + 2\dfrac{7}{10} + 4\dfrac{8}{12}$ is:

    (A) $\dfrac{68}{15}$ **(B)** $\dfrac{6}{5}$ **(C)** $\dfrac{67}{6}$ **(D)** $\dfrac{7}{10}$

19. What fraction of the figure is shaded?

    (A) $\dfrac{1}{4}$ **(B)** $\dfrac{3}{8}$

    (C) $\dfrac{5}{8}$ **(D)** $\dfrac{8}{11}$

20. What fraction of the figure is shaded?

    (A) $\dfrac{7}{25}$ **(B)** $\dfrac{8}{25}$

    (C) $\dfrac{9}{25}$ **(D)** $\dfrac{2}{5}$
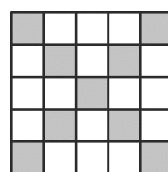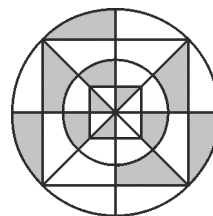
21. Which of the following is correct?

(A) $0.658 < 0.738 < 0.514 < 0.813$ (B) $0.514 < 0.658 < 0.732 < 0.813$

(C) $0.813 < 0.732 < 0.658 < 0.514$ (D) $0.514 < 0.732 < 0.658 < 0.813$

22. $\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{3}}} =$

(A) $\dfrac{1}{6}$ (B) $\dfrac{3}{10}$ (C) $\dfrac{7}{10}$ (D) $\dfrac{5}{6}$
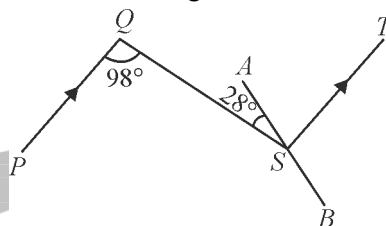
23. Express $9\dfrac{7}{20}$ as a decimal.

(A)   9.05   (B)   9.53   (C)   9.26   (D)   9.35

24. A farmer has 192 animals out of which $\dfrac{7}{16}$ are cattle. $\dfrac{2}{3}$ of cattle are dairy cows. How many dairy cows he has?

(A)   128   (B)   84   (C)   56   (D)   112

25. In the figure, PQ is parallel to ST. AB is a straight line. Find $\angle BST$.

(A)   110°   (B)   125°   (C)   152°   (D)   98°

26. In the figure, AB is parallel to CD. Which of the following statements is true?
(EF is drawn parallel to AB)
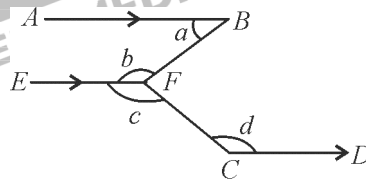
(A) $a+b=180°$ (B) $b+c=180°$ (C) $c+d=180°$ (D) $a+b+c=360°$

27. In the figure (not drawn to scale), ABCD is a rhombus and CGEF is a square. Find y.
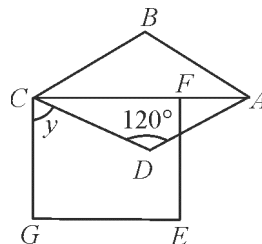
(A)   30°   (B)   50°   (C)   60°   (D)   70°

28. A triangle whose lengths of sides are 5 cm, 12 cm and 13 cm. The triangle is:

(A)   Obtuse - angled triangle   (B)   Acute - angled triangle

(C)   Right - angled triangle   (D)   Triangle is not formed

29. In the given $\triangle ABC$, if $AB = AC$ and $BD = DC$, then $\angle ADC$ is equal to:

(A)   60°   (B)   120°   (C)   90°   (D)   45°

30. In any $\triangle ABC$, which of the given condition holds true?

(A) $AB - BC > CA$ (B) $AB + BC < CA$ (C) $AB - BC < CA$ (D) $AB + CA < BC$

31. ABC is an isosceles triangle with $AB = AC$ and AD is altitude, then :

(A) $\angle B > \angle C$ (B) $\angle B < \angle C$ (C) $\angle B = \angle C$ (D)   None of these

32. The value of $\left(-5x^2 y\right) \times \left(-\dfrac{2}{3}xy^2 z\right) \times \left(\dfrac{8}{15}xyz^2\right) \times \left(-\dfrac{1}{4}z\right)$ is:
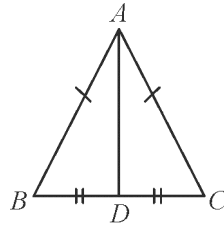
(A) $-\dfrac{4}{9}x^4 y^4 z^4$ (B) $\dfrac{4}{9}x^4 y^4 z^4$ (C) $-\dfrac{4}{9}x^3 y^3 z^3$ (D) $\dfrac{4}{9}x^3 y^3 z^3$

