

## Schedule of Examination

### Information Brochure | NATA - 2017

#### 3.0 Schedule of Examination

Date & Time of Examination	Subject and Marks of Examination
16.04.2017 (Sunday) 11.00 a.m. to 2.00 p.m.	FIRST 90 minutes <span style="float: right;">TOTAL 120 Marks</span>
	Mathematics (MCQ) 30X2 = 60 Marks (OMR BASED) General Aptitude (MCQ) 30X2 = 60 Marks (OMR BASED)
(Grand Total of 200 marks)	LAST 90 minutes <span style="float: right;">TOTAL 80 Marks</span> Drawings (TWO SETS) in A4 Size paper 2X 40 = 80 Marks

**N.B.** No further examination shall be held under any circumstances for those who will be unable to appear on the scheduled date and time of NATA-2017 examination.

#### Pattern of Questions and Mode of Answering

All the booklets will be served at the beginning in one folder. MCQ answer sheet (OMR) will be withdrawn after 90 minutes. It is to be noted carefully that the candidates must fill in as well as bubble in ALL the relevant information including the “Question Booklet No” at the indicated places on OMR Answer Sheet, Drawing Sheets and Attendance Sheet during examination.

Questions and all instructions will be available only in English medium.

Syllabus for NATA-2017 is given in **APPENDIX – I**.

Subject	Distribution of Marks	Total Marks
Mathematics (30 Qs)	30 x 2	60
General Aptitude (30 Qs)	30 x 2	60
Drawing (2 Qs)	2 x 40	80
	<b>TOTAL</b>	<b>200</b>

#### Mathematics & General Aptitude Test

**Only one option is correct and correct response will yield 2 (two) marks. There is no negative marking, but wrong answering will be penalized in case of tie breaking, as elaborated below.**

Answers to both parts must be provided on same OMR sheet, which is specially designed machine readable response sheet. **ANSWERS ARE TO BE MARKED (BUBBLED) USING BLUE/BLACK BALL POINT PEN ONLY ON THE ‘OMR ANSWER SHEET.’**

## Result format

Results will be available in the website of the COUNCIL, and some other websites which will be announced in various electronic/printing media before declaration of results.

The result will be available in three formats:

1. Marks obtained out of 200 and in each component
2. Merit listing – unique based on marks and tie breaking rules (mentioned in Section 4 above)
3. Percentile score based on the merit listing

Qualifying marks for NATA-2017 would be based on the following rules:

1. At least 25% must be secured in MCQ portion (30 out of 120)
2. At least 25% must be secured in Drawing portion (20 out of 80)
3. Overall qualifying marks (out of 200) would be based on post-exam statistics and at the discretion of the Council. Candidate will not qualify in NATA-2017 unless (s)he satisfies all three conditions mentioned above. An attempt will be made to normalize (with respect to NATA-2017) the score of NATA-2016 qualified

candidates seeking admission in the session 2017-18 in order to specify their position in order of merit for counseling purposes. Such guidelines would be based on statistical analysis and the Council's decision would be final in this regard.

## Syllabus for NATA-2017

Subject		Questions	Marks	Mode of Exam
Mathematics & General Aptitude	Mathematics	30	60	MCQ (OMR based)
	General Aptitude	30	60	MCQ (OMR based)
Drawing test		02	80	Paper and Pencil

### MATHEMATICS

**Algebra:** Definitions of A. P. and G.P.; General term; Summation of first n-terms of series  $\Sigma n$ ,  $\Sigma n^2$ ,  $\Sigma n^3$ ; Arithmetic/Geometric series, A.M., G.M. and their relation; Infinite G.P. series and its sum.

**Logarithms:** Definition; General properties; Change of base.

**Complex Numbers:** Definition and properties of complex numbers; Complex conjugate; Triangle inequality; Square root of complex numbers; Cube roots of unity; De Moivre's theorem (statement only) and its elementary applications. Solution of quadratic equation in complex number system.

**Quadratic Equations:** Quadratic equations with real coefficients; Relations between roots and coefficients; Nature of roots; Formation of a quadratic equation, sign and magnitude of the quadratic expression  $ax^2 + bx + c$  (where  $a, b, c$  are rational numbers and  $a \neq 0$ ).

**Binomial theorem (positive integral index):** Statement of the theorem, general term, middle term, equidistant terms, properties of binomial coefficients.

