**PRESIDENT’S OFFICE-**

**REGIONAL ADMINSTRATION AND LOCAL GOVERNMENT**

**SCHEME OF WORK**

 SCHOOL’S NAME:

 TEACHER’S NAME:

 CLASS: **FORM FOUR**

 SUBJECT: **BASIC MATHEMATICS**

 TERMS**: I AND II**

 YEAR: **2024**

| **COMPETENCE** | **OBJECTIVES** | **MONTH** | **WEEK** | **MAIN TOPIC** | **SUB TOPIC** | **PERIOD** | **TEACHING ACTIVITIES** | **LEARNING ACTIVITIES** | **TEACHING &LEARNING MATERIALS** | **REFERENCE** | **ASSESSMENT** | **REMARKS** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| By the end of Form Four Course Students should have competence in applying Coordinate Geometry in Daily Life | The student should be able to derive the general equation of a straight line.-Determine the coordinates of the midpoint of a line segment.-Calculate the distance between two points on a plane.-Compute gradients in order to determine the conditions for any two lines to be parallel or to be perpendicular. -Solve problems on parallel and perpendicular lines. | **JANUARY** | **2** | **COORDINATE GEOMETRY** | **Equation of a line.** | **3** | To lead students to derive a linear equation in the general form ax +by +c = 0 | The students to rewrite linear equation in the general form. | -Graph papers-Squared papers-Geoboard-Rubber band-Graph boardMathematical instruments. | **TIE(2005),****Secondary Basic Mathematics,BookFour, Educational Book** **Publishers LTD,Dar es Salaam** | The students to rewrite linear equation in the general form. |  |
| **3** |  | **Midpoint of a line segment.** | **3** | To lead students through questions and answers to form a formula for midpoint of a line segment. | The students to find the midpoints of a given line segment. | The students to find the midpoints of a given line segment. |  |
| **4** |  | **Distance between two points on a plane** | **3** | To lead students in using Pythagoras theorem to form a distance formula.To leadstudents to discuss the result of the gradients for the parallel lines and perpendicular lines. | The students to apply the formula to calculate distances on the X-y plane.The students to calculate the gradient of different lines. | The students to apply the formula to calculate distances on the X-y plane |  |
| **4** |  | **Parallel and perpendicular lines.** | **3** | To guide students to solve problem on parallel and perpendicular lines. | Students to solve problems on parallel and perpendicular lines in real life. | Students to solve problems on parallel and perpendicular lines in real life. |  |
|  |  | **FEBRUAR**Y | 1 | **AREA AND PERIMETER** | **Area of any Triangle** | 6 | To lead students to derive the area of any triangle using base any heightTo lead students to derive area of triangle when two sides and included angle | The students to solve problems using $$\frac{1}{2}ABSinC$$ | text | students to derive the area of any triangle using base any height |  |
|  |  | 2 |  | **Area of a Rhombus** | 3 | Guiding students to derive the formula for finding the area of rhombi in term of diagonals | students to derive the formula for finding the area of rhombi in term of diagonals | text |  | students to derive the formula for finding the area of rhombi in term of diagonals |  |
|  |  |  | 2 |  | **Perimeter of Regular Polygon** | 3 | To lead students to derive the formula for the length of a side of a regular polygon | Students to solve problems on the length of a side of a regular polygonTo deduce the formula for perimeter of regular polygon and apply the formula calculate the perimeter of regular polygon | text |  | students to derive the formula for the length of a side of a regular polygon |  |
|  |  |  | 3 |  | **Area of a regular Polygon** | 3 | To lead students to drive the formula of the area of a regular polygon | Students in groups to derive the formula of the area of regular polygonAnd apply it to find the area of regular polygons | text | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | students to drive the formula of the area of a regular polygon |  |
|  |  |  | 3 |  | **Area of similar polygon** | 3 | To lead students to show the ratio of areas of two similar triangle where k is the ratio of their corresponding sidesTo lead students in solving problems related to ratio of areas of similar polygons | Students in groups to solve problems related to ratio of area of similar polygons | text | Students in groups to solve problems related to ratio of area of similar polygons |  |
| By the end of Form Four Course students should have developed competence in solving and applying three dimensional figures in daily Life | By the end of Form Four Course Students should be able to understand to solve problems related to three dimensional figures |  | 4 | **THREE DIMESIONAL FIGURES** | **Three Dimensional Figure** | 6 | To classify objects into cones, pyramids, prisms and cylinders and to discuss characteristics of each figure | Students to lists characteristics of three dimensional figures | Three dimensional objects | Students to lists characteristics of three dimensional figures |  |
| **MARCH** | 1 |  | **constructing three dimensional figures** | 6 | To demonstrate how to construct three dimensional figures using oblique projectionsTo guide students to locate and find the angle between a line and a plane andBetween two planes | Students to find the angle between a line and a plane andAngle between two planes | text | Students to find the angle between a line and a plane andAngle between two planes |  |
