

P-649

MATHEMATICS PAPER-X
(A-I-KT-26)



VERSION: A

& Stamp of Supdt:

Roll No. _____

C No.172 _____

Name: _____

Write Roll No. in the boxes
and shade the appropriate
circle.

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Time Allowed: 20 Minutes

SECTION-A

Marks:15

- In a quadratic equation the highest power of the variable is:
A. 1 B. 2 C. 3 D. 4
- The roots of the quadratic equation $x^2 - 3x + 2 = 0$ are: 1217234
A. $x = 3$ or $x = -2$ B. $x = -3$ or $x = 2$ C. $x = -3$ or $x = -2$ D. $x = 1$ or $x = 2$
- The discriminant of the quadratic equation $x^2 - 4x + 4 = 0$ is:
A. 0 B. 4 C. 8 D. 16
- The sum of the roots of the quadratic equation $2x^2 - 6x + 1 = 0$ is:
A. 2 B. 3 C. -4 D. 8
- Comparison of the same kind of quantities is called:
A. Ratio B. Direct Variation C. Inverse Variation D. Rate
- The third proportion of a^2b^2 and a^3b^3 is:
A. a^2b^2 B. ab C. a^3b^3 D. a^5b^5
- Partial fraction decomposition can be directly applied to a rational function $\frac{P(x)}{Q(x)}$ only if:
A. The degree of $P(x) >$ the degree of $Q(x)$ B. The degree of $P(x) =$ the degree of $Q(x)$ C. The degree of $P(x) <$ the degree of $Q(x)$ D. $Q(x)$ is a constant
- If $A = N$ and $B = Z$, then $A \cup B$ is equal to:
A. Set of Natural Number B. Set of Integers C. Set of Rational Numbers D. Sets of Irrational Numbers
- If two ordered pairs $(2x, x - y)$ and $(4, 1)$ are equal, then the values of x and y are.
A. 2 and 1 B. 1 and 2 C. 4 and 1 D. 1 and 4
- If $A = \{2, 3, 4\}$ and $B = \{d, e, f, g\}$, then the number of elements in $A \times B$ are:
A. 7 B. 10 C. 12 D. 15
- The frequency in a grouped frequency table can be determined by:
A. Tally marks B. Range C. Class Limits D. Class Boundaries
- The first step in constructing a histogram is:
A. Label the axes B. Draw the bars C. Determine the class intervals D. Determine the Frequency
- The measure of the angle $\theta = 47^\circ 25' 20''$ in decimal form is:
A. 47.4222° B. 45.5042° C. $45^\circ 30'$ D. 47.50
- The trigonometric ratio $\frac{\text{adjacent side of } \theta}{\text{hypotenuse}}$ is equal to:
A. $\cos \theta$ B. $\sin \theta$ C. $\tan \theta$ D. $\sec \theta$
- The property of congruent chords in a circle is: 1217234
A. They are always parallel B. They are equidistant from the center C. They intersect at the center D. They are perpendicular to the radius

1	2	3	4	5	6
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Shade the correct answers
for each question below.

1.	☐ A	☒ B	☐ C	☐ D
2.	☐ A	☐ B	☐ C	☒ D
3.	☒ A	☐ B	☐ C	☐ D
4.	☐ A	☒ B	☐ C	☒ D
5.	☒ A	☐ B	☐ C	☐ D
6.	☐ A	☐ B	☐ C	☒ D
7.	☐ A	☐ B	☒ C	☐ D
8.	☐ A	☒ B	☐ C	☐ D
9.	☒ A	☐ B	☐ C	☐ D
10.	☐ A	☐ B	☒ C	☐ D
11.	☒ A	☐ B	☐ C	☐ D
12.	☐ A	☐ B	☒ C	☐ D
13.	☒ A	☐ B	☐ C	☐ D
14.	☒ A	☐ B	☐ C	☐ D
15.	☐ A	☒ B	☐ C	☐ D

Hours 40 Minutes

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KT-X-26-I
Mathematics (10th)
Section "B"

P-650

Marks: 36

2 Attempt any NINE parts. All parts carry equal marks.

i. Solve $2^{2x} - 6 \cdot 2^x + 8 = 0$ using quadratic formula. 1+2+1

ii. Solve the equation $\sqrt{4x+3} = 2x+5$. 1+1+2

iii. Examine the nature of the roots of $6x^2 + x - 2 = 0$ and verify the result by solving it. 2+2

iv. Find the value of k so that the sum of the roots of the equation $3x^2 + kx - 2 = 0$ is equal to three times the product of its roots. 1+1+2

v. Solve the equation $\frac{\sqrt{4x+3}+\sqrt{x}}{\sqrt{4x+3}-\sqrt{x}} = \frac{5}{1}$. 1+2+1

vi. Resolve $\frac{2x+1}{(x+1)(x-3)}$ into partial fractions. 1+2+1

vii. If $f = \{1, 2, 3, 4\}$ & $Y = \{a, b, c, d\}$ then write: 2+2

a. one function from X to Y (ii). bijective function from Y to X .

viii. Find the variance for the data: 5, 10, 15, 20, 25 1+2+1

ix. Find the area of sector of a circle whose radius is 6 m, with central angle 90° . 1+2+1

x. Prove that $\cos x \cdot \cot x + \sin x = \operatorname{cosec} x$. 1+2+1

xi. If two circles with radii $2x$ cm and 4 cm respectively touches each other externally, find the value of x if the distance between their centers is 12 cm. 1+2+1

xii. In a circle, arcs PQ and RS subtend equal angles at the center. If the length of chord $PQ = 3x - 2$ cm and the length of chord $RS = 5x - 12$ cm, find the value of x . 1+2+1

Section "C"

Marks: 24

Note: Attempt any THREE questions. All questions carry equal marks.

Q.3 Using Apollonius' theorem, find the length of the medians of a triangle, having length of their sides are $AB = 5$ cm, $BC = 3$ cm, and $AC = 4$ cm. 1+2+2+2

Q.4 Prove that Perpendicular from the center of a circle on a chord bisects it. 1+1+4+2

Q.5 Prove that any two angles in the same segment of a circle are equal. 1+1+4+2

Q.6 Inscribe a circle in a triangle ABC whose sides are 6 cm, 10 cm and 8 cm. 3+2+3+2