33. **Step 1 :** $x^2 - 3x^2 y^2 + x^2 y^2 - 2x^2 - 3y^2 + 12x^2 y^2$

Step 2 : $\left(x^2 - 2x^2\right) + \left(-3x^2 y^2 + x^2 y^2 + 12x^2 y^2\right) - 3y^2$

Step 3 : $\left(-x^2 + 10x^2 y^2 - 3y^2\right)$

Are the above given steps showing simplification of algebraic expression

$x^2\left(1 - 3y^2\right) + x\left(xy^2 - 2x\right) - 3y\left(y - 4x^2 y\right)$?

(A)   Yes   (B)   No
(C)   Only step 1 is correct   (D)   Only step 1 and 2 are correct

34. If $x + \dfrac{1}{x} = 12$, then the value of $x - \dfrac{1}{x}$ is:

(A) $\sqrt{140}$ (B) $\sqrt{120}$ (C)   10   (D)   11

35. If $\dfrac{x}{y} = \dfrac{3}{4}$, then the incorrect expression from the following options is:

(A) $\dfrac{x+y}{y} = \dfrac{7}{4}$ (B) $\dfrac{y}{y+x} = \dfrac{4}{7}$ (C) $\dfrac{x+2y}{x} = \dfrac{11}{3}$ (D) $\dfrac{x-y}{y} = \dfrac{1}{4}$

36. Subtract the sum of $\left(8a - 6a^2 + 9\right)$ and $\left(-10a - 8 + 8a^2\right)$ from -3 is:

(A) $2a^2 - 2a - 2$ (B) $2a^2 - 2a + 4$ (C) $-2a^2 + 2a - 4$ (D) $-2a^2 + 2a - 2$

37. What is the value of $ax^2 + bx + c$ at $x = \dfrac{-b}{a}$?

(A) a (B) $b^2 - 4ac$ (C) c (D)   0

38. A factor of $\left(3x^4 - 12y^4\right)$ is:

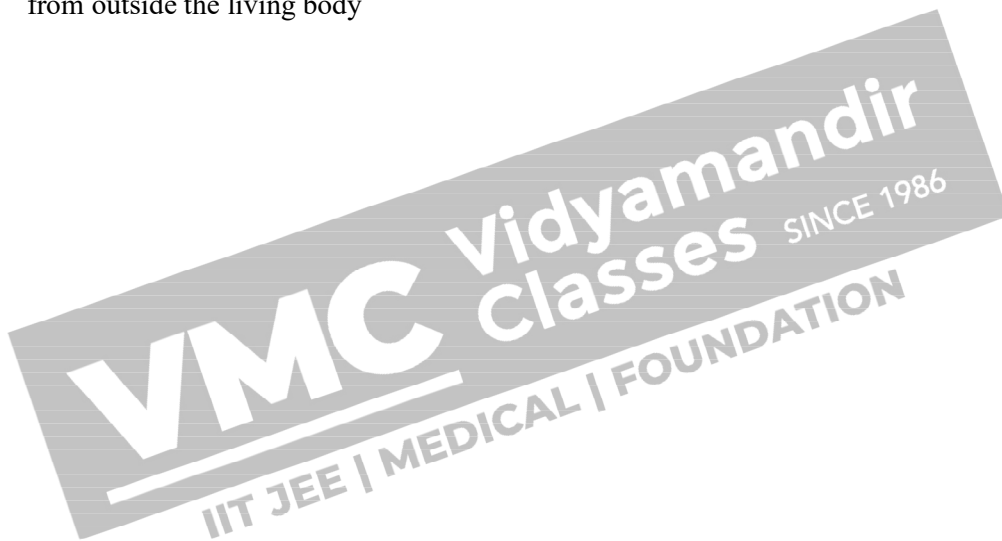(A)   3   (B) $x^2 - 2y^2$ (C) $x^2 + 2y^2$ (D)   All of these

39. $2^3 + 2^3 + 2^3 + 2^3$ is equal to:

   (A) 2^5 (B) 2^{12} (C) 2^{81} (D) 2^{16}

40. The value of x, for which $\left(\dfrac{125}{8}\right)^5 \times \left(\dfrac{125}{8}\right)^x = \left(\dfrac{5}{2}\right)^{18}$ is:

   (A)   2   (B)   3   (C)   1   (D)   9

41. If $\dfrac{p}{q} = \left(\dfrac{2}{3}\right)^3 \div \left(\dfrac{3}{2}\right)^{-3}$, then the value of $\left(\dfrac{p}{q}\right)^{-10}$ is:

