



MATHEMATICS

Grade 8

National Level Examination

NLE 2025

Subject Code:

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Total Questions: 40

Total Marks: 40

Time: 1 hour

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED TO DO SO

- All questions are compulsory.
- Read the instructions on the **ANSWER SHEET** and fill in your **NAME, CLASS** and **OTHER INFORMATION**.
- To mark your choice of answer by darkening the circles in the **ANSWER SHEET**, use a **BLUE/BLACK BALL PEN** only.
- You **MUST** record your answers on the **ANSWER SHEET** only.
- There are **40 MULTIPLE CHOICE QUESTIONS**. Use the information provided to choose the **BEST** possible answer among the four options. On your **ANSWER SHEET** fill in the circle that matches your answer.
- **$\frac{1}{2}$ MARK** will be deducted for every **WRONG ANSWER**.
- Return the **ANSWER SHEET** to the invigilator at the end of the examination.
- You are **NOT** allowed to use a calculator. You may use a ruler and spare paper for rough work.



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This question paper contains a total of 40 questions divided into three sections—A, B and C. Read the instructions carefully before attempting these questions.

Section A (Logical Reasoning)

1. Observe the following addition and find the value of $(A + B + C)$.

$$\begin{array}{r}
 A \ C \ B \\
 + \ C \ C \\
 \hline
 7 \ C \ A
 \end{array}$$

Here, each letter represents a distinct digit, and the leftmost digit in each number cannot be zero.

(A) 16 (B) 18
 (C) 20 (D) 22

2. Pointing towards a person, a man said to a woman. "His mother is the only daughter of your father." How is the woman related to that person?
 (A) Sister (B) Daughter
 (C) Mother (D) Wife

3. We have a sequence $(1, 2, 3), (4, 5, 6, 7, 8), (9, 10, 11, \dots, 15), (16, 17, 18, \dots, 24)$, and so on.
 Here, $(1, 2, 3)$ is the first group, $(4, 5, 6, 7, 8)$ is the second group, and so on.
 Find the 1st number of the 25th group.
 (A) 576 (B) 600
 (C) 601 (D) 625

4. Sumit's house is 2 km east and 3 km north of IIT BHU. He drives to Sarnath, which is 3 km east and 9 km north of his house. The shortest distance between Sarnath and IIT BHU is
 (A) 10 km (B) 13 km
 (C) 15 km (D) 17 km

5. Find the missing number.
 (A) 42 (B) 48
 (C) 52 (D) 56

		6	
8	8	27	39
	64	2197	
		?	

6. Observe the following multiplication and find the value of $(A^2 + B^2 + C^2)$.

$$AB \times AB = ACC$$

Here, each letter represents a distinct digit, and the leftmost digit in each number cannot be zero.

(A) 21 (B) 34
 (C) 25 (D) 40



7. A bag contains 3 red, 3 black, and 3 green balls. What is the minimum number of balls that must be drawn to guarantee that you have at least one ball of each colour?
(A) 5 (B) 8
(C) 7 (D) 6

8. Find the missing alphabet in the series:
A, E, F, H, I, K, L, ?
(A) M (B) N
(C) T (D) R

Section B (Subject Specific)

9. The simplest rationalizing factor of $\sqrt[3]{500}$ is
(A) $\sqrt[3]{2}$ (B) $\sqrt[3]{5}$
(C) $\sqrt{3}$ (D) $\sqrt[4]{5}$

10. If two adjacent angles of a parallelogram are $(5x - 5)^\circ$ and $(10x + 35)^\circ$ respectively, then the ratio of these angles is _____.
(A) 1 : 3 (B) 2 : 3
(C) 1 : 4 (D) 1 : 2

11. On joining points (0, 0), (0, 2), (2, 2) and (2, 0) we obtain a
(A) square (B) rectangle
(C) rhombus (D) trapezium

12. Numbers 1 to 5 are written on separate slips, i.e., one number on one slip and put it in a box. Anjali picks a slip from the box without looking at it. What is the probability that the slip bears an odd number?
(A) $\frac{1}{5}$ (B) $\frac{2}{5}$
(C) $\frac{3}{5}$ (D) $\frac{4}{5}$

13. If $F = V = 5$ in a polyhedron, then the number of edges in this shape is
(A) 6 (B) 8
(C) 12 (D) 5

14. The value of $\sqrt{248 + \sqrt{52 + \sqrt{144}}}$ is _____.
(A) 14 (B) 12
(C) 16 (D) 13

15. For a kite, which of the following is false?
(A) The diagonals are perpendicular to each other. (B) Only one diagonal bisects the other.
(C) Only one pair of opposite angles is equal. (D) All the four sides are equal.

