

MATHEMATICS Paper-X (26)

۱۔ ہر سوال کے سامنے چار دائرے دیئے گئے ہیں، صرف صحیح جواب والا دائرہ بھر دیں۔

۲۔ دائروں کو شیڈ (بھرنے) کے لیے نیلے یا کالے رنگ کا مارکر استعمال کریں۔

۳۔ جواب میں ایک سے زائد دائرے بھرنے سے جواب غلط تصور ہوگا۔

Time: 20 Minutes

SECTION-A

Marks: 15

Q1: Choose the correct option i.e, A,B,C or D?

- The equation $(2x-3)^2 = 0$ is.
☐ Linear equation ☒ Quadratic equation
☐ Cubic equation ☐ Quartic equation
- $x=1$ or $x=4$ are the roots of the quadratic equation.
☐ $x^2 - 6x + 5 = 0$ ☒ $x^2 + 3x + 4 = 0$
☐ $x^2 - 5x + 4 = 0$ ☐ $2x^2 - 6x + 4 = 0$
- The discriminant of the quadratic equation $3x^2 - 2x + \frac{1}{3} = 0$ is.
☐ 0 ☐ 4 ☐ 6 ☒ 8
- The product of the roots the quadratic equation $2x^2 + 3x + 6 = 0$ is.
☒ 2 ☐ 3 ☐ -4 ☐ 8
- If y varies directly as x and $y=12$ when $x=3$, so the value of k is.
☐ 2 ☐ 3 ☒ 4 ☐ 36
- The mean proportion of 4 and 16 is.
☒ 4 ☐ 6 ☐ 8 ☐ 16
- A rational fraction $\frac{2x^3+5}{x+1}$ is.
☐ Proper fraction ☒ Improper fraction
☐ Mixed fraction ☐ Undefined
- If $A=Q$ and $B=Z$ then $A \cup B$ is equal to.
☐ Set of natural numbers ☒ Set of integers
☐ Set of rational numbers ☐ Sets of irrational numbers
- If two ordered pairs $(x, x+y)$ and $(2, 4)$ are equal, then the value of y is.
☐ 2 ☐ -2 ☒ 4 ☐ -4

10. If $A=\{2,3\}$ and $B=\{d,e,f\}$ then the number of elements in $A \times B$ are.
☐ 6 ☒ 9 ☐ 12 ☐ 15
11. The smallest and largest possible data values that can belong to a specific class are known as.
☐ Tally marks ☐ Width
☐ Class limits ☒ Class boundaries
12. In a histogram, the area of each rectangle is proportional to the:
☐ Frequencies ☐ Class width
☒ Class intervals ☐ Class boundaries
13. The measure of the radians in one complete rotation is.
☒ 2π ☐ 3π ☐ $2\pi/3$ ☐ $3\pi/2$
14. If $90^\circ < \theta < 180^\circ$, then θ lies in:
☐ 1st quadrant ☒ 2nd quadrant
☐ 3rd quadrant ☐ 4th quadrant
15. The property of congruent chords in a circle is.
☐ They are always parallel
☒ They are equidistant from the center
☐ They intersect at the center
☐ They are perpendicular to the radius

MRD -10th

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Note: Time allowed for Section-B & Section-C is 2:40 hours.

SECTION-B

Marks: 36

Q2: Attempt any NINE of the following parts. All parts carry equal marks.

- Solve the equation $3^{2x} - 10 \cdot 3^x + 9 = 0$ for value of x .
- Solve the equation $\sqrt{x+7} + \sqrt{x-2} = 5$
- Find the quadratic equation whose roots are 0 and 6.
- Find the value of k so that the sum of the roots of the quadratic equation $2x^2 - kx + 4 = 0$ is equal to the product of its roots.
- Solve the equation $\frac{\sqrt{4x+1} + \sqrt{x}}{\sqrt{4x+1} - \sqrt{x}} = \frac{5}{1}$
- Resolve $\frac{6x+4}{(2x+1)(x-4)}$ into partial fractions.

7. If $x = \{2, 3, 4, 5, 6\}$ and $Y = \{a, b, c, d, e\}$ then write:
(a) A one-one functions from X to Y.
(b) Bijjective function from Y to X.
8. Find the variance for the data 3, 9, 15, 21, 27, 33
9. Find the area of sector of a circle whose radius is 12m, with central angle 100° .
10. Prove that $\sin x \tan x + \cos x = \sec x$.
11. If two circles with radii $2x$ cm and $5x$ cm respectively touches each other externally, find the value of x if the distance between their centers is 20cm.
12. In a circle, arcs PQ and RS subtend equal angles at the center. If the length of chord $PQ = 2x - 2$ cm and the length of chord $RS = x + 3$ cm, find the value of x .

SECTION-C

Marks: 24

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

- Q3: Using Apollonius' theorem, find the length of the medians of the triangle, having length of their sides are $AB = 5$ cm, $BC = 12$ cm, and $AC = 13$ cm.
- Q4: Prove that perpendicular from the center of a circle on a chord bisect it.
- Q5: Prove that any two angles in the same segment of a circle are equal.
- Q6: Construct a scalene triangle ABC with sides 5cm, 7cm and 9cm and inscribe a circle in it.