**Matrices:** Concepts of  $m \times n$  ( $m \leq 3, n \leq 3$ ) real matrices, operations of addition, scalar multiplication and multiplication of matrices. Transpose of a matrix. Determinant of a square matrix. Properties of determinants (statement only). Minor, cofactor and adjoint of a matrix. Nonsingular matrix. Inverse of a matrix. Finding area of a triangle. Solutions of system of linear equations. (Not more than 3 variables).

**Trigonometry:** Trigonometric functions, addition and subtraction formulae, formulae involving multiple and submultiples angles, general solution of trigonometric equations. Properties of triangles, inverse trigonometric functions and their properties.

**Coordinate geometry of two dimensions:** Distance formula, section formula, area of a triangle, condition of co linearity of three points in a plane. Polar coordinates, transformation from Cartesian to polar coordinates and vice versa. Parallel transformation of axes, concept of locus, elementary locus problems. Slope of a line. Equation of lines in different forms, angle between two lines. Condition of perpendicularity and parallelism of two lines. Distance of a point from a line. Distance between two parallel lines. Lines through the point of intersection of two lines. Equation of a circle with a given center and radius. Condition that a general equation of second degree in  $x, y$  may represent a circle. Equation of a circle in terms of endpoints of a diameter. Equation of tangent, normal and chord. Parametric equation of a circle. Intersection of a line with a circle. Equation of common chord of two intersecting circles.

**Co-ordinate geometry of three dimensions:** Direction cosines and direction ratios, distance between two points and section formula, equation of a straight line, equation of a plane, distance of a point from a plane.

**Differential calculus:** Functions, composition of two functions and inverse of a function, limit, continuity, derivative, chain rule, derivative of implicit functions and functions defined parametrically.

**Integral calculus:** Integration as a reverse process of differentiation, indefinite integral of standard functions. Integration by parts. Integration by substitution and partial fraction. Definite integral as a limit of a sum with equal subdivisions. Fundamental theorem of integral calculus and its applications. Properties of definite integrals.

**Differential Equations:** Formation of ordinary differential equations, solution of homogeneous differential equations, separation of variables method, linear first order differential equations.

**Application of Calculus:** Tangents and normals, conditions of tangency. Determination of monotonicity, maxima and minima. Differential coefficient as a measure of rate. Motion in a straight line with constant acceleration. Geometric interpretation of definite integral as area, calculation of area bounded by elementary curves and Straight lines. Area of the region included between two elementary curves.

**Vectors:** Addition of vectors, scalar multiplication, dot and cross products, scalar triple product.

**Sets, Relations and Mappings:** Idea of sets, subsets, power set, complement, union, intersection and difference of sets. Venn diagram. De Morgan's Laws. Inclusion / Exclusion formula for two or three

finite sets, Cartesian product of sets. Relation and its properties. Equivalence relation — definition and elementary examples, mappings, range and domain, injective, subjective and objective mappings, composition of mappings, inverse of a mapping.

**Permutation and combination:** Permutation of  $n$  different things taken  $r$  at a time ( $r \leq n$ ). Permutation of  $n$  things not all different. Permutation with repetitions (circular permutation excluded). Combinations of  $n$  different things taken  $r$  at a time ( $r \leq n$ ). Combination of  $n$  things not all different. Basic properties. Problems involving both permutations and combinations.

**Statistics and Probability:** Measure of dispersion, mean, variance and standard deviation, frequency distribution. Addition and multiplication rules of probability, conditional probability and Bayes' Theorem, independence of events, repeated independent trials and Binomial distribution.

## **GENERAL APTITUDE**

Objects, texture related to architecture and built environment. Interpretation of pictorial compositions, Visualizing three-dimensional objects from two-dimensional drawing. Visualizing different sides of 3D objects. Analytical reasoning, mental ability (visual, numerical and verbal), Awareness of national/international architects and their creations.

## **DRAWING TEST**

Understanding of scale and proportion of objects, geometric composition, shape, building forms and elements, aesthetics, colour texture, harmony and contrast. Conceptualization and Visualization. Drawing of patterns - both geometrical and abstract. Form transformations in 2D and 3D like union, subtraction, rotation, surfaces and volumes. Generating plan, elevation and 3D views of objects. Creating 2D and 3D compositions using given shape and forms. Perspective drawing, Sketching of urbanscape and landscape.