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16. Radhika bought a car for ₹4,50,000. Next year, its price decreased by 10% and further next year, it decreased by 12%. In the two years overall decrease per cent in the price of the car is _____.
(A) 3.2% (B) 22%
(C) 20.8% (D) 8%

17. What is the probability of drawing a letter other than 'A' from a printed 26 English alphabets kept in a bag?
(A) $\frac{1}{26}$ (B) $\frac{25}{26}$
(C) $\frac{23}{26}$ (D) 0

18. Find the value of x if $abx = (3a + b)^2 - (3a - b)^2$.
(A) 14 (B) 12
(C) 18 (D) 20

19. If $x = 9^{0.25}$, $y = 9^{0.5}$, and $x^9 = y^k$, then what is the value of $7k - 21$?
(A) 10.5 (B) 8.7
(C) 4.9 (D) 3

20. In a pie diagram, a certain component is represented by 80° and the total value of all the components is 3240. Arrange the following steps in sequential order, involved in finding the value of the component.

- I. $x = \frac{80^\circ \times 3240}{360^\circ}$
- II. $x = 80 \times 9$
- III. Let the value of the component be x .
- IV. Degree of component = $\frac{x}{3240} \times 360^\circ = 80^\circ$

(A) III, IV, I, II (B) III, IV, II, I
(C) IV, III, I, II (D) III, I, IV, II

21. If two numbers are in the ratio of $\frac{1}{7} : \frac{1}{5}$, then the following steps are involved in calculating the percentage of the second number that is more than the first. Arrange them in sequential order.

- I. The second number is $2x$ more than the first number.
- II. Difference between the two numbers is $7x - 5x = 2x$.
- III. The ratio of two numbers = $\frac{1}{7} : \frac{1}{5} = 5:7$. Therefore, the numbers are $5x$ and $7x$.
- IV. The required percentage = $\frac{2x}{5x} \times 100\% = 40\%$.

(A) I, II, III, IV (B) III, II, I, IV
(C) II, III, I, IV (D) III, I, II, IV

22. Which of the following is a square of an even number?
(A) 169 (B) 196
(C) 729 (D) 121

23. The rate of interest on a sum of money is numerically equal to the number of years. If the simple interest is $\frac{4}{9}$ th of the principal, then the number of years will be

(A) $\frac{10}{3}$ years (B) $\frac{16}{3}$ years
(C) $\frac{17}{3}$ years (D) $\frac{20}{3}$ years

24. The net shown can be folded into the shape of a cube. The face marked with the letter L is opposite to the face marked with which letter?

(A) M (B) N
(C) Q (D) O



25. Consider the following statements:

I. The bisectors of all four angles of a parallelogram enclose a rectangle.
II. The figure formed by joining the midpoints of the adjacent sides of a rectangle is a rhombus.
III. The figure formed by joining the midpoints of the adjacent sides of a rhombus is a square.

Which of these statements is correct?

(A) I and II (B) II and III
(C) I and III (D) I, II and III

26. A circle of maximum possible size is cut from a square sheet of board. Subsequently, a square of maximum possible size is cut from the resultant circle. What will be the area of the final square?

(A) $\frac{3}{4}$ of original square (B) $\frac{1}{4}$ of original square
(C) $\frac{1}{2}$ of original square (D) $\frac{2}{3}$ of original square

27. If the following shapes are arranged based on the increasing order of the number of their edges, then which of the following is the correct order?

(A) Prism with triangular base, Prism with rectangular base, Prism with square base
(B) Prism with square base, Prism with triangular base, Prism with rectangular base
(C) Pyramid with triangular base, Pyramid with square base, Pyramid with hexagonal base
(D) Prism with square base, Pyramid with square base, Prism with triangular base

28. The value of $\left(\frac{a'}{a^m}\right)^{l+m} \times \left(\frac{a^m}{a^n}\right)^{m+n} \times \left(\frac{a^n}{a'}\right)^{n+l}$ is _____.

(A) 0 (B) 1
(C) 2 (D) 3

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Instruction: Q. 29 to 33 are two-key based questions having four options A, B, C and D out of which TWO are correct.

29. Which of the following statement/s is/are true about the area of a circle?

(A) The area of a circle is equal to four times the area of a quadrant of the same radius.
(B) The area of a circle cannot be divided into two equal parts.
(C) If the measure of a chord of a circle is given, we can determine its area.
(D) The area of a circle is π times the square of its radius.

30. The king, queen and jack of clubs are removed from a deck of 52 playing cards and after the well-shuffling, one card is selected from the remaining cards. The probability of getting heart is _____ and king is _____.

