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B.A. Economics
B.A. Part 1
Sem :1
Paper- Mathematical Methods In Economics (MJC-2)
Topic- Number System (Introduction)
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Number System

A number system is a structured way of representing, expressing, and manipulating numbers. In mathematics, several types of number systems exist, each with its unique properties and applications. Here's an overview of some fundamental number systems:

1.Natural Numbers (N):
Positive integers starting from 1 and extending infinitely. {1, 2, 3, ...}

2. Whole Numbers (W):
Similar to natural numbers but includes zero. {0, 1, 2, 3, ...}

3. Integers (Z):
Positive and negative whole numbers, including zero. {..., -3, -2, -1, 0, 1, 2, 3, ...}

4. Rational Numbers (Q):
Numbers that can be expressed as fractions p/q, where p and q are integers and q is not zero. Examples include 1/2 and -3.

5. Irrational Numbers:
 Numbers that cannot be expressed as fractions, with non-terminating and non-repeating decimals. π (pi) and √2 are examples.

6. Real Numbers (R):
The combination of rational and irrational numbers, forming the continuum of all possible numbers on the number line.

7. Complex Numbers (C):
Numbers in the form a + bi, where "a" and "b" are real numbers, and "i" is the imaginary unit (√(-1)). Examples include 3 + 4i.

8. Binary System:
 Used in computers, it represents numbers using only two digits, 0 and 1.

9. Octal and Hexadecimal Systems:

Base-8 and base-16 number systems, often used in computing for their concise representation.

Understanding these number systems is crucial for various mathematical operations, computations, and applications in fields such as computer science, physics, and engineering. Each system has its unique characteristics and plays a distinct role in solving mathematical problems and modelling real-world scenarios.