

III. **SYLLABUS :**

The syllabus of the Written Examination for Paper – I & Paper – II appended at **Appendix- A.**

IV. **GENERAL :**

- i. The Qualifying Marks to be eligible to be called for the Personality Test is 35% in the Written Examination out of 400 Marks for UR Category candidates and 30% for SEBC/SC/ST & PwD Category candidates. However, the Commission, at its discretion, may lower the qualifying marks further for all/ specific categories of candidates only if sufficient number of candidates are not available to appear for the Personality Test. The qualifying marks for Sports Person and Ex-Servicemen will be same as their respective caste category as above.
- ii. The qualifying candidates will be shortlisted for the Personality Test based on the Marks secured in the Written Examination out of 400 Marks in a ratio of 1:2 of the advertised vacancies. In case where the vacancy is 2 or less, 5 number of candidates will be called for the Personality Test.
- iii. The documents/ testimonials submitted by the candidates will be verified before the Personality Test with respect to their correctness and authenticity.
- iv. The Select List of the candidates in different categories will be drawn in order of merit based on the Aggregate Marks secured both in the Written Examination and Personality Test (out of 450 Marks).
- v. If two or more candidates secure