



## **RABINDRA VIDYA NIKETAN, KEONJHAR**

### **Class XI Admission Test 2026–27**

### **Question Pattern, Marking Scheme & Syllabus**

This document contains the **question pattern, marking scheme, and syllabus** for the **Class XI Admission Test (Session 2026–27)** of **Rabindra Vidya Niketan, Keonjhar**.

The information is provided **stream-wise** for:

- **Science**
- **Commerce**
- **Humanities**

The syllabus is based on the **CBSE and ICSE Class X curriculum**.

Students are advised to go through the details carefully before appearing for the admission test.

### **Class XI (SCIENCE) Admission Test Syllabus**

	Math	Physics	Chemistry	Biology	English
MCQ'S	NIL	NIL	NIL	NIL	•Reading Comprehension 5 Questions(1 mark each)
Subjective	10 Questions (2 marks each)	•Reading Comprehension 1 Question (2 Marks) 3 Questions (1 mark each) •Grammar 5 Questions (1 mark each) • Analytical Paragraph 1 Question (5 Marks)			

#### **MATHEMATICS**

##### **1. POLYNOMIALS**

- i) Zeros of a polynomial
- ii) Relationship between zeros and coefficients of quadratic polynomials.

##### **2. QUADRATIC EQUATIONS**

- i) Standard form of a quadratic equation  $ax^2 + bx + c = 0, (a \neq 0)$ .

ii) Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula.

Relationship between discriminant and nature of roots.

iii) Situational problems based on quadratic equations related to day-to-day activities to be incorporated

### **3. ARITHMETIC PROGRESSIONS**

i) Motivation for studying Arithmetic Progression

ii) Derivation of the nth term and sum of the first n terms of AP and their application in solving daily life problems.

### **4. COORDINATE GEOMETRY**

i) Distance formula.

ii) Section formula (internal division).

### **5. TRIANGLES**

Definitions, examples, counter examples of similar triangles.

i) (Prove) If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

ii) State (without proof) If a line divides two sides of a triangle in the same ratio, the line is parallel to the third side.

iii) State (without proof) If in two triangles, the corresponding angles are equal, their corresponding sides are proportional and the triangles are similar.

iv) State (without proof) If the corresponding sides of two triangles are proportional, their corresponding angles are equal and the two triangles are similar.

v) State (without proof) If one angle of a triangle is equal to one angle of another triangle and the sides including these angles are proportional, the two triangles are similar.

### **6. CIRCLES**

i) Tangent to a circle at point of contact.

ii) (Prove) The tangent at any point of a circle is perpendicular to the radius through the point of contact.

iii) (Prove) The lengths of tangents drawn from an external point to a circle are equal.

### **7. INTRODUCTION TO TRIGONOMETRY**

i) Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined)

ii) Motivate the ratios whichever are defined at  $0^\circ$  and  $90^\circ$ . Values of the trigonometric ratios of  $30^\circ$ ,  $45^\circ$  and  $60^\circ$ . 3. Relationships between the ratios.

### **8. TRIGONOMETRIC IDENTITIES**

i) Proof and applications of the identity  $\sin^2 A + \cos^2 A = 1$ .

ii) Only simple identities to be given.

### **9. HEIGHTS AND DISTANCES:**

i) Angle of elevation, Angle of Depression.

ii) Simple problems on heights and distances. Problems should not involve more than two right triangles. Angles of elevation / depression should be only  $30^\circ$ ,  $45^\circ$ , and  $60^\circ$ .

### **10. SURFACE AREAS AND VOLUMES**

i) Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones.

### **11. PROBABILITY**

i) Classical definition of probability.

ii) Simple problems on finding the probability of an event.

## **PHYSICS**

### **1. Effects of Current:**

Electric current, potential difference and electric current  
Ohm's law; Resistance, Resistivity, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R.

### **2. Magnetic effects of current:**

Magnetic field, field lines, field due to a current carrying conductor, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's Left Hand Rule, Direct current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

### **3. Natural Phenomena:**

#### **REFLECTION OF LIGHT:**

Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula, magnification.

#### **REFRACTION OF LIGHT:**

Laws of refraction, refractive index.

Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivation not required); Magnification. Power of a lens

#### **HUMAN EYE AND ITS COLOURFUL WORLD**

Functioning of a lens in human eye, defects of vision and their corrections, applications of spherical mirrors and lenses.

#### **DISPERSION AND SCATTERING OF LIGHT**

Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

### **4. Force, work, power and energy:**

Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration.

Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy.

## **Chemistry**

### **1. Atoms and Molecules :** Symbols and formulae, atomic mass , molecular mass, formula unit mass, mole concept

2. **Structure of the atom:** Charge particle of matter, Cathode ray and Anode ray experiment , Thomson's model, Rutherford's model, Bohr's model, Atomic number, Mass number, Isotopes, Isobars, Isotopes
3. **Chemical Reaction and Equation:** Writing a chemical equation, balanced chemical equation, Types of chemical reaction
4. **Acid , Base and Salt:** Acids, Bases, Properties of acids and bases, Salts
5. **Metals and Non Metals:** Metals, Non Metals, Physical and Chemical Properties , Ores and Minerals Extraction of metals, Corrosion, Alloys
6. **Organic Chemistry:** Versatile nature of carbon, Bonding of Carbon, Allotropes, Hydrocarbon, Functional group, Nomenclature and Isomerism, Ethanol and Ethanoic Acid, Soap and Detergent.

## **BIOLOGY**

1. **Cell:** Type, Shape, Number. Cell Wall, Plasma Membrane, Cell organelles- Nucleus, Endoplasmic Reticulum, Golgi Apparatus, Lysosome, Mitochondria, Plastid, Vacuoles, Cell division : Mitosis, Meiosis. (Definition and Importance).
2. **Life processes:**  
Nutrition - Autotroph - Photosynthesis, Heterotroph - *Amoeba, Paramoecium*.  
Digestive system in Human beings, Dental caries. Respiratory system, Glucose breakdown, ATP formation. Human circulatory system, Human heart, Blood vessels, Blood, Lymph. Transportation in plants - Absorption, Osmotic pressure.  
Excretory system in Human beings, Haemodialysis, Organ donation.
3. **Control and Coordination:**  
Nervous system, Neuron, Reflex action, Reflex arc. Human brain. Plants' Response to stimuli: Phototropism, Geotropism, Hydrotropism. Endocrine glands in humans- Animal Hormones. Plant hormones: Auxin, Gibberellin, Cytokinin, ABA (function).
4. **Reproduction:**  
Heredity and Variation. Asexual Reproduction - Binary fission, Multiple fission, Regeneration, Fragmentation, Budding, Spore formation. Vegetative propagation, Tissue culture. Sexual Reproduction in Flowering plants - Flower, Stamen, Pistil, Germination, Pollen tube formation, Fertilisation, Fruit and Seed formation.  
Human Reproduction - Male reproductive system, Female reproductive system, Puberty, Menstruation, Reproductive health.
5. **Heredity**- Mendel's experiment (Monohybrid and Dihybrid cross), Gene, Chromosome, DNA, Sex determination.

## **ENGLISH**

1. Reading Comprehension
2. Integrated Grammar
3. Creative Writing

(Letter Writing, Analytical Paragraph)

## **Class XI (COMMERCE) Admission Test Syllabus**

	Economics	Math	Arithmetic	Logical Reasoning	English
MCQ'S	NIL	NIL	NIL	20 Questions (1 mark each)	•Reading Comprehension 5 Questions(1 mark each)
Subjective	10 Questions (2 marks each)	10 Questions (2 marks each)	10 Questions (2 marks each)	NIL	•Reading Comprehension 1 Question (2 Marks) 3 Questions (1 mark each) •Grammar 5 Questions (1 mark each) • Analytical Paragraph 1 Question (5 Marks)

### **ECONOMICS**

1. Development
2. Sectors of Indian economy
3. Money
4. Banking
  - A. Commercial bank
  - B. Central bank.

### **MATHEMATICS**

#### **6. POLYNOMIALS**

- iii) Zeros of a polynomial
- iv) Relationship between zeros and coefficients of quadratic polynomials.

