

Note: There are three sections in this paper, i.e. A, B & C.

VERSION: A

Instructions:

- Please attempt Section-A on the MCQs Answer Sheet only.
- Only black ball point or marker may be used for shading the relevant circle.
- Please make sure that there is no cutting, over writing, erasing, or multiple circles shading.

Time Allowed: 20 Minutes

"Section - A"

Marks: 15

Q.1. CHOOSE the correct option i.e. A, B, C or D.

- To apply the quadratic formula to $3x^2 + 2x = 5$, we have
 (A) $A=3, b=2, c=5$ (B) $A=3, b=-2, c=5$ (C) $A=3, b=2, c=-5$ (D) $A=3, b=-2, c=-5$
- Which of the given equations can be reduced to a quadratic equation?
 (A) $7x^5 + 9x^3 - 2 = 0$ (B) $7x^5 + 9x^2 - 2 = 0$ (C) $7x^4 + 9x^3 - 2 = 0$ (D) $7x^4 + 9x^2 - 2 = 0$
- Discriminant of the quadratic equation $5x^2 - 2x - 1 = 0$ is:
 (A) -24 (B) -16 (C) 16 (D) 24
- The quadratic equation whose roots are 8 and -4 is:
 (A) $X^2 + 4x + 32 = 0$ (B) $X^2 - 4x + 32 = 0$ (C) $X^2 + 4x - 32 = 0$ (D) $X^2 - 4x - 32 = 0$
- If $\frac{8}{5} = \frac{16}{10}$, then by alternendo property:
 (A) $\frac{8}{16} = \frac{5}{10}$ (B) $\frac{5}{8} = \frac{10}{16}$ (C) $\frac{13}{5} = \frac{26}{10}$ (D) $\frac{3}{5} = \frac{6}{10}$
- Which of the given relations represents a joint variation between the quantities?
 (A) $q + 3p^2$ (B) $p^2q = 3$ (C) $q = 3p^2r$ (D) $p^2qr = 3$
- Which of the given is an improper fraction?
 (A) $\frac{x^2 + 2}{x^2 + 4}$ (B) $\frac{x^2 + 4}{x^2 + 2}$ (C) $\frac{x^2 + 4}{x^2 + 4}$ (D) $\frac{x^4 + 2}{x^3 + 4}$
- If A has 3 elements and B has 3 elements. Then number of elements in $A \times B$ is:
 (A) 6 (B) 9 (C) 2^6 (D) 2^9
- If $f = \{ (c,d), (d,e), (e,f) \}$ is a function from $A = \{ c,d,e \}$ to $B = \{ d,e,f,g \}$, then the domain of f is:
 (A) $\{c,d,e\}$ (B) $\{d,e,f\}$ (C) $\{c,d,e,f\}$ (D) $\{d,e,f,g\}$
- If $A = \{1,2,3\}$ and $B = \{4,5,6\}$, then a function from B to A is:
 (A) $R = \{ (1,4), (2,5), (1,6) \}$ (B) $R = \{ (1,4), (2,5), (3,4) \}$ (C) $R = \{ (4,1), (5,2), (4,3) \}$ (D) $R = \{ (4,1), (5,2), (6,1) \}$
- The average of 58 and 86 with weights of 1 and 3 respectively is:
 (A) 65 (B) 72 (C) 75 (D) 79
- The range of the data 25, 54, 37, 50, 47 is:
 (A) 54 (B) 29 (C) 25 (D) 22
- The quadrantal angle in the given is:
 (A) 60° (B) 120° (C) 240° (D) 360°
- The quadrant in which both $\sin\theta$ and $\cos\theta$ are positive is:
 (A) 1st quadrant (B) 2nd quadrant (C) 3rd quadrant (D) 4th quadrant
- The length of a chord which is 16 cm from the center of a circle of radius 20 cm is:
 (A) 4 cm (B) 12 cm (C) 24 cm (D) 36 cm

Total Time: 3:00 Hours**Mathematics (10th)**Total Marks: 75Time Allowed: 2.40 Hours**"Section – B"**Marks: 36**Q-2. Attempt any nine (9) parts:-**

- (i) Solve the given equation by factorization: $12x^2 - 11x + 2 = 0$
- (ii) Solve the given equation: $2.2^{2x} - 3.2^x + 1 = 0$
- (iii) Find the sum and product of roots of the given equation: $4x^2 + 6x - 3 = 0$
- (iv) Use synthetic division to find the quotient Q (x) and the remainder R when the polynomial $5x^3 - 3x + 2$ is divided by $x - 2$.
- (v) Find the mean proportional of 6 and 24.
- (vi) Resolve the given fraction into partial fractions: $\frac{x+2}{x^2-1}$
- (vii) If $A = \{x, y, z\}$ and $B = \{1, 2, 3, 4\}$, then write two injective functions from A to B.
- (viii) Find the harmonic mean of the given values: 6, 9, 11, 14, 16
- (ix) An arc of length 10 cm of a circle subtends an angle of 90° at its center. Find the radius of the circle.
- (x) The angle of depression of a boat from the top of a light house is 60° . If the horizontal distance between them is 80 m, find the height of the light house.
- (xi) Find the length of a tangent drawn to a circle of radius 12 cm from a point at a distance of 13 cm from the center of the circle.
- (xii) Prove that if two chords of a circle are equal, then their corresponding minor arcs are congruent.

"Section – C"Marks: 24**Note: Attempt any three (3) questions:-**

- Q-3. Using Apollonius theorem, find the length of the medians of a triangle having sides 8 cm, 10 cm and 14 cm.
- Q-4. Prove that two chords of a circle which are equidistant from the center are congruent.
- Q-5. Prove that the angle in a semi-circle is a right angle.
- Q-6. Circumscribe an equilateral triangle about a circle of radius 5 cm.