   (A)   1   (B)   0   (C)   −1   (D)   Cannot be determined

42. Match the reciprocal of each of the following in exponential form:

   (1) 3^2 (a) $\left(-\dfrac{7}{3}\right)^{89}$

   (2) $(-5)^3$ (b) $\left(-\dfrac{1}{5}\right)^3$

   (3) $\left(\dfrac{2}{5}\right)^4$ (c) $\left(\dfrac{1}{3}\right)^2$

   (4) $\left(\dfrac{-3}{7}\right)^{89}$ (d) $\left(\dfrac{5}{2}\right)^4$

   (A)   1c, 2b, 3d, 4a   (B)   1a, 2b, 3c, 4d
   (C)   1b, 2c, 3d, 4a   (D)   1d, 2a, 3b, 4c

43. The value of $(-8)\times(-8)\times(-8)\times(-8)\times(-8) + (-8)\times(-8)\times(-8)\times(-8)\times(-8)$ is:

   (A) $-2(8)^5$ (B) $-(2)^{16}$ (C) $-(4)^8$ (D)   All of these

44. If $\left(\dfrac{1}{5}\right)^{3y} = 0.008$, then $(0.25)^y$ will be:

   (A)   1   (B)   0.25   (C)   0.0625   (D)   0.125

45. Which of the following numbers is in the scientific notation?

   (A) $1.26\times10^{-5}\,m$ (B) $15.75\times10^3\,km$ (C) $0.18\times10^{-7}\,km$ (D) $0.0013\times10^{-8}\,km$

SECTION - III [SCIENCE]

46. If all the parts of green parts of tree are covered with transparent wax. Then pick the wrong statement from the following.

   (A)   The plant will die as it cannot show transpiration
   (B)   Stomata will be closed therefore plant cannot exchange gases
   (C)   Plant will perform photo synthesis as transparent wax is used
   (D)   After some time, plant will die

47. Two plants are kept in an air tight bell jars. It one of the bell jar (I) place a rat and in the other bell jar (II) place potassium hydroxide as it absorbs carbon dioxide and then place a rat. Both the jars are kept in sun light for some time. What will happen.

(A) Plant and rat both will die in bell jar I

(B) Both will die in bell jar II

(C) Only plant will die in bell jar I

(D) Only rat will die in bell jar I

48. Main digesting function of teeth in our body:

(A) It helps in cutting the food

(B) It grinds the food and therefore increases area for proper action of enzyme

(C) Helps in swallowing the food

(D) Helps in mastication

49. Which among the following is called artificial silk?

(A) Rayon (B) Nylon (C) Terylene (D) Bakelite

50. Clinical Thermometer has a kink at the bottom of mercury tube. What is the reason behind it:

(A) So that we can see reading easily (B) It slows down the fall of mercury

(C) Mercury does not evaporate easily (D) So that the mercury falls quickly

51. Physical change is reversible that is it can be reversed back to its original state. Pick the one which is not a physical change.

(A) Melting of wax or ice (B) Tearing of paper

(C) Wax in burning candle (D) Melting ice cream

52. Image formed by the plane mirror is behind the mirror and distance of object and image from the mirror is same if a person initially at a distance of 20 cm from the mirror moves away from one mirror at the rate of 5 cm/s. Find the distance between image and object at the end of 10 seconds:

(A) 20 cm (B) 100 cm (C) 120 cm (D) 140 cm

53. Person 'A' covers 10 m in 3 seconds and another person 'B' covers 5000 m in 250 seconds. Who moves faster?

(A) A (B) B

(C) They both run with same speed (D) None of the option above is right

54. High BOD (Biological Oxygen Demand) shows that :

(A) Water is polluted (B) Water is potable

(C) Either (A) or (B) (D) Neither of the above

55. Increased growth of algae in a water body due to increase in concentration of nitrogenous Fertilizers is also called:

(A) Bio - magnification (B) Eutrophication

(C) Bio - accumulation (D) Bio - concentration

56. Animals living in cold region undergoes winter sleep to protect themselves from harsh environment. This winter sleep is also called:

(A) Hibernation (B) Incubation (C) Aestivation (D) Incineration

57. Out of the following which is not an adaptation of organisms living in arid condition?

(A) Leaves of cactus converted into spines (B) Deep and extensive root system

(C) Fleshy stem (D) Larger canopy

58. Which of the following is not advantage of constructing large dams?
    (A) It can be used for production of electricity
    (B) It prevents flood
    (C) It leads to deforestation
    (D) It helps in distributing water to remote area

59. The movement of alimentary canal to move the food is called:
    (A) Peristalsis   **(B)** Voluntary movement
    (C) Arrhythmia   **(D)** Pulmonary