|  | 2 |  | **Sketch three dimensional figures**  | 6 | Guiding students to draw a sketch of three dimensional figures Guiding students to identify the properties of three dimensional figures | students to draw a sketch of three dimensional figures students to identify the properties of three dimensional figures | text | students to identify the properties of three dimensional figures |  |
|  |  |  | 3 |  | **Surface area of three dimensional figures** | 6 | To lead students to derive the formulae of the surface area of prisms, cylinders, pyramids and conesTo guide students to use the formula to solve problems | Students to calculate the surface areas of prisms, cylinders, pyramids and cones | Mathematical tablesMathematical instruments | Students to calculate the surface areas of prisms, cylinders, pyramids and cones |  |
|  |  | MARCH | 4 |  | **Volume of three dimensional figures** | 6 | To lead students to derive the formula for findings the volume of prisms, cylinders, pyramids and conesTo lead students to apply the formula the formula of a cones, pyramid, prisms and cylinder | Students to calculate the volume of prisms and cylindersTo apply the formula $$V=\frac{1}{3}\*basearea$$To calculate the volume of cones and pyramids |  | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | Students to calculate the volume of prisms and cylindersTo apply the formula $$V=\frac{1}{3}\*basearea$$To calculate the volume of cones and pyramids |  |
| By the end of Form Four Course Students should have competence in applying Probability in daily life | The student should be able to:--Determine the probability of an even through experiments.-Interpret experimental results in relation to real life occurrences.-Write the formula for finding the probability of an event |  | **4** | **PROBABILITY** | **Probability of an Even** | 6 | To lead students to perform the experiments such as rolling a die or tossing a coin.To guide students through questions and answers to interpret experimental results in real life.To lead students to discuss how to write the formula of the probability from the experimental results.To guide students to apply the formula for finding the probability of an even. | -The students to perform experiments on probability and record their results.-The students to do the same experiment with large number of trials and interpret results.-The students to write the formula for finding probability of an event.-The students to solve problems on probability | -Coin-Die-Coloured objects-Cloth-CardsGames-Ruler-Population records-Weather forecast | The students to perform experiments on probability and record their results., to do the same experiment with large number of trials and interpret results.,to write the formula for finding probability of an event., to solve problems on probability |  |
| **MIDTERM TEST** |
| **MIDTERM BREAK 31TH MARCH – 08TH APRIL 2024** |
|  | -Perform experiments of two combined events-Draw a tree diagram of combined events. | **APRIL** | **2** |  | **Combined Events** | 6 | To lead students to discuss how to find the probabilities of event to occur or not to occur.To guide students to perform the activities of doing to events at the same time.To lead students to perform the activities of doing two events at the same time by the use of a tree diagram.To lead students to find the probability of two combined events using the formula. | The students to perform experiments and record the results.The students to solve problems on probability of combined events by the use of tree diagrams.The students to calculate the probability of two combined events by formula.The students to apply the knowledge of probability of predicts outcomes of occurrence’s in real life. |  |  | The students to perform experiments and record the results.to solve problems on probability of combined events by the use of tree diagrams.to calculate the probability of two combined events by formula. |  |
| By the end of Form Four Course students should have developed competence in using knowledge of trigonometry in daily life | The student should be able to determine the Sine, Cosine and Tangent of an angle measured in clockwise and anticlockwise direction  |  | 3 | **TRIGONOMETRY** | **Trigonometric Ratio****.** | 6 |  To guide the students to;--Discuss the Sine, Cosine and Tangent for the angle in four quadrantTo do activities which involves application of trigonometric ratio in daily life e.g. buildings, finding the height of the tower, mountain and riversTo Solve problems using trigonometric tables or scale drawing. | .Students in groups to find Cosine and tangent of angle measured in any direction Students to work individually to use trigonometric ratio in solving problems | .Mathematical tablesProtractorTape measureTrigonometrical tables RulerRope | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | Students in groups to find Cosine and tangent of angle measured in any direction |  |
|  | Apply trigonometric ratio to solve problems in daily lifeFind Sine and Cosine of an angle such that $-720\leq θ\leq 720$ |  | 4 |  | **Sine and Cosine** | 3 | To guide students to read the values of Cosines and sine function for angle $θ$Such that $-720\leq θ\leq 720$Prepare table value of Sine and Cosine of angle $θ$ such that $-720\leq θ\leq 720$ | Students to practicing reading the value of sine and cosine for angle $-720\leq θ\leq 720 $Students to identify even or odd function and period or non periodic function | Coloured chalkRulerGraph paper | Students to practicing reading the value of sine and cosine for angle $-720\leq θ\leq 720 $ |  |
