**Credit Hours: 4**

**Teaching Hours: 128**

**Estimated Periods: 171 (Each of 45minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **Unit** | **Teaching Hours** | **Teaching Periods**  **(Each of 45 Min)** |
| **1** | Algebra | 29 | 39 |
| **2** | Trigonometry | 30 | 40 |
| **3** | Coordinate Geometry | 18 | 24 |
| **4** | Transformation | 18 | 24 |
| **5** | Vector | 11 | 15 |
| **6** | Statistics | 10 | 13 |
| **7** | Limit and Continuity | 12 | 16 |
|  | **Total** | **128** | **171** |

**Credit Distribution:**

**Specification Chart, 2080 (Opt. Mathematics)**

**-afx\o d"Nofª\sgsf nflu\_**

**(For External Examination)**

**k"0ff{ª\s M 75 ;do : 3 hour**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SN | Contents | Knowledge | Understanding | Application | Higher Ability | Total | Total Marks |
| each of 1 marks | each of 2 marks | each of 3 marks | each of 4 marks |
| 1. | jLhul0ft (Algebra) | 2 | 2 | 2 | 1 | 7 | 16 |
| 2. | ;LdfGt dfg / lg/Gt/tf  (Limit and continuity) | 1 |  | 1 |  | 2 | 4 |
| 3. | d]l6«S; (Matrix) | 1 | 1 | 1 |  | 3 | 6 |
| 4. | lgb]{zfª\s Hofldlt  (Co-ordinate Geometry) | 2 | 1 | 1 | 1 | 5 | 11 |
| 5. | lqsf]0fldlt (Trigonometry) | 2 | 2 | 3 |  | 7 | 15 |
| 6. | e]S6/ (vector) | 1 | 1 |  | 1 | 3 | 7 |
| 7. | :yfgfGt/0f (Transformation) | 1 |  | 1 | 1 | 3 | 8 |
| 8. | tYofª\s zf:q (Statistics) |  | 1 | 2 |  | 3 | 8 |
|  | **hDdf k|Zg ;ª\Vof (Total questions)** | **10** | **8** | **11** | **4** | **33** | **75** |
|  | **cª\sef/ (Weight)** | **10** | **16** | **33** | **16** | **75** |  |

**cfGtl/s d"Nofª\sgsf nflu**

cfGtl/s d"Nofª\sgsf nflu cfGtl/s d"Nofª\sgsf nflu d"Nofª\sgsf cfwf/x¿ lgDgfg';f/ /x]sf 5g\ M

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| --- | --- | --- |
| **j|m=;=** | **cfGtl/s d"Nofª\sgsf cfwf/x¿** | **cª\sef/** |
| != | ;xeflutf -pkl:ylt / l;sfO lj|mofsnfkdf ;lj|motf / ;xeflutf\_ | # |
| @= | k|of]ufTds tyf kl/of]hgf sfo | !^ |
| #= | q}dfl;s k/LIff | ^ |
|  | hDdf | @% |

gf]6 M ljBfyL{sf] cfGtl/s d"Nofª\sg ubf{ clgjfo{ ul0ft ljifodf k|of]u ul/g] cfGtl/s d"Nofª\sgsf ;fwg g} k|of]u ug'{kg]{ 5 .

**First Terminal Examination Opt I Mathematics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | Rem  arks |
| Algebra | Order Pair | 2 | Formula chart, Graph board and paper | Demonstration  Explanation  Problem solving | Class test  Unit test  Assignment |  |
| Cartesian product | 2 |
| Relation  (Domain, Range, Inverse Relation) | 3 |
| Functions  (Types, Domain, Co-domain, Range, Problems on functions) | 8 |
| Polynomials  (Roots, Division of Polynomials by Synthetic division) | 4 |
| Matrix | Types of Matrix | 2 | Data sheet, mark sheet  Bivariate frequency table | Discussion  Application  Problem solving | Class test  Unit test  Assignment |  |
| Operation of Matrix and the Properties on it. | 5 |
| Multiplication of Matrix by Scalar | 2 |
| Trigonometry | Measurement of Angle | 1 | Different triangular structure,  Protractor  Circular shape | Formula derivation  Demonstration,  solving  Real life problems ,  Problem solving | Class test  Unit test  Assignment  Project work |  |
| Sexagesimal, Centisimal and Radian Measure | 6 |
| Relation between Central angle and its corresponding arc | 6 |
| Statistics | Quartiles, Percentiles | 3 | Primary/ Secondary data | Analysis of data | Class test  Unit test  Assignment |  |
| Quartile deviation | 2 |
| Five Numbers Summary and Whisker-Box Plot | 2 |
| Total |  | 48 |  |  |  |  |

