**RUBRIC: SSC 1st ANNUAL EXAMINATION 2022**

**SUBJECT: MATHEMATICS SSC- I (HA)**

| **Q.# /Part #** | **Criteria**  | **Level 1 (Marks)** | **Level 2(Marks)** | **Level 3 (Marks)** | **Level 4 (Marks)** | **Level 5 (Marks)** |
| --- | --- | --- | --- | --- | --- | --- |
| $$2(i)$$ | Finding the values of $x$ and $y$  | Correctly simplifying LHS by scalar multiplication and addition of matrices(2) | Either correct scalar multiplication or addition of matrices(1) | Wrong answer(0) |  |  |
| Finding the correct values of $x$ and $y$(2) | Finding the correct value of either $x$ or$ y$(1) | Wrong answer(0) |  |  |
| $$2\left(ii\right)$$ | Simplifying and writing the answer in the form $a+bi$ | Correctly rationalizing(2) | Partially correct(1) | Wrong answer(0) |  |  |
| Correctly simplifying and writing in the form $a+bi$(2) | Partially correct(1) | Wrong answer(0) |  |  |
| $$2(iii)$$ | Simplifying using laws of exponents  | Correctly applying the laws of Exponents and simplifying the expression(2) | Either correctly applying the laws of Exponents or simplifying the expression(1) | Wrong answer(0) |  |  |
| Correctly applying the laws of Exponents and simplifying the expression(2) | Either correctly applying the laws of Exponents or simplifying the expression (1) | Wrong answer(0) |  |  |
| $$2(iv)$$ | Finding the value of $x$ | Correct conversion of Logarithmic form to its equivalent exponential form(1) | Wrong answer(0) |  |  |  |
| Correctly simplifying the expression and finding the value of $x^{3}$ (2) | Partially correct(1) | Wrong answer(0) |  |  |
| Finding the correct value of $x$ (1) | Wrong answer(0) |  |  |  |
| $$2(v)$$ | Finding the values of $x+\frac{1}{x}$ and $x-\frac{1}{x}$  | Finding the correct value of $\frac{1}{x}$ by Rationalizing (2) | Partially correct(1) | Wrong answer(0) |  |  |
| Correctly finding the values of $x+ \frac{1}{x}$ and $x - \frac{1}{x}$ (2) | Partially correct i.e. either correct finding of$x+ \frac{1}{x}$ or $x - \frac{1}{x}$ (1) | Wrong answer(0) |  |  |
| $$2(vi)$$ | Factorizing the expression | Arranging the terms correctly(2) | Partially correct(1) | Wrong answer(0) |  |  |
| Correct factorization(2) | Partially correct(1) | Wrong answer(0) |  |  |
| $$2(vii)$$ | Finding the Square root | Correctly finding the three quotient terms(3) | Correctly finding the two quotient terms(2) | Correctly finding the one quotient term(1) | Wrong answer(0) |  |
| Correctly finding the square root value(1) | Wrong answer(0) |  |  |  |
| $$2(viii)$$ | Solving the inequality  | Correctly applying LCM on both sides(1) | Wrong(0) |  |  |  |
| Finding the correct values of $x$(2) | Partially correct(1) | Wrong answer(0) |  |  |
| Finding the correct solution set(1) | Wrong(0) |  |  |  |
| $2(ix$) | Solving linear equation involving absolute value | Correctly simplifying $\frac{5+9x}{3}=\frac{4}{3}$ and finding the correct value of $x$(2) | Partially correct(1) | Wrong answer(0) |  |  |
| Correctly simplifying $\frac{5+9x}{3}=-\frac{4}{3}$ and finding the correct value of $x$(2) | Partially correct(1) | Wrong answer(0) | Partially correct(1) |  |
| $2(x$) | Drawing graph by taking at least four ordered pairs | Correctly drawn graph from the given equation:1. Labeling the coordinate axes
2. Correctly Plotting the ordered pairs on the graph
3. Correctly drawing the straight line by joining the points