|  | Draw the graph sine and cosine functionInterpret the graph of Sine and Cosine function. |  | 4 |  |  | 3 | Demonstrating on how to draw the graph of Sine and Cosine using table valuesTo use questions and answer to discuss features of the graph of sine and cosine function | students to draw the graph of Sine and Cosine using table valuesTo use questions and answer to discuss features of the graph of sine and cosine function |  | students to draw the graph of Sine and Cosine using table values |  |
| By the end of Form Four Course students should have developed competence in using knowledge of trigonometry in daily life | Derive the Sine and Cosine rules.Apply Sine and Cosine rules to solve Problems | **MAY** | 1 |  | **Sine and Cosine Rules** | 3 | The teacher to lead Students to:-Derive the Sine and Cosine RulesTo demonstrates to students how to solve problems related to Sines or Cosines rules by drawingTo guide students to use the Sine and Cosine rules in Solving real life problems  | Students in groups to solve problems using the sine and Cosine rulesDerive Cosine and Sine rulesSolve problems related to the Sine and Cosine rules | Coloured ChalkRuler |  | Students to Derive Cosine and Sine rulesSolve problems related to the Sine and Cosine rules |  |
|  |  |  | 1 |  | **Compound angles** | 3 | To explain the compound angles for sine and cosineTo demonstrate to students how to solve trigonometric problems using compound angle formulae | Students in groups to solve and simplify trigonometric problems using compound angle formulae | Chart of trigonometric formulae for compound anglesTrigonometric tables | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | Students in groups to solve and simplify trigonometric problems using compound angle formulae |  |
| By the end of Form Four Course Students should have competence in do computations and applying vectors | Student to explain the concept of vector quantity |  | 2 | **VECTORS** | **Displacement and position vectors** | 6 | To lead students to explain the concept of a vector quantity.To lead students to discuss the meaning of displacement, equivalent and position vectors | The students to discuss the difference between the vector and scalar quantity.The students to discuss the meaning of displacement, equivalent and position vectors | text | The students to discuss the difference between the vector and scalar quantity. |
|  | The student should be able:-To calculate the magnitude and direction of a vector. |  | 2 |  | **Magnitude and Direction of a vectors.** | 3 | To lead students to discuss how to find the magnitude and direction of a vector.To demonstrate to students how to find sum or difference of two or more vectors diagrammatically | -The students to find the sum or difference of given vectors by drawing.-The students to find the sum or difference of vectors without using diagrams | text | The students to find the sum or difference of given vectors by drawing. |  |
| By the end of Form Four Course Students should have competence in do computations and applying Matrices | -To find the sum of two or more vectors and the difference of two or more vectors-To multiply a vector by scalar |  | 2 |  | **Sum and difference of vectors.** | 3 | To lead students to discuss how to find the sum or difference of vector without using diagrams | students to discuss how to find the sum or difference of vector without using diagrams | text | students to discuss how to find the sum or difference of vector without using diagrams |  |
|  | **3** |  | **Multiplication of a vector by a scalar.** | 3 | To use example to discuss with students how to multiply a vector by a scalar | -The students to multiply a vector by a scalar. | text |  | The students to multiply a vector by a scalar. |  |
|  | To apply vectors in solving simple problems on velocities displacements and forces. |  | **3** |  | **Application of vectors** | 3 | To lead students to discuss the use of vectors in solving simple problems on velocities.To demonstrate to students, how to find bearing by drawing and measuring. | Students to do exercises on application of vectors in solving real life problems. | text |  | Students to do exercises on application of vectors in solving real life problems. |  |
| **TERMINAL EXAMINATIONS** |
| **TERMINAL 31TH MAY – 01TH JULY 2024** |
| By the end of Form Four Course Students should have competence in do computations and applying Matrices and Transformations in Daily Life | The student should be able to:--Explain the concept of a matrix.-Add and subtract matrices of order up to 2x2-Multiply a matrix of order 2x2 by a scalar.-Multiply two matrices of order up to 2x2 | **JULY** | **4** | **MATRICES AND TRANSFORMATIONS** | **Operations on matrices** | 6 | -To guide students on how to organize the items and price in column and rows.-To explain to the students the meaning of matrix -To demonstrate to the students how to add matrices of order up to 2x2 and subtract matrices of order up to 2x2-To demonstrate to students how to multiply a 2x2 matrix by a scalar and multiplication of two matrices of order up to 2x2. | -The students to collect price lists of items.-The students to solve problems on addition of 2x2 matrices and subtraction of 2x2 matrices.-The students to solve problems on multiplication of 2x2 matrices by scalars and multiplication of two matrices of order up to 2x2. | -Coloured chalks-Prices of itemsCharts of matricesGraph boardMathematical tables.-Rule  | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | The students to solve problems on addition of 2x2 matrices and subtraction of 2x2 matrices. |  |
