<table>
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<th>S. No.</th>
<th>Existing</th>
<th>Proposed</th>
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<tr>
<td>1</td>
<td>Skill Enhancement Courses (SEC) offered to B.Sc. (H) Mathematics (in 3rd and 4th Semester) are of 3 Credits</td>
<td>Since these courses should of 4 Credits according to UGC Guidelines, amendments have been made in the existing Courses to make them of 4 Credits</td>
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<td>2</td>
<td>Skill Enhancement Courses (SEC) offered to B.A./ B.Sc. Programme (in 3rd, 4th, 5th and 6th Semesters) are of 3 Credits</td>
<td>Since these courses should of 4 Credits according to UGC Guidelines, amendments have been made in the existing Courses to make them of 4 Credits</td>
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<td>3</td>
<td>Only One Generic Elective Paper is offered (in 1st, 2nd and 3rd Semester) to students of B.Sc. (H), B.A. (H) &amp; B.Com (H) other than B.Sc. (H) Mathematics.</td>
<td>Two Generic Elective Papers are now offered each semester to students of B.Sc. (H), B.A. (H) &amp; B.Com (H) other than B.Sc. (H) Mathematics.</td>
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<td>4</td>
<td>No Generic Elective papers were being offered to students of B.A, B.Sc. &amp; B.Com Programme in the 5th and 6th Semester</td>
<td>Generic Elective papers are now offered to students of B.A, B.Sc. &amp; B.Com Programme in the 5th and 6th Semester</td>
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<tr>
<td>Semester</td>
<td>Core Course (12)</td>
<td>Ability Enhancement Compulsory Course (AECC) (2)</td>
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<td>VI</td>
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</tbody>
</table>
Semester V

GE-1: GENERAL MATHEMATICS-1

5 Lectures + 1 Tutorial per week (Ideal Tutorial Group Size: 12-15 Students)
Max. Marks 100 (including internal assessment)
Examination: 3 hrs

UNIT-I
A brief introduction to the lives and information on the works of the following Mathematicians:
Euler, Lagrange, Laplace, Fourier, Gauss, Poisson, Cauchy, Abel, Dirichlet, Galois, Weierstrass,
Cayley, Reimann

UNIT-II
An overview of number systems, including algebraic and transcendental numbers, with some
historical background
Fundamental operations of Arithmetic, rules of divisibility, Hierarchy of operations and Modular
Arithmetic, Euclidean algorithm
Prime numbers, the sieve of Erastosthenes, fundamental theorem of arithmetic, Euclid’s Lemma,
Fermat Numbers, Mersenne Numbers and Mersenne Primes, Prime testing method of Fermat,
Statement and significance of Prime number theorem, Goldbach Conjectures, twin primes, uses
of prime numbers, Perfect and Amicable numbers
Pythagorean triples and its properties, Statement and historic background of Fermat’s Last
Theorem
Multiplication rules, Permutation and combination, Latin Square, Magic Square

UNIT-III
Matrices, basic concepts and algebraic operations, types of matrices, transpose of a matrix,
symmetric and skew symmetric matrices, Matrix multiplication and its properties, powers of
square matrix, Inverse of a matrix and its properties, Determinant and its properties (matrix
product, transpose), expansion by rows and columns, cofactors, determinant criteria for matrix
singularity, adjoint matrix and calculation of inverse, Cramer rule

REFERENCES:
University Press, 2002
GE- 2: GENERAL MATHEMATICS-2

5 Lectures + 1 Tutorial per week (Ideal Tutorial Group Size: 12-15 Students)
Max. Marks 100 (including internal assessment)
Examination: 3 hrs

UNIT-I
A brief introduction to the lives and information on the works of the following Mathematicians:
Dedekind, Cantor, Poincare, Hilbert, Moore, Hausdorff, Hardy, Noether, Polya, Ramanujan,
Alexander, Banach, Neumann

UNIT-II
Basics of Graph theory, the Konigsberg Bridge problem, four-colour map problem, Mobius strip
and Klein bottle
Introduction of functions, graphs of functions, increasing and decreasing functions, even and odd
functions, location of points of extrema, inflection, periodic functions-all via graphs
Perspective and Projection, Perspective geometry: lines and points in 2D and 3D, Fundamental
trigonometric functions, use of perspective in drawing, historical background, common tools
adopted by artists for such representations, analysis of some paintings to spot use of perspective
and techniques
Types of symmetry, concrete examples of symmetry groups, basic tilings, Study of symmetry
and patterns by looking at monuments/ buildings/ ornamental art, Escher’s art
Golden ratio, Golden rectangle, Fibonacci sequences in nature
Shapes and solids, the regular polyhedral, Euler’s formula, Importance of Platonic solids and
mystical significance to the ancient Greeks, Construction of Altars and geometry in ancient India
Fractals in nature, for example snowflakes and coastlines

UNIT-III
Solving system of linear equations, gauss elimination method and row operations, consistent and
inconsistent system, Gauss Jordon row reduction and echelon form, homogeneous system,
equivalent system, row equivalence, rank of a matrix, relation between homogeneous systems
and rank, solving a system using the inverse of coefficient matrix

REFERENCES:
University Press, 2002