FACULTY OF SCIENCES

SYLLABUS
of
Certificate Course in Vedic Mathematics

(Under Absolute Marks System with Grades)

Session: 2024-2025

The Heritage Institution

KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)

Certificate course in Vedic Mathematics.
Session-2024-25
Programme Specific Outcomes

After the successful completion of this Certificate Course, the students will be able to:

PSO 1: Enhance computational skills in Mathematics

PSO 2: Develop Analytical thinking through Vedic Maths.

PSO 3: Enable further research in Indian Ancient Mathematics.

PSO 4: Conduct Seminar on the subject and bringing together scholars in Vedic Mathematics.

PSO 5: Develop postal and online study courses on Vedic Mathematics.

PSO 6: Instil love and remove the fear of Mathematics.

PSO 7: Promote Vedic culture.

PSO 8: Crack entrance of competitive examinations.

Scheme and Curriculum of Examinations
Certificate Course in Vedic Mathematics
Session- 2024-25

Certificate Course in Vedic Mathematics						
Course Code	Course Title	Course Type	Marks			Examination time (in Hours)
			Total	L	P	
CVML-1331	Vedic Arithmetic and Applications	C	50	50	-	3
CVML-1332	Vedic Algebra and Geometry	C	50	50	-	3
Total			100			

C – Compulsory

Duration- 30 Contact hours (1 Year)

Credit :2

Marks :50+50=100

Eligibility : +2 from any stream with 50% marks in aggregate

Method of Delivery :Theory

Examination Pattern : Written Examination

Certificate Course in Vedic Mathematics.
Session-2024-25
Course Title: Vedic Arithmetic and Applications
Course Code: CVML-1331

Course Outcomes

The students will be able to

CO 1: Develop the understanding of objectives and features of Vedic Arithmetic and

recognize the meaning of Mathematical sutras of Vedic Arithmetic in Sanskrit and in English. Also to define Beej-ank, Vinculum using Nikhilam Sutra.

CO 2: Manage to solve the multiplication using Urdhav triyaghbhyam sutra and Ekadhiken Purven Sutra and demonstrate multiplication by 11, 111,1111 by using Vedic sutras of multiplication.

CO 3: Distinguish between squaring numbers ending in 5 and squaring numbers near the base and subbase and manage to perform squaring by Dwandvayoga sutra (General method of squaring) and Cubing by Anurupyen Sutra and to find the square root of perfect square and Cube Roots of perfect cube mentally.

CO 4: To apply division by 9,19,29….., understand the concept of division by using straight division and to enhance the knowledge for Recurring Decimals of fractions 1/13,1/23,5/33,9/11….by Anurupyen Sutra.

Certificate Course in Vedic Mathematics.
Session-2024-25
Course Title: Vedic Arithmetic and Applications
Course Code: CVML-1331

Examination Time: 3 Hours Max. Marks: 50

Instructions for the paper setters/examiners:
Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

INTRODUCTION: History of Vedic Maths, why Vedic Maths, salient features of Vedic Maths, Introduction to Vedic Maths Sutras- 16 Sutras and 13 Sub Sutras, terms and operations, Beejank, Vinculum Operations, High speed addition by using the concept of completing the whole, introduction to bases and sub bases in Vedic Mathematics, superfast subtraction by Nikhilam Sutra from bases and with any sub base, and its application in subtraction of decimals, Subtraction using Vinculum with Sutras Nikhilam and Eknuyena.

UNIT-II

SUTRAS OF MULTIPLICATION: Multiplication of numbers near to the bases 10,100,1000,10000,using Nikhilam Sutra and multiplication of numbers near sub bases using Nikhilam and Anurupyena, fast multiplication by 11,111,1111 and with multiples of 11, 111 and 1111. Multiplication of numbers consisting of all 9s by Eknuyena and Nikhilam Sutra, Multiplication of Numbers ending with 9, Multiplication by Antyodarshkeyapi Sutra and Antyayoreva, Multiplication by Urdhav triyaghbhyam sutra, (two, three and four digits), Verification by Beejank method, Formation of any Two Digit table.

UNIT-III

SUTRAS OF SQUARES,SQUARE ROOTS,CUBE AND CUBE ROOTS : Meaning of Ekadhiken Sutra and its applications in finding squaring of numbers ending in 5, squaring near base by Yavdunamthavadunikrityavargamchayojyet sutra, squaring near sub base by Anurupyena Sutra, squaring by Dwandvayoga sutra (General method of squaring), Verification by Beejank Method, super fast squaring numbers nearest 50, square roots of perfect squares (upto 6 digits) by Viloknam Sutra, cubes by Anurupyena sutra, Cube of numbers near the base using Nikhilam and general method to find cubes by Anurupyena Sutra, Cube Roots of Perfect Cubes (upto 9 digits). Combined Operations

UNIT-IV

SUTRAS OF FACTORISATION AND DIVISION: Osculation, Divisibility test, Division near the base by Nikhilam Navatascaramam Dasatah Sutra, division near sub base by Paravartya Yojayet, division by Anurupyena, Division by Dwajank Sutra (Straight division), Conversion of vulgar fractions 1/19,1/29,1/39,1/49…..into decimals by Ekadhiken Purven Sutra, Recurring Decimals of fractions 1/13,1/23,5/33,9/11….by Anurupyen Sutra.

