Dr. Annasaheb G. D. Bendale Mahila

Mahavidyalaya, Jalgaon

## Department of Mathematics

# Certificate Course on Fundamentals of Mathematics

(2021-22)

( Required for Competitive Exams )

# Regulations

| | | |
|---|---|---|
| Duration | : | 40 hours |
| Fee | : | Rs. 100/- |
| Eligibility | : | H.S.C. Completed in Arts, Commerce and Science |
| Maximum Intake | : | 30 Students |
| Certificate | : | Awarded by the College on the basis of examination results and credits earned. |
| Course Structure | : | 60 + 40 Pattern<br>Internal MCQ Test 40 marks and External MCQ Test 60 marks. |
| Progression and Assessment | : | a) Regulation for work and attendance shall be a per College general regulations.<br>b) Minimum 40% marks are essential for passing.<br>c) Department will declare results<br>Certificate duly signed by Principal shall be issued. |

**Aims :**

The aims of teaching and learning mathematics are to encourage and enable students to :

1. understand and be able to use the language, symbols and notation of mathematics.
2. develop mathematical curiosity and use inductive and deductive reasoning when solving problems.
3. become confident in using mathematics to analyses and solve problems in real-life situations.
4. develop abstract, logical and critical thinking and the ability to reflect critically upon their work and the work of others.

**Courses Objectives :**

Knowledge and understanding are fundamental to studying mathematics and form the base from which to develop problem-solving skills.

Courses Outcomes :

At the end of the course students should be able to:

- explain whether their results make sense in the context of the problem
- explain the importance of their findings
- justify the degree of accuracy of their results where appropriate
- suggest improvements to the method when necessary.

# Syllabus

**Unit 1 : Number systems** 10 Hours 25 Credit

i) Different Type of Numbers (Rational, Irrational, Positive, Negative, Prime, Composite, Integers, Real, Imaginary)
ii) Absolute Value
iii) Rounding of Numbers
iv) Addition, Subtraction, Multiplication, Division rules with Fractions, Decimal Numbers, Integers, Mixed Numbers, Exponents
v) Numbers Divisibility Rule
vi) Scientific Notations

**Unit 2 : Operation and properties of Numbers** 10 Hours 25 Credit

i) Commutative, Associative, Distributive, Identity, Inverse
ii) Greatest Common Factor (GCF), Least Common Multiple (LCM), Least Common Denominator (LCD
iii) Square Root, Cube Root

**Unit 3 : Applications of Numbers** 10 Hours 25 Credit

i) Proportion and Ratio
ii) Percentage and Average
iii) Profit and Loss
iv) Simple and Compound Interest
v) Partnership
vi) Rates, Unit Rates
vii) Mark Up, Sales Discount, Final Cost

**Unit 4 : Geometrical Approach of Numbers** 10 Hours 25 Credit

i) Distance, Time and Speed
ii) Time and Work
iii) Volume and Surface Area
iv) Pipes and Cisterns
v) Perimeter, Area, Circumference, Circle, Square, Triangle, Rectangle
vi) Metric and Customary Unit Conversion Length, Weight, Capacity, Time
vii) Problem on Ages and on Trains
viii) Clocks and Calendar

Co-ordinator
( Dr. P. N. Tayade )

Head of Dept.
( Miss. R. N. Mahajan )