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

 **SUBJECT: MATHEMATICS - II (L) Final correction by Anwaar sb, Ali Raza sb, Mozam sb, date: 04-06-22 at 12:50**

| **Q.# /Part #** | **Criteria** | **Level 1 (Marks)** | **Level 2 (Marks)** | **Level 3 (Marks)** | **Level 4 (Marks)** | **Level 5 (Marks)** |
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| $$2(i)$$ | Solving the equation by factorization  | Correctly taking LCM and writing the equation in standard form (2) | Either correctly taking LCM OR writing the equation in standard form (1) | Partially correct (0.5) | Wrong answer(0) |  |
| Correctly factorizing and producing correct solution (2) | Either correctly factorizing OR producing correct solution (1) | Partially correct (0.5) | Wrong answer (0) |  |
| $$2(ii)$$ | Solving the exponential equation | Correctly converting the equation in new variable and writing the equation in standard form (2) | Either correctly converting the equation in new variable OR writing the equation in standard form (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly solving quadratic equation in new variable and finding the solution set in x (2) | Either correctly solving quadratic equation in new variable OR finding the solution set in x (1) | Partially correct (0.5) | Wrong answer (0) |  |
| $$2(iii)$$ | Show that the equation has equal roots if c2 $= a^{2}$ (1+m2) | Correctly writing the equation in standard form and finding its discriminant (2) | Either correctly writing the equation in standard form OR finding its discriminant (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly setting the discriminant = 0 and proving the given condition (2) | Either correctly setting the discriminant = 0 OR proving the given condition (1) | Partially correct (0.5) | Wrong answer (0) |  |
| $$2\left(iv\right)$$ | Finding the unknowns by inverse variation | Correctly expressing the inverse variation and writing the equation connecting w and z (2) | Either correctly expressing the inverse variation OR writing the equation connecting w and z (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly finding the values of constant and of w(2) | Either correctly finding the value of constant OR value of w (1) | Partially correct (0.5) | Wrong answer (0) |  |
| $$2\left(v\right)$$ | Proving the equation by k-method | Correctly finding the values of a, b and c in terms of k and correctly substituting the values in the given equation (2) | Either correctly finding the values of a, b and c in terms of k OR correctly substituting the values in the given equation (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly simplifying the equation and proving it(2) | Either correctly simplifying the equation OR proving it(1) | Partially correct (0.5) | Wrong answer (0) |  |
| $$2(vi)$$ | Resolving the expression into partial fractions | Correctly factorizing the denominator and expressing as an identity (rule 1)(2) | Either correct factorizing the denominator OR expressing as an identity (rule 1)(1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly finding the values of two unknown constants (2) | Either correctly finding the value any one unknown constant (1) | Partially correct (0.5) | Wrong answer (0) |  |
| $$2(vii)$$ | Verifying the De-Morgan’s Law | Correctly finding A’ and B’ (2) | Correctly finding either A’ or B’ (1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly finding the values of LHS and RHS (2) | Either correctly finding the value of LHS OR the value of RHS (1) | Partially correct (0.5) | Wrong answer (0) |  |

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| **Q.# /Part #** | **Criteria** | **Level 1 (Marks)** | **Level 2 (Marks)** | **Level 3 (Marks)** | **Level 4 (Marks)** | **Level 5 (Marks)** |  |
| $$2(viii)$$ | Writing the given sets in tabular form and developing the relation  | Correctly writing the sets X and Y in tabular form (2) | Either correctly writing the set X OR Y in tabular form (1) | Partially correct (0.5) | Wrong answer (0) |  |  |
| Correctly finding X x Y and writing a relation R (2) | Either correctly finding X x Y OR writing a relation R (1) | Partially correct (0.5) | Wrong answer (0) |  |  |
| $2(ix$) | Finding Geometric Mean | Correctly finding ∑*f* , logx, ∑*f* logx and GM (4) | Correctly finding any three values (3) | Correctly finding any two values (2) | Correctly finding any one value (1) | Wrong answer (0) |  |
| $2(x$) | Verifying the trigonometric identity | Correctly expressing tan$θ$ and cot$θ $in the ratio of sin$θ $and cos$θ $(2) | Either correctly expressing tan$θ$ OR cot$θ $in the ratio of sin$θ $and cos$θ $(1) | Wrong answer (0) |  |  |  |
| Correctly applying LCM and simplifying to prove the identity (2) | Either correctly applying LCM OR simplifying to prove the identity (1) | Partially correct (0.5) | Wrong answer (0) |  |  |
| $$2\left(xi\right)$$ | Finding m$\overbar{BC}$ by using the given theorem | Correctly finding the value of AD (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correctly finding the value of BC (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| $$2(xii)$$ | Proving that two tangents drawn to a circle from point outside it are equal in length | Correct figure, given, to prove, construction (2) | Any three correct shown aspects (1.5) | Any two correctly shown aspect (1) | Any one correctly shown aspect (0.5) | Wrong answer (0) |  |
| Correct statements and correct reasons (2) | Correct statements with partially correct reasons (1.5) | Partially correct statements with partially correct reasons (1) | Partially correct (0.5) | Wrong answer (0) |  |
| 2(xiii) | Finding the values of m$\overbar{BM}$ and m$∠$BOM from the given figure | Correctly finding the value of m$\overbar{BM}$ using Pythagoras theorem (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correctly finding the value of m$∠$BOM (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| $$2(xiv)$$ | Construction of circle passing through two points | Correct construction of circle (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correct steps of construction (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| $$3$$ | Finding the unknown number by using the given two conditions  | Stating a two digit number and developing two correct equations from the given conditions (3) | Stating a two digit number and developing anyone correct equation (2) | Partially correct (1) | Wrong answer (0) |  |  |
| Correctly solving the equations and correctly finding the digits (4) | Solving the equations and correctly finding the value of anyone digit (3) | Partially correct solution in finding the value of anyone digit (1.5) | Wrong answer (0) |  |  |
| Correctly finding the required number (1) | Wrong answer (0) |  |  |  |  |
| $4$  | Resolving the expression into partial fractions | Correctly writing the expression as an identity (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correctly finding the values of unknown constants (5) | Correctly finding values of any four unknown constants (4) | Correctly finding values of any three unknown constants (3) | Correctly finding values of any two unknown constants (2) | Correctly finding value of any one unknown constant (1) | Wrong answer (0) |
| Correct substitution of unknown constants in the identity (1) | Wrong answer (0) |  |  |  |  |
| 5 | Finding the distance between two boats  | Construction of Figure (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correctly finding the distance between second boat and light house (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correctly finding the distance between first boat and light house (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| Correctly finding the distance between two boats (2) | Partially correct (1) | Wrong answer (0) |  |  |  |
| 6 | Proving that if two chords of a circle are congruent, then they will be equidistant from the centre | Correct figure, given, to prove, construction (4) | Any three correctly shown aspects (3) | Any two correctly shown aspects (2) | Any one correct shown aspect (1) | Wrong answer (0) |  |
| Proof with correct statements and reasons (4) | Correct statements with partially correct reasons (3) | Partially correct statements with partially correct reasons (2) | Partially correct (1) | Wrong answer (0) |  |
| 7 | Proving that measure of central angle of a minor arc of a circle is double that of the angle subtended by the corresponding major arc | Correct figure, given, to prove, construction (4) | Any three correctly shown aspects (3) | Any two correctly shown aspects (2) | Any one correct shown aspect (1) | Wrong answer (0) |  |
| Proof with correct statements and reasons (4) | Prove with correct statements without reasons (2) | Partially correct (1) | Wrong answer (0) |  |  |