(A) $\frac{13}{49}$ (B) $\frac{4}{49}$
(C) $\frac{12}{49}$ (D) $\frac{3}{49}$

31. The ratio between a two-digit number and the sum of the digits of that number is $a : b$. If the digit in the unit place is n more than the digits in the tens place, then the numbers are

(A) $\frac{n(a-b)}{11b-2a}$ (B) $\frac{11bn-3a}{10b-2a}$
(C) $\frac{(10b-a)n}{11b-2a}$ (D) $\frac{9bn}{11b-2a}$

32. If 1 litre solution contains 600 mL milk and 400 mL water, then which of the following is/are true for the composition of the solution?

(A) 60% milk and 40% water (B) 70% milk and 30% water
(C) milk : water :: 3 : 2 (D) milk : water :: 2 : 3

33. Which of the following statement(s) is/are correct?

(A) 1 is the only rational number that has its own reciprocal.
(B) The sum of rational numbers $\frac{a}{b}$ and $\frac{c}{d}$ is $\frac{a+b}{c+d}$.
(C) The reciprocal of a negative number is always negative.
(D) $-\frac{5}{7} < -\frac{4}{7}$

Section C (Competency Enhancement)

34. If P and Q are two positive integers such that $2(8P + 189) + 27 = 3(27Q + 26) + 2$, what is the minimum possible value of P + Q?

(A) 0 (B) 10
(C) 12 (D) 18



35. **Assertion:** Two opposite angles of a parallelogram are $(3x - 2)^\circ$ and $(50 - x)^\circ$. The measure of one of the angles is 37° .

Reason: Opposite angles of a parallelogram are equal.

(A) Both A and R are true and R is the correct explanation of A.
 (B) Both A and R are true but R is not the correct explanation of A.
 (C) A is true but R is false.
 (D) A is false but R is true.

36. If a , b , c , and d are positive integers such that $ab + a + b = 104$, $bc + b + c = 146$, $cd + c + d = 524$, then the value of $a + b + c + d$ will be

(A) 54 (B) 64
 (C) 68 (D) 49

Directions (Qs 37 – 38): Meena wrote a cubic polynomial on a blackboard while Teena wrote a linear polynomial. The teacher called Sayema to divide the given cubic polynomial by the linear polynomial on the board. Study the passage and answer the following questions.

37. What will be the remainder if the cubic polynomial is $x^3 - 6x^2 + 11x - 5$ and linear polynomial is $(x - 2)$?

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

38. What will be the quotient if the cubic polynomial is $x^3 - 6x^2 + 11x - 6$ and linear polynomial is $(x - 1)$?

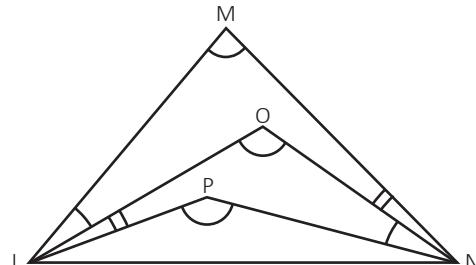
(A) $x^2 - 5x + 6$ (B) $x^2 - 4x + 5$
 (C) $x^2 - 5x + 4$ (D) $x^2 - 6x + 5$

39. While studying her family's history, Shikha discovers records of ancestors 12 generations back. She wonders how many ancestors she has had in the past 12 generations. She starts to make a diagram which becomes very complex after certain steps. Then she generalises an expression for the number of ancestors in a given generation n . Identify the correct expression.

(A) 2^n (B) 4^n
 (C) 8^n (D) 16^n

40. In the given figure, $\angle MLO = \angle ONP$ and $\angle MNO = \angle OLP$. If $\angle LON = 120^\circ$ and $\angle LPN = 150^\circ$, then what is the measure of $\angle LMN$?

(A) 80° (B) 90°
 (C) 100° (D) 105°



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$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$\Delta 3 = \Delta mc^2$$

$$T = 2\pi\sqrt{\frac{1}{g}}$$

$$V_n^k = \frac{n^k - (n-k)^k}{(n-k)^k}$$

$$N^{\frac{3}{8}} = 0.375 = 37.5\%$$

$$\sum^1 \frac{(-1)^n x^{2n}}{(2n)}$$

$$V_n^k = \frac{n^k - (n-k)^k}{(n-k)^k}$$

$$E = mc^2$$

$$T = 2\pi\sqrt{\frac{1}{g}}$$

$$\sum^1 \frac{(-1)^n x^{2n}}{(2n)}$$

$$f(x) = a(-x) + b = -(ax - b)$$

$$E = mc^2$$

$$P = \frac{F}{S}$$