**Mid Terminal Examination Opt I Mathematics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | **Rem**  **Arks** |
| Trigonometry | Trigonometric ratio | 6 | Formula chart, | Demonstration  Explanation,  Problem solving | Class test  Unit test  Assignment |  |
| Conversion of Trigonometric ratio | 3 |
| Trigonometric Identities | 8 |
| Coordinate | Locus and Its Graphical Presentation  (Straight line, Perpendicular Bisector and Circular Locus) | 4 | Geo board  Geogebra app | Discussion,  Demonstration,  Problem solving | Class test  Unit test  Assignment |  |
| Section Formula, Mid-Point Formula | 5 |
| Transformation | Introduction, Types, Uses in Daily Life | 1 | Graph paper, geometrical instruments,  Geogebra  Formula chart | Demonstration,  Practice,  Problem solving | Class test  Unit test  Assignment  Project work |  |
| Reflection on the lines x=y, x=-y, x=a, y=b | 8 |
| Statistics | MD | 3 | Primary and Secondary data | Collection and analysis of data  Problem solving | Class test  Unit test  Assignment  Project work |  |
| SD | 3 |
| Total |  | 41 |  |  |  |  |

**Second Term Examination Opt I Mathematics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | Rem  arks |
| Algebra | Graph of the function | 3 |  |  |  |  |
| Limit and Continuity | Concept of infinity and indeterminate form | 2 | Graph, | Analysis,  Demonstration,  Estimation  Problem solving | Class test  Unit test  Assignment |  |
| Concept of Limit | 2 |
| Notation of Limit | 1 |
| Limiting Value and Functional Value | 2 |
| Finding Limits of Algebraic Functions | 9 |
| Coordinate Geometry- | X-Intercept, Y-Intercept, Slope | 3 | Graph,  Geo board  Geogebra, | Demonstration,  Experiment  Problem solving | Class test  Unit test  Assignment  Project work |  |
| Equation of the lines of the Form x=a, y=b |
| Slope-intercept form | 2 |
| Double Intercept Form | 3 |
| Normal Form | 3 |
| Transformation | Rotation about about the centers (0,0) and (a, b) | 7 | Graph paper, geometrical instruments,  Geogebra  Formula chart | Demonstration,  Practice,  Problem solving | Class test  Unit test  Assignment  Project work |  |
| Enlargement & Reducemen | 8 |
| Total |  | 45 |  |  |  |  |

**Annual Examination Opt I Mathematics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | Rem  arks |
| Algebra | Equation, Inequality and Graph | 4 | Graph, Chart, Board | Explanation, Problem solving, Problem formulation | Class test  Unit test  Assignment |  |
| Number System, Surds, Interval Notation of Real Numbers | 4 |
| Co-ordinate Geometry | General Equation of Straight Line | 2 | Graph,  Geo board  geogebra | Demonstration  Problem solving | Class test  Unit test  Assignment |  |
| Conversion of General Equation into Standard Forms | 3 |
| Trigonometry | Standard angle | 4 | Angle value table,  Formula chart | Explanation  Problem solving | Class test  Unit test  Assignment |  |
| Allied angle | 6 |
| Vector | Types of Vector | 2 | Graph  Geogebra | Demonstration  Concept building,  Problem solving | Class test  Unit test  Assignment  Project work |  |
| Vector and Scalar | 1 |
| Vectors in Coordinate and Graph | 2 |
| Laws of vector addition | 2 |
| Operation of vectors | 4 |
| Magnitude and direction of Vector, unit vector | 4 |
| Total |  | 38 |  |  |  |  |