60. How does parasite different from saprotrophs, pick the correct options?
    (A) Parasites have complete alimentary canal and developed digestive system and saprotroph do not have one
    (B) Parasites absorbs digested nutrient whereas saprotroph digests nutrient outside their body and then picks up
    (C) Parasites feed on dead and decaying organisms and saprotrophs on living host body
    (D) Saprotrophs always moves inside the body for its nutrition, but parasites obtain its nutrition's from outside the living body

❧ ❧ ❧ **End of Sample Paper | 5 Year** ❦ ❦ ❦

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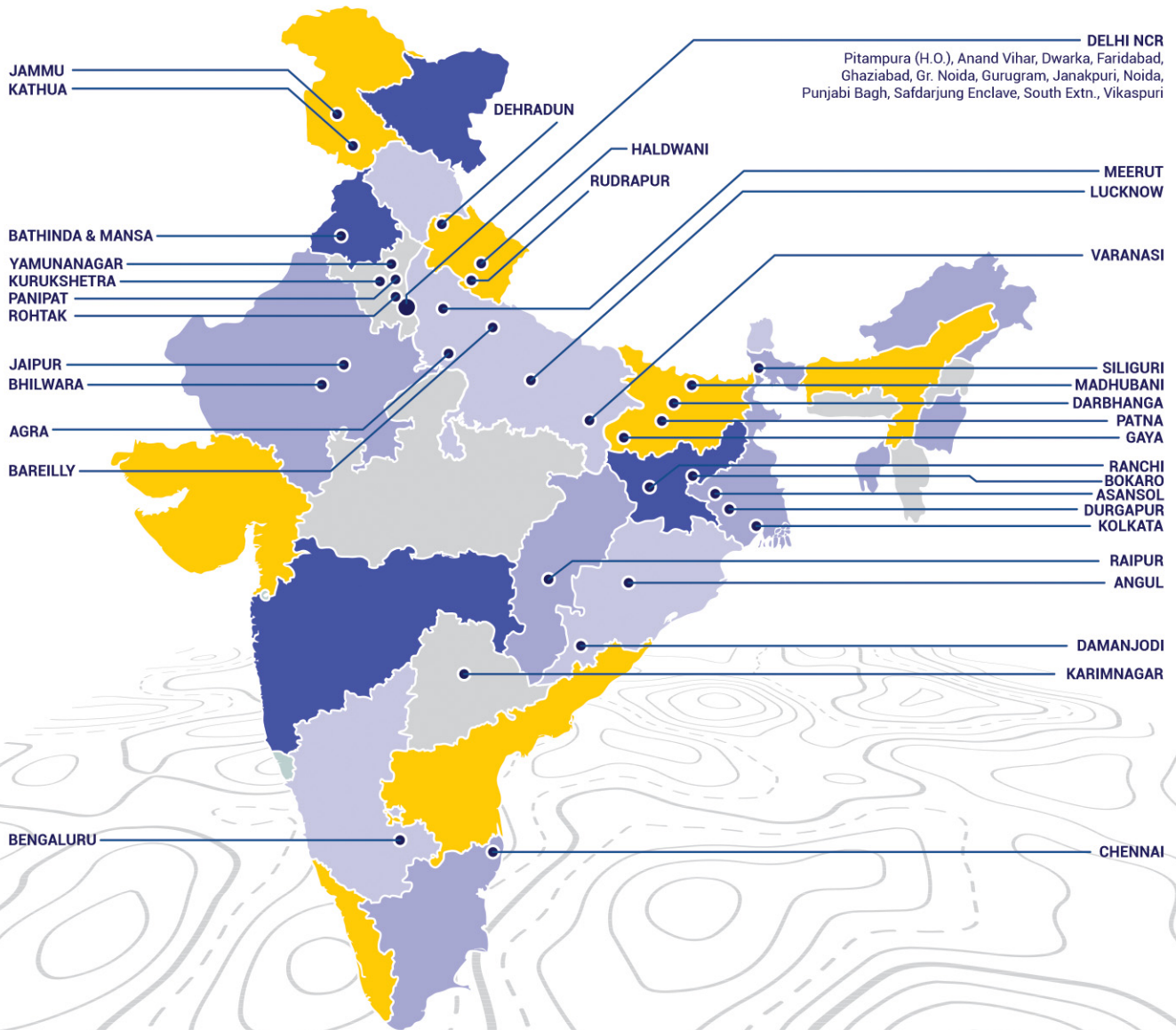## Answers to Sample Paper | 5 Year

<table>
<tr><td colspan="10">SECTION - I</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
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<tr><td colspan="10">SECTION - II</td></tr>
<tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr>
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