**ljlzi6Ls/0f tflnsf @)\*), -P]= ul0ft\_**

Test 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

|  |  |  |
| --- | --- | --- |
| **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**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | Rem  arks |
| Algebra | functions | 6 | Graph paper, Geogebra | Explanation  Demonstration  Problem solving | Class test,  Unit test and  Assignments | Constructive Feedback |
| Polynomials | 6 |
| Matrix | Determinant and inverse matrix | 4 |  | Group discussion,  Problem solving | Oral/written Class test,  Unit test and  Assignments |  |
| Solving equation by matrix methods | 5 |
| Cramer’s Rule | 4 |
| Trigonometry | Multiple angle | 12 | Formula chart | Demonstration, Question Answer,  Formula derivation | Class test,  Unit test and  Assignments |  |
| Sub-multiple angle | 5 |
| Coordinate Geometry | Angle between two lines | 12 | Geogebra,  Graph paper | Demonstration, Explanation,  Problem solving | Class test,  Unit test and  Assignments |  |
| Revision |  | 8 days |  | Problem solving, group |  | Support for needy students |

**Mid Terminal Examination**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | **Rem**  **Arks** |
| Limit and Continuity | Limit and Continuity | 4 | Graph,  Geogebra, | Demonstration  Problem solving | Class Test, Unit Test,  Assignments |  |
| Coordinate Geometry | Homogeneous Equation | 5 | Graph,  Geogebra, | Graph,  Geogebra, | Class Test, Unit Test,  Assignments |  |
| Trigonometry | conditional | 6 | Formula Chart | Problem solving | Class Test, Unit Test,  Assignments |  |
| Trigonometric Equations | 5 |  |
| Vector | Scalar Product | 4 | Graph, Chart papers | Group discussion,  Demonstration | Class Test, Unit Test,  Assignments  Projects |  |
| Vector Geometry | 10 |  |
| Statistics | Q.D | 4 | Primary / secondary Data | Problem solving | Class Test, Unit Test,  Assignments  Projects |  |
| M.D. | 4 |  |
| S.D | 4 |  |
| Algebra | LPP | 4 | Graph  Geogebra | Demonstration,  Presentation,  Problem solving | Class Test, Unit Test,  Assignments  Projects |  |
| Quadratic Equations | 3 |  |
| Revision |  | 2 |  |  |  |  |

**Pre-Qualifying Examination Opt I Mathematics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Units | Topics | per  iods | Teaching Materials | Teaching Methods | Evaluation  Procedure | Rem  arks |
| Algebra | Sequence and Series | 14 |  | Problem solving | Class test,  Unit test and  Assignments |  |
| Coordinate | Conic section | 2 | Solid objects, chart papers | Demonstration, discussion,  Problem solving | Class test,  Unit test and  Assignments  Projects |  |
| circle | 8 |  |
| Trigonometry | Height and Distance | 6 |  |  | Class test,  Unit test and  Assignments  Projects |  |
| Transformation | Combined Transformation | 8 | Formula Chart,  Graph, Geogebra | Demonstration,  Explanation  Problem solving | Class test,  Unit test and  Assignments  Projects |  |
| Inversion Transformation | 3 |  |
| Matrix Transformation | 4 |  |
|  |  | 45 |  |  |  |  |

**Full Marks:100**

**Speciation Grid (Pre-qualifying)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Unit** | **Content (Topics)** | **V.S.Q** | **S.Q.** | **L.Q.** | **T.N.Q** | **T.M.** | **Total Time** |
| **1** | **Revenue and Cost Curves** | **2** | **1** |  | **3** | **7** |  |
| **2** | **Exchange/ Product Pricing** | **1** | **1** |  | **2** | **6** |  |
| **3** | **Distribution/ Theory of factor Pricing** | **1** | **1** |  | **2** | **6** |  |
| **4** | **Money Banking and Non Banking Financial institutions** | **2** |  | **1** | **3** | **10** |  |
| **5** | **Public Finance** | **1** |  | **1** | **2** | **9** |  |
| **6** | **Development Economics** | **1** | **1** |  | **2** | **6** |  |
| **7** | **Foreign trade of Nepal** | **2** | **1** |  | **3** | **7** |  |
| **8** | **Economic Planning** |  | **1** |  | **1** | **5** |  |
| **9** | **Statistical Works** | **1** | **2** |  | **3** | **11** |  |
| **10** | **Statistical tools** |  |  | **1** | **1** | **8** |  |
|  | **Total** | **11** | **8** | **3** | **22** | **75** |  |

**Evaluation Scheme:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.N.** | **Nature of questions** | **No of questions to be asked** | **No of questions to be answered** | **Marks** | **Time** |
|  | **Very short answer questions** | **11** | **11** | **11x1=11** | **10x2= 20 min** |
|  | **Short answer questions** | **8** | **8** | **8x5 =40** | **12x8.33=100 min** |
|  | **Long answer questions** | **3** | **3** | **3x8 =24** | **3x20 = 60 min** |
|  | **Total** | **22** | **22** | **75** | **180 min** |

**Teaching/Learning process**

In the process of teaching economics, the teacher needs to emphasize more on the practical implementation of the concepts, knowledge, skill, laws and theories of economic. The following teaching methods should be adopted for effective learning process of economics.

* Teacher - centered techniques
* Student - centered techniques.
* Questions - answer method.
* Individual/group discussion method.
* Problem solving method.
* Demonstration method
* Report presentation
* Field/project work
* Research/web based methods.

**Process of evaluation:**

The following evaluation methodology should be adopted to make constructive evaluation of students.

* To observe the change and improvements of their activities.
* Participation of students on class work and other activities.
* Application of knowledge of economics in practice.
* Written work (Class work, Home work) and practical work.
* Oral test and written exams.

The teacher needs to construct questions paper strictly on the basis of specification grid for conducting the written exams. The SEE will be held as per the mentioned specification grid.