Text Book:

S. B. Tirthaji, Vedic Mathematics, Motilal Banarsidass Private Limited, Revised Edition, 1992 (Scope as in Chapters 2, 3, 4, 5, 10, 26, 27, 28, 31, 32, 33, 34, 35, 36)

Reference Books:

1 K. R. Williams, Vedic Mathematics Teacher's Manual, Inspiration Books, Revised Edition, 2009 (Scope as in Chapters 1, 2, 3, 5, 7, 9, 10, 11)

2 M. Tyra, Magical Book On Quicker Maths, ESC Publications, 5th Edition, 2018 (Scope as in Chapters 2-10, 18, 20, 22, 23, 24, 25)

Certificate course in Vedic Mathematics.
Session-2024-25
Course Title: Vedic Algebra and Geometry
Course Code: CVML-1332

Course Outcomes

The students will be able to

CO 1: Develop the understanding of objectives and features of Vedic Algebra and

recognize the mathematical sutras of Algebra and Geometry in Sanskrit and understand its meaning in English. Manage to solve the Algebraic addition, subtraction multiplication and division using different Sutras.

CO 2: Distinguish between factorization of Quadratic and cubic polynomials using Vedic Sutra and to understand the factorization of Homogeneous equation of second degree by Lopstapanabhyam Sutra.

CO 3: To identify the solution of linear equations with one or two terms of x by Paravartya yojyet Sutra, solution of linear equations in two variables by Paravartya yojyet, Anurupyen sutra and Sankalana-vyavakalana-bhyam quickly

CO 4: Understand and apply Triples (Bodhyan Numbers- BN) in coordinate geometry of two dimension and trigonometry with reference to Bodhyana Sutra

Certificate course in Vedic Mathematics.
Session-2024-25
Course Title: Vedic Algebra and Geometry
Course Code: CVML-1332

Examination Time: 3 Hours Max. Marks: 50

Instructions for the paper setters/examiners:
Eight questions of equal marks are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

UNIT-I

SUTRAS FOR ALGEBRAIC OPERATIONS: Addition and Subtraction of polynomials, Subtraction of Polynomials, multiplication of polynomials by Urdhvatiragbhyam Sutra: Binomial ×Binomial, Trinomial× Trinomial, Trinomial ×Binomial, division of polynomials by paravartya yojyet Sutra (Divisor: Linear expression of single variable), Algebraic Squaring.

UNIT-II

SUTRAS OF FACTORIZATION: HCF of two Polynomials by Sakalana-Vyavkalana Sutra, Factorization of Quadratic Polynomials, Factorization of Cubic Expressions by Vilokanam, Factorization of Cubic polynomials by Gunita Sauccaya: Samuccaya Gunita sutra and Lopana-Sthapanabhym. Factorization of Homogeneous equation of second degree by Lopana-Sthapanabhym Sutra.

UNIT-III

SUTRAS FOR ROOTS OF EQUATIONS: Solution of linear equations with one or two terms of x by Paravartya yojyet Sutra, Solution of linear simultaneous equations using Urdhvatiryagbhyam and Sunyam Samya Samuccaye, solution of linear equations in two variables by Paravartya yojyet, Anurupyen sutra and Sankalana-vyavakalana-bhyam, solution of Quadratic equations by Anurupyen Sutra and Adyamadye Nantyamaantyena sutra.

UNIT-IV

SUTRAS FOR GEOMETRY: Introduction to Triples (Bodhyan Numbers- BN), BN of an angle, multiplication of a constant in a BN, BN of complementary angles, BN addition of angles, BN of double angle, BN of quadrant angles, Application of BN: BN subtraction of angles, BN Geometry, Angle between two lines, Half Angle, Coordinate Geometry (two dimension): Length of perpendicular from a point onto a line, Equation of a straight line through two given points by Urdhavtriagbhyam Sutra, BN Trigonometry, Bodhayan Sutra as Pythagoras theorem.

Text Book:

S. B. Tirthaji, Vedic Mathematics, Motilal Banarsidass Private Limited, Revised Edition, 1992 (Scope as in Chapters 3, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 37)

Reference Books:

1 K. R. Williams, Vedic Mathematics Teacher's Manual, Inspiration Books, Revised Edition, 2009 (Scope as in Chapters 4, 5(5.3), 6, 7(7.2), 8, 10(10.7))