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

 **SUBJECT: MATHEMATICS - II (HA) Final correction by Anwaar sb, Ali Raza sb, Moazam sb dated: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 quadratic equation by completing the square  | Correctly completing the square on LHS (2) | Partially correct(1) | Wrong answer(0) |  |  |
| Finding correct values of $x$(2) | Partially correct(1) | Wrong answer(0) |  |  |
| $$2(ii)$$ | Solving the square root equation | Correctly converting the equation in quadratic form(2) | Partially correct(1) | Wrong answer(0) |  |  |
| Finding the correct roots of the equation and writing the correct solution(2) | Finding the correct roots of the equation **OR** writing the correct solution (1) | Partially correct(0.5) | Wrong answer(0) |  |
| $$2(iii)$$ | Finding the unknown value involved in a quadratic equation | Correctly stating the roots and correctly finding their sum & product(2) | Either correctly stating the roots **OR**correctly finding the sum & product of roots(1) |  Either correctly finding sum of roots **OR** product of roots(0.5) | Wrong answer(0) |  |
| Correctly finding the value of q(2) | Partially correct(1) | Wrong answer(0) |  |  |
| $$2(iv)$$ | Finding the unknowns by inverse variation | Correctly expressing the inverse variation, writing the equation connecting $l \&$ $n$ and finding the value of the constant of proportionality(2) | Either correctly expressing the inverse variation and writing the equation connecting $l $and $n$ **OR**finding the value of the constant of proportionality (1) | Either correctly expressing the inverse variation **OR** writing the equation connecting $l $and $n$(0.5) | Wrong answer(0) |  |
| Correctly finding the value of $l$ when $n$ is given and correctly finding the value of $n$ when$ l$ is given(2) | Correctly finding the value of $l$ when $n$ is given **OR** correctly finding the value of $n$ when$ l$ is given (1) | Partially correct(0.5) | Wrong answer (0) |  |
| $$2(v)$$ | Wrong statement | Awarded full credit i.e. (04) marks if attempted. |
| $$2(vi)$$ | 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 the values of $A∩B$ and $\left(A∩B\right)^{'}$  (2) | Either correctly finding the value of $A∩B$ **OR** $$\left(A∩B\right)^{'}$$(1) | Partially correct (0.5) | Wrong answer (0) |  |
| Correctly finding the values of $A^{'}$, $B^{'}$ and$$A^{'}∪B^{'}$$(2) | Either correctly finding the values of $A^{'}$, $B^{'}$ **OR** the value of $A^{'}∪B^{'}$(1) | Either correctly finding the value of $A^{'}$ **OR**  $B^{'}$ (0.5) | Wrong answer (0) |  |
| $$2(viii)$$ | 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 $X × Y$ and writing the relation R (2) | Either correctly finding$X × Y$ **OR** writing the relation R (1) | Partially correct (0.5) | Wrong answer (0) |  |
| $2(ix$) | Finding the H.M from the given data | Correctly finding $\sum\_{}^{}f$ , $\left(\frac{f}{x}\right)$ $\sum\_{}^{}\left(\frac{f}{x}\right)$ , and HM(4) | Correctly finding any three values(3) | Correctly finding any two values(2) | Correctly finding any one value(1) | Wrong answer(0) |
| $2(x$) | Proving the trigonometric identity | Correctly rationalizing and formulating for $cos^{2}θ$ (2) | Correctly rationalizing **OR** formulating for $cos^{2}θ$ (1) | Wrong answer(0) |  |  |
| Correctly simplifying to prove(2) | Partially correct(1) | Wrong answer(0) |  |  |

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| $$2(xi)$$ | Drawing figure and finding the angle | Correctly finding the length of $\overbar{CD}$(2) | Partially correct(1) | Wrong answer(0) |  |  |  |
| Correctly finding the length of $\overbar{BC}$(2) | Partially correct(1) | Wrong answer(0) |  |  |  |
| $$2(xii)$$ | Proving that tangent to a circle and radial segment joining the point of contact and the centre are perpendicular to each other | Correct figure, given,to prove, 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) |  |
| 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 $x$ and $y$ from the figure | Correctly applying the Pythagoras theorem and correctly finding the correct value of $x$(2) | Correctly applying the Pythagoras theorem and finding the wrong value of $x$(1) | Partially correct(0.5) | Wrong answer (0) |  |  |
| Correctly applying any of the trigonometric ratios and finding the correct value of $y$(2) | Correctly applying any of the trigonometric ratios and finding the wrong value of $y$(1) | Partially correct(0.5) | Wrong answer (0) |  |  |
| $$2(xiv)$$ | Constructing circle fromthe given points | Correctly drawing $m\overbar{PQ}$, $m\overbar{QR}$ , two perpendicular bisectors and circle(4) | Any three correctly shown aspects(3) | Any two correctly shown aspects(2) | Any one correctly shown aspect(1) | Wrong answer(0) |  |
| $$3$$ | Finding dimensions of the rectangle | Correctly setting of equation for the area and correctly setting of equation for the perimeter(4) | Setting of one correct and one partially correct(3) | Correctly setting of equation for the area **OR** correctly setting of equation for the perimeter(2) | Any Partially correct equation(1) | Wrong answer(0) |  |
| Correctly solving the equations and finding the correct values of $x$ and $y$ (4) | Correctly solving the equations and finding the correct value of $x$ **OR** $y$(3) | Correctly solving the equations and finding the incorrect values of $x$, $y$ (2) | Partially correct(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 height of the houseby using the trigonometric ratios | Correctly drawing the diagram(2) | Partially correct (1) | Wrong (0) |  |  |  |
| Correctly applying two trigonometric ratios in the triangles with the given elevation angles and correctly setting two equations(4) | Correctly applying two trigonometric ratios in the triangles with the given elevation angles and correctly setting one equation(3) | Correctly applying two trigonometric ratios in the triangles with the given elevation angles and setting two wrong equations(2) | Partially correct(1) | Wrong answer (0) |  |
| Correctly finding the values of $x$ and $y$(2) | Either correctly finding the value of $x$ **OR** of $y$(1) | Partially correct(0.5) | Wrong answer (0) |  |  |
| 6 | Proving that two chords which are equidistant from the center, are congruent | 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 correct reasons(4) | Proof with correct statements with partially correct reasons(3) | Proof with correct statements without reasons (2) | Partially correct(1) | Wrong answer(0) |  |
| 7 | Proving that opposite angles of any quadrilateral inscribed in a circle are supplementary | 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 correct reasons(4) | Proof with correct statements with partially correct reasons(3) | Proof with correct statements but without reasons(2) | Partially correct(1) | Wrong answer (0) |  |