

Syllabus for the Online Entrance Test for MCA 2018

The MCA 2018 Online Entrance Test shall comprise of 120 questions to be answered in 2 hours. Questions will be of objective type with multiple choices out of which only one is correct. A candidate must select only the correct answer to score full marks. For each correct answer a candidate will earn 4 marks. For every incorrect answer one mark will be deducted. If a question has not been attempted no credit will be given. The questions will be distributed into various areas as follows and the detailed syllabus is given below:

Section	Subject	No of Questions
A	Mathematics	60
B	Analytical ability & Logical Reasoning	20
C	Computer Awareness	20
D	English	20
	Total	120

Section A: Mathematics (60 questions – objective type)

- **Algebra:** Fundamental operations in Algebra, expansion, factorization, quadratic equations, indices, logarithms, arithmetic, geometric and harmonic progressions, binomial theorem, permutations and combinations, surds
- **Set Theory:** Sets and subsets, operations on sets, sequences, properties of integers, relations and functions
- **Matrix Algebra:** Elementary transformations, inverse of a matrix, rank, solution of simultaneous linear equations, eigenvalues and eigenvectors, quadratic forms
- **Co-ordinate Geometry:** Rectangular Cartesian co-ordinates, equations of a line, mid point, intersections etc., equations of a circle, distance formulae, pair of straight lines, parabola, ellipse and hyperbola, simple geometric transformations such as translation, rotation, scaling.
- **Calculus:** Limit of functions, continuous functions, differentiation of function(s), tangents and normals, simple examples of maxima and minima, integration of function by parts, by substitution and by partial fraction, definite integral application to volumes and surfaces of frustums of a sphere, cone, cylinder, Taylor Series.
- **Differential Equations:** Differential equations of first order and their solutions, linear differential equations with constant coefficients, homogenous linear differential equations.
- **Vectors:** Position vector, addition and subtraction of vectors, scalar and vector products and their applications to simple geometrical problems and mechanics.
- **Trigonometry:** Simple identities, trigonometric equations, properties of triangles, solution of triangles, height and distance, inverse function
- **Probability and Statistics:** Basic concepts of probability theory, averages, dependent and independent events, frequency distributions, and measures of dispersions, skewness and kurtosis, random variable and distribution functions, mathematical expectations, binomial, Poisson, normal distributions, curve fitting, and principle of least squares, correlation and regression
- **Linear Programming:** Formulation of simple linear programming problems, basic concepts of graphical and simplex methods, revised simplex method, transportation and assignment problems, duality and integer programming

Section B: Analytical Ability and Logical Reasoning: (20 questions – objective type)

Questions in this section will test logical reasoning, quantitative reasoning, and visio-spatial reasoning

Section C: Computer Awareness: (20 questions – objective type)

- **Computer Basics:** Organization of a computer, Central Processing Unit (CPU), Structure of instructions in CPU, input / output devices, computer memory, memory organization, back-up devices
- **Data Representation:** Representation of characters, integers, and fractions, binary and hexadecimal representations, Binary Arithmetic: Addition, subtraction, division, multiplication, 1's and 2's complement arithmetic, floating point representation of numbers, normalized floating point representation, Boolean algebra, truth tables, Venn diagrams
- **Computer Architecture:** Block structure of computers, communication between processor and I / O devices, interrupts
- **Computer Language:** Assembly language and high-level language, Multiprogramming and time-sharing operating systems, Computer Programming in C.
- **Flow chart and Algorithms**
- **Operating Systems:** Evolution of operating systems, types of operating systems, functions of an operating system, modern operating systems

Section D: English: (20 questions – objective type)

- **Use of articles and prepositions** (fill in the blanks or correct use)
- **Idioms and phrases**
- **Synonyms**
- **Reading comprehension**
- **Expansion of an idea**
- **Sentence sequence** (jumbled sentences)
- **Completion of a sentence** (with choices)
- **Choice of appropriate word to fill in the blanks** (with options)
- **Abridging sentences / paragraphs.**