

JOINT ENTRANCE TEST EXAM ORISSA

MASTER OF COMPUTER APPLICATIONS (MCA)

Eligibility :

Pass or appearing for the Bachelors Degree examination of three years duration in any discipline from any University or Orissa or equivalent recognised by UGC and having passed in Mathematics at 10 + 2 level or in +3 level. Business Mathematics at +2 level are not permitted.

OR

Pass or appearing for the Bachelors degree examination of three years duration in any discipline from any University of Orissa or equivalent with Mathematics as one of the subjects. There is no age limit to admission to MCA course.

Pattern :

All candidates seeking admission to MCA course will have to appear in Mathematics and Computer Awareness (in one sitting). There will be multiple choice type question. The number of questions will be sixty (60) per each hour of examination. Each question shall have four answers (including one or more correct answer(s)) and the examinee shall have to blacken only the appropriate circle (which he/she considers most correct) in HB pencil or black/blue ball point. Each correct answer shall fetch four marks whereas each incorrect answer will lead to deduction of one mark. Each unattempted question will fetch zero. If more than one circles are darkened for one question. It will be treated as an incorrect answer and one mark will be deducted.

Tentative Month : May

Syllabus :

MATHEMATICS :

Logic : Statement, Negation, Implication, Converse, Contra positives, Conjunction, Disjunction, Truth Table.

Algebra of Sets : Set operations, Union, Intersection, Difference, Symmetric Difference, Complement, Venn Diagram, Cartesian products of set, Relation and Function, Composite Function, Inverse of a Function, Equivalence Relation, Kinds of Function.

Number Systems : Real numbers (algebraic and other properties, rational and irrational numbers), Complex numbers, Algebra of complex numbers, Conjugate and square root of a complex number, cube roots of unity, De-Moivres Theorem with simple application.

Permutation and Combinations : Permutation and combinations and their simple applications, Mathematical induction, Binomial Theorem.

Determinants : Determinants upto third order, Minors and Cofactors, Properties of determinants. Matrices upto third order. Types of matrices, Algebra

of matrices, Adjoint and Inverse of a matrix, Application of determinants and matrices to the solution of linear equations (in three unknowns)

Trigonometry : Compound angles, Multiple and Sub-multiple angles, Solution of trigonometrical equations, Properties of triangles, Inverse circular function.

Co-ordinate Geometry of Two Dimensions : Straight lines, Pair of straight lines, Circles, Equations of tangents and normals to a circle, Equations of Parabola, Ellipse and Hyperbola, Ellipse and hyperbola in simple forms and their tangents (Focus, directrix, eccentricity and latus rectum in all cases).

Co-ordinate Geometry of Three Dimensions : Distance and division formulae, Direction cosines and direction ratios, Projections, Angles between two planes. Angle between a line and a plane, Distance of a point from a line and plane, Equations of a sphere-general equation.

Vectors : Fundamentals, Dot and Cross product of two vectors, Scalar triple product, Simple Applications (to geometry, work and moment).

Differential Calculus : Concept of limit, Continuity, Derivation of standard functions, Successive differentiation simple cases, Leibnitz Theorem, Partial differentiation simple cases, derivatives as rate measure, Maxima and minima indeterminate forms, Geometrical applications such as tangents and normals to plane curves.

Integral Calculus : Standard methods of integration (substitution, by parts, by partial fractions etc.) Definite integrals and properties of Definite integrals, Area under plane curves. Differential Equations (only simple cases). (i) $dy/dx = f(x)$ (ii) $dy/dx = f(x)g(y)$ (iii) $d^2y/dx^2 = f(x)$ and application to motions in a straight line with constant acceleration.

Probability and Statistics : Averages (Mean, Median and Mode), Dispersion (standard deviation and variance). Definition of probability, Mutually exclusive events, Independent events, Addition theorem.

Computer Awareness :

Introduction to Computer : Brief history of Computers, Components of a Computer, Computer related general knowledge, Application of Computers, Classification of Computers, Simple DOS commands.

Computer Arithmetic : Number System with general base, Number base conversion, Elementary arithmetic operation.

Basic Language Programming : Flow charts, Algorithms, Constants, Variables, Arithmetic and logical expression, Elementary BASIC statements, Writing simple programs (using sequence, repetition and control structures), Subscripted variables, Matrix operations Function and Subroutines, Concept of Files.

NIMS
KANPUR

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