(4) | Any two correct steps(3) | Any one correct step(2) | Partially correct(1) | Wrong answer(0) |
| $$2(xi)$$ | Using distance formula to show that given points form a right triangle | Correctly finding the values of $\left|AB\right|^{2}$, $\left|BC\right|^{2}$ and $\left|AC\right|^{2}$(3) | Correctly finding the values of any two (2) | Correctly finding the value of any one(1) | Wrong answer(0) |  |
| Applying Pythagoras Theorem to justify that ABC is a right triangle(1) | Wrong answer(0) |  |  |  |
| $$2(xii)$$ | Proving that any point inside an angle, equidistant from its arms is on the bisector of it. | Correct figure, given, to prove and construction(2)  | Any three correctly shown aspects(1.5) | Any two correctly shown aspects(1) | Any one correctly shown aspect(0.5) | Wrong answer(0) |
| Proof with correct statements and correct reasons(2) | Proof with correct statements and partially correct reasons(1.5) | Proof with correct statements but without reasons **OR**Proof with partially correct statements and partially correct reasons(1) | Wrong answer(0) |  |
| 2(xiii) | Finding the value of $x$ from the given figure | Correct substitution of values from the figure in the given equation(1)  | Wrong answer(0) |  |  |  |
| Correct Simplification(2) | Partially correct(1) | Wrong answer(0) |  |  |
| Finding the correct value of $x$(1) | Wrong answer(0) |  |  |  |
| $$2(xiv)$$ | Finding the value of$ x$ from the given figure | Correctly finding the values of $\overbar{AC}$ and $\overbar{BC}$(2) | Correctly finding the values of either $\overbar{AC}$ or $\overbar{BC}$ (1) | Wrong answer(0) |  |  |
| Correctly applying the Pythagoras theorem and finding the correct value of $x $ (2) | Either correctly applying the Pythagoras theorem or finding the correct value of $x $ (1) | Wrong answer(0) |  |  |
| $$3$$ | Solving the system of linear equations by using matrix inversion method | Correctly writing the system of equations in matrix form and expressing it as $X=A^{-1}B$(2) | Either correctly writing the system of equations in matrix form or expressing it as $X=A^{-1}B$(1) | Wrong answer(0) |  |  |
| Correctly finding the values of det A and adj of A (2) | Either correctly finding the values of det A or adj of A  (1) | Wrong answer(0) |  |  |
| Correctly finding $A^{-1}$(2) | Partially Correct (1) | Wrong answer(0) |  |  |
| Finding the correct values of $x$ and $y$(2) | Finding the correct values of either $x$ or $y$ (1) | Wrong answer(0) |  |  |
| $4$  | Verifying the condition of parallelogram using its vertices  | Correctly finding the values of $\left|AB\right|$, $\left|BC\right|$, $\left|DC\right|$ and $\left|AD\right|$ (4) | Correctly finding any three values (3) | Correctly finding any two values (2) | Correctly finding any one value (1) | Wrong answer(0) |
| Correctly showing that opposite sides are equal(1) | Partially correct(0.5) | Wrong answer(0) |  |  |
| Correctly calculating the length of diagonal(1) | Partially correct (0.5) | Wrong answer(0) |  |  |
| Correctly applying and verifying the Pythagoras theorem(2) | Either correctly applying or verifying the Pythagoras theorem(1) | Wrong answer(0) |  |  |
| 5 | Solving the system of linear equations by using graphical method | Correct construction of two tables of values(3) | Correct construction of one table of values(1.5) | Partially correct(1) | Wrong construction(0) |  |
| Correct plotting of points and correct drawing of 1st straight line(2)  | Either correct plotting of points or correct drawing of 1st straight line (1) | Wrong drawing (0) |  |  |
| Correct plotting the points and correct drawing 2nd straight line(2)  | Either correct plotting of points or correct drawing of 2nd straight line (1) | Wrong drawing (0) |  |  |
| Finding the correct solution set(1) | Wrong answer(0) |  |  |  |
| 6 | Proving that if two opposite sides of a quadrilateral are congruent and parallel, it is a parallelogram | Correct figure, given, to prove, construction(4)  | Any three correctly shown aspects(3) | Any two correctly shown aspects(2) | Any one correctly shown aspect (1) | Wrong answer (0) |
| Correct proof with complete statements and reasons(4) | Proof with correct statements and partially correct reasons(3) | Proof with partially correct statements with partially correct reasons **OR**Proof with correct statements without reasons (2) | Partially correct(1) | Wrong answer(0) |
| 7 | Construction of triangle ABC with two perpendicular bisectors  | Correct construction of triangle ABC by drawing $m\overbar{AB}$, $m\overbar{BC}$ and $m∠A$(3) | Any two correctly shown aspects (2) | Any one correctly shown aspect(1) | Wrong construction(0) |  |
| Correct construction of three altitudes of $∆ABC$ (3)  | Correct construction of any two altitudes(2) | Correct construction of any one altitude(1) | Wrong construction(0) |  |
| Correct steps of construction(2) | Partially correct steps of construction(1) | Wrong answer(0) |  |  |