#### **7. QUADRATIC EQUATIONS**

- iv) Standard form of a quadratic equation  $ax^2 + bx + c = 0, (a \neq 0)$ .
- v) Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula.  
Relationship between discriminant and nature of roots.

- vi) Situational problems based on quadratic equations related to day-to-day activities to be incorporated

#### **8. ARITHMETIC PROGRESSIONS**

- iii) Motivation for studying Arithmetic Progression
- iv) Derivation of the nth term and sum of the first n terms of AP and their application in solving daily life problems.

#### **9. COORDINATE GEOMETRY**

- iii) Distance formula.
- iv) Section formula (internal division).

#### **12. INTRODUCTION TO TRIGONOMETRY**

- iii) Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined)

**13.** Motivate the ratios whichever are defined at  $0^\circ$  and  $90^\circ$ . Values of the trigonometric ratios of  $30^\circ$ ,  $45^\circ$  and  $60^\circ$ . 3. Relationships between the ratios.

**14. TRIGONOMETRIC IDENTITIES**

iii) Proof and applications of the identity  $\sin^2 A + \cos^2 A = 1$ .

iv) Only simple identities to be given.

**15. HEIGHTS AND DISTANCES:**

iii) Angle of elevation, Angle of Depression.

iv) Simple problems on heights and distances. Problems should not involve more than two right triangles. Angles of elevation / depression should be only  $30^\circ$ ,  $45^\circ$ , and  $60^\circ$ .

**16. SURFACE AREAS AND VOLUMES**

ii) Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones.

**17. STATISTICS**

Mean, Median and Mode

**18. PROBABILITY**

iii) Classical definition of probability.

iv) Simple problems on finding the probability of an event.

**ARITHMATIC**

1. Profit & Loss
2. Speed & Distance
3. Time & Work
4. Simple Interest & Compound Interest
5. Age

**LOGICAL REASONING**

1. Numeric series
2. Reasoning Analogies
3. Blood Relations
4. Coding-Decoding
5. Directions
6. Figure Matrix/ Embedded Images
7. Mirror and Water Images
8. Odd One Out
9. Picture Series and Sequences
10. Puzzles
11. Order & Ranking

19. Seating Arrangements

20. Syllogism

**ENGLISH**

1. Reading Comprehension
2. Integrated Grammar
3. Creative Writing

(Letter Writing, Analytical Paragraph)

## **Class XI (HUMANITIES) Admission Test Syllabus**

	Economics	History	Geography	Political Science	English
MCQ'S	NIL	10 Questions (1 mark each)	10 Questions (1 mark each)	10 Questions (1 mark each)	<ul style="list-style-type: none"> <li>• Reading Comprehension</li> <li>5 Questions(1 mark each)</li> </ul>
Subjective	10 Questions (2 marks each)	5 Questions (2 marks each)	5 Questions (2 marks each)	5 Questions (2 marks each)	<ul style="list-style-type: none"> <li>• Reading Comprehension</li> <li>1 Question (2 Marks)</li> <li>3 Questions (1 mark each)</li> <li>• Grammar</li> <li>5 Questions (1 mark each)</li> <li>• Analytical Paragraph</li> <li>1 Question (5 Marks)</li> </ul>

### **ECONOMICS**

4. Development
5. Sectors of Indian economy
6. Money
4. Banking
  - A. Commercial bank
  - B. Central bank.

### **HISTORY**

1. Revolt of 1857
2. Gandhi and the Indian Nationalism
3. Rise of Hitler
4. Nationalism in Europe
5. Rise of British power in India
6. French revolution

### **GEOGRAPHY**

Physical Geography

1. Climate
2. Structure and Physiography
3. Drainage

4. Natural Vegetation and Wildlife

Human and Cultural Geography

1. Resources- Soil, water
2. Agriculture
3. Mineral and Energy Resources
4. Manufacturing Industries
5. Lifelines of national Economy

**POLITICAL SCIENCE**

1. Democratic thought
2. Legislature
3. Executive
4. Judiciary
5. Federalism
6. Democratic practices
7. Right and duties
8. Local self government
9. Indian election system

**ENGLISH**

1. Reading Comprehension
2. Integrated Grammar
3. Creative Writing  
(Letter Writing, Analytical Paragraph)

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