| By the end of Form Four Course Students should have competence in do computations and applying Matrices | Calculate determinant, find inverse and apply to solve simultaneous equations.-Transform any point P (xx,y) into P’(x,y’) | **AUGUST** | 1 | **Inverse of a matrix** | 6 | To demonstrate to calculate the determinant of a 2x2 matric.To lead students to discuss the application of 2x2 matrices in solving simultaneous equations. | -The students to calculate the determinants of given 2x2 matrices.-The students to find the inverse of given matrix.The students to apply 2x2 matrices in solving simultaneous equations. |  | The students to calculate the determinants of given 2x2 matrices. |  |
|  | -Apply the matrix $\left(\begin{matrix}1&0\\0&1\end{matrix}\right)$to reflect a point in the x and y axis.-Rotate anypoint P 9x,y) through 90, 180 ,270, 360 and 0.-Use the enlargement matrix. E=(k$$E= \left(\begin{matrix}K&0\\0&K\end{matrix}\right)$$ |  | 2&3 |  | **Matrices and Transformations** | 12 | To lead students to discuss how to multiply a 2x2 matrixes and a column matrix and to demonstrate a transformation of appoint by transformation matrix.To guide students to reflect a point P (x,y) in the X –ax15 and y-axis using the matrix ( 1 0)-To demonstrate the rotation of a point P(X,Y) through 90” 180, 270 and 360 about the origin using the rotation matrix $T=\left(\begin{matrix}Cos&Sin\\Sin&Cos\end{matrix}\right)$ | -The students to transform the give points by using different transformation matrices.-The students to work in reflecting given points in x –axis and y-ax15 using the appropriate matrix.-The students to rotate various points through 90, 180, 270 and 360 about the origin using the appropriate transformation matrix. | text | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | The students to transform the give points by using different transformation matrices. |  |
|  |  |  |  |  | -The teacher to demonstrate the enlargement of figures using a matrix | The students to enlarge given figures using the enlargement matrix $$E= \left(\begin{matrix}K&0\\0&K\end{matrix}\right)$$ | text |  |  |
| By the end of Form Four Course Students should have competence in applying Linear Programming in daily life | The student should be able to:--Form simultaneous equation from word problems.Solve simultaneous equations graphically. |  | **4** | **LINEAR PROGRAMMING** | **Simultaneous Equations.** | 3 | To use examples in leading a discussion on how to formulate linear simultaneous equation from word problems.To lead students to solve linear simultaneous equations graphically. | The students to formulate linear simultaneous equation from word problems.The students to solve various linear simultaneous equations formulated from word problems graphically. | text |  | The students to formulate linear simultaneous equation from word problems. |  |
| **MIDTERM TEST** |
| **MIDTERM BREAK 30TH AUGOST – 16TH SEPTEMBER 2024** |
|  | -Form linear inequalities in two unknowns flow word problems.-Find the solution set of simultaneous linear inequalities graphically | **SEPTEMBER** | 4 |  | **Inequalities** | 6 | To guide students to form linear inequalities in two unknowns from a word problemTo demonstrate to the students how to determine of feasible region of a set of linear inequalities graphically | -The students to formulate linear inequalities in two unknowns from word problems.-The students to solve problems on determining the solution of a set of linear inequalities graphically. | text | **TIE(2005),****Secondary Basic Mathematics, Book Four, Educational Book** **Publishers LTD, Dar es Salaam** | The students to formulate linear inequalities in two unknowns from word problems. |  |
|  | -Form an objective funding from word problems.-Locate corner points on the feasible region. | **OCTOBER** | 1 |  | **objective function** | 6 | To lead students to discuss how to formulate an objective function from a word problems.To guide students to determine the coordinates of corner points of the feasible region. | The students to form an objective function from given word problems.-The students to draw the graphs of linear inequalities formulated from a word problem and determine the coordinates of points of the feasible region. | text | The students to form an objective function from given word problems. |  |
|  | -Find minimum and maximum values using the objective function. |  | 2 |  | **Maximum and minimum values.** | 6 | To illustrate the maximum and minimum values using the objective function graphically. | -The students to practice on determining the maximum and minimum values using the objective function graphically.-The students to find the maximum values of the given problems by substituting the corner points in the objective | text | e students to practice on determining the maximum and minimum values using the objective function graphically. |  |
| **REVISION** |
| **FORM FOUR NATIONA EXAMINATION** |