

Federal Board SSC-I (2016)**MATHEMATICS SSC-I****SECTION – A (Marks 15)**

Time allowed: 20 Minutes

Marks: 15

NOTE:- Section-A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q1. Circle the correct option i.e. A/B/C/D. Each part carries one mark.

- (i) If $A \begin{vmatrix} 2 & 6 \\ 3 & x \end{vmatrix} = 0$, then $x = ?$
 (A) 6 (B) -6
 (C) 9 (D) -9
- (ii) $(4)^{2/3}$ with radical sign is:
 (A) $\sqrt[3]{4^2}$ (B) $\sqrt[3]{4^2}$
 (C) $\sqrt[3]{4^3}$ (D) $\sqrt[3]{4}$
- (iii) If $\log_a y = x$ then :
 (A) $a^x = y$ (B) $a^y = x$
 (C) $x^a = y$ (D) $y^a = x$
- (iv) The degree of the polynomial $x^2y^2 + 3xy + y^3$ is.....
 (A) 2 (B) 3
 (C) 1 (D) 4
- (v) Find m so that $x^2 + 4x + m$ is a complete square...
 (A) 8 (B) -8
 (C) 4 (D) -4
- (vi) H.C.F. of $x^2 - 5x + 6$ and $x^2 - x - 6$ is.....
 (A) $x - 3$ (B) $x + 2$
 (C) $x - 2$ (D) $x + 3$
- (vii) L.C.M. of $a^2 + b^2$ and $a^4 - b^4$ is
 (A) $a^2 + b^2$ (B) $a^2 - b^2$
 (C) $a^4 - b^4$ (D) $a - b$
- (viii) If x is no larger than 10, then.....
 (A) $x \geq 10$ (B) $x \leq 10$
 (C) $x > 10$ (D) $x < 10$
- (ix) Point $(-3, -3)$ lies in the quadrant :
 (A) I (B) II
 (C) III (D) IV
- (x) Mid-point of the points $(2, -2)$ and $(-2, 2)$ is
 (A) $(2, 2)$ (B) $(-2, -2)$
 (C) $(0, 0)$ (D) $(1, 1)$
- (xi) The altitudes of an isosceles triangle are congruent.
 (A) two (B) three
 (C) four (D) none of these
- (xii) Distance between the points $(-1, 3)$ and $(3, -2)$ is:
 (A) $\sqrt{41}$ (B) $-\sqrt{41}$
 (C) 41 (D) -41
- (xiii) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ is called matrix
 (A) Unit (B) Scalar
 (C) Zero (D) Singular
- (xiv) If $i^2 = -1$ then $i = ?$
 (A) 1 (B) -1
 (C) ± 1 (D) $\sqrt{-1}$
- (xv) If two medians of a triangle are congruent then triangle will be:
 (A) isosceles (B) right angled
 (C) equilateral (D) acute angled

MATHEMATICS SSC-I

Time allowed: 2:40 Hours

Total Marks Sections B and C: 60

NOTE:- Attempt any twelve parts from Section 'B' and any three questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly. Log Table and Graph Paper will be provided to you on demand.

SECTION – B (Marks 36)

Q. 2 Attempt any TWELVE parts. All parts carry equal marks. (12 × 3 = 36)

- (i) Let $A = \begin{bmatrix} 3 & 2 \\ 1 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 4 \\ 3 & -5 \end{bmatrix}$
 then verify that $(AB)^t = B^t A^t$
- (ii) Solve by using Cramer's rule $\begin{cases} 3x - 2y = -6 \\ 5x - 2y = -10 \end{cases}$
- (iii) Simplify $\sqrt{\frac{(216)^{\frac{2}{3}} \times (25)^{\frac{1}{2}}}{(0.04)^{\frac{-1}{2}}}}$
- (iv) If $Z = 2 + 3i$ and $W = 5 - 4i$ show that $\overline{Z}W = Z\overline{W}$
- (v) Find the value of 'x' if $\log_{64} x = \frac{-2}{3}$
- (vi) Use log table to find the value of $\frac{(438)^3 \sqrt{0.056}}{(388)^4}$
- (vii) If $5x - 6y = 13$ and $xy = 6$ then find the value of $125x^3 - 216y^3$
- (viii) Simplify $\frac{\sqrt{a^2+2} + \sqrt{a^2-2}}{\sqrt{a^2+2} - \sqrt{a^2-2}}$
- (ix) Factorize $25x^2 - 10x + 1 - 36z^2$
- (x) For what value of m is the polynomial $p(x) = 4x^3 - 7x^2 + 6x - 3m$ exactly divisible by $x + 2$
- (xi) Express the decimal $0.\overline{23}$ in the form of $\frac{p}{q}$, where $p, q \in \mathbb{Z}$ and $q \neq 0$
- (xii) Find the L.C.M of $4(x^4 - 1)$, $6(x^3 - x^2 - x + 1)$ by factorization.
- (xiii) Simplify $\left[\frac{x^2+y^2}{x^2-y^2} - \frac{x^2-y^2}{x^2+y^2} \right] \div \left[\frac{x+y}{x-y} - \frac{x-y}{x+y} \right]$
- (xiv) Using division method find the square root of $9x^4 - 6x^3 + 7x^2 - 2x + 1$
- (xv) Solve each equation and check for extraneous solution, if any $\sqrt[3]{2-t} = \sqrt[3]{2t-28}$
- (xvi) Solve for x $|3 + 2x| = |6x - 7|$
- (xvii) Solve $3(2x + 1) - 2(2x + 5) < 5(3x - 2)$
- (xviii) Solve the equations graphically $x = 3y$ and $2x - 3y = -6$

SECTION - C (Marks 24)

Note: Attempt any THREE questions. All questions carry equal marks. (3 × 8 = 24)

- Q.3** Show that the points $A(-6, -5)$, $B(5, -5)$, $C(5, -8)$ and $D(-6, -8)$ are vertices of a rectangle. Find the lengths of its diagonals. Are they equal?
- Q.4** If two angles of triangle are unequal in measure, the side opposite to the greater angle is longer than the side opposite to the smaller angle.
- Q.5** If two angles of a triangle are congruent, then the sides opposite to them are also congruent.
- Q.6** The bisectors of the angles of the triangle are concurrent.
- Q.7** Construct ΔPQR . Draw their altitudes and show that they are concurrent.

$$m\overline{PQ} = 4.5 \text{ cm}, m\overline{QR} = 3.9 \text{ cm}, m\angle R = 45^\circ$$