

## The Online Computer Based Test

The Online Computer Based Test for shortlisting candidates for admission to its 2 Years [4 Semesters] full-time MCA Program will be conducted by the Institute at national level. Please refer Section 9 for the details of the Test.

**Date of Online Entrance Test: 19.06.2022 (Sunday)**

**Mode of Examination: Proctored Based Online Test.**

**Duration of Online Test: 2 hours [10 am to 12 Noon]**

### Admit Cards:

Admit card will be issued to the applied candidates whose online applications are submitted successfully within the stipulated time.

The candidates are advised to download their admit cards from the Institute website [Admission Page] on or after **15.06.2022**. If a candidate is unable to download the admit card, candidates should contact the Admissions Office at BIT Mesra, Ranchi by email at [admissions@bitmesra.ac.in](mailto:admissions@bitmesra.ac.in) or telephone or fax (contact numbers are given in page -2 of this Brochure).

At the end of the online test, the score obtained by the candidates will be flashed on the computer screen. You may note it down for your ready reference.

Candidates are also advised to visit our Institute website <http://www.bitmesra.ac.in> for any latest updates pertaining to Online Entrance Test and admission.

### Notes:

- The admit card is not transferable to any other person. Impersonation is a punishable offence under law. The admit card will be required to be produced at the time of admission. Therefore, all candidates are required to preserve the admit card until the admission process is complete.**
- The link along with instructions for mock test and actual test will be share within the Admit Cards of the applicants.
- Merely being allowed to appear in the online test will not be considered as a ground for being eligible for admission.**

## Sec 9. Syllabus for the Online Entrance Test

The MCA 2022 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	40
B	Analytical ability & Logical Reasoning	20
C	Computer Awareness	40
D	English	20
	Total	120

### Section A: Mathematics (40 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.
- **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

## 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: (40 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
- **Programming Languages:** C, C++, Java, Python
- **Flow chart and Algorithms**
- **Operating Systems:** Evolution of operating systems, types of operating systems, functions of an operating system, modern operating systems
- **Database Management systems:** Relational Database, Entity-Relationship Diagram, Functional Dependencies, Decomposition
- **Computer Networks:** Classification of Networks: LAN, MAN, WAN, Network Topology: Bus, Star, Ring, Star bus, Star ring, Mesh, Modem, Repeater, NIC, Network adapters, Connectors, Transceiver, Hub, Bridge, Switches, Routers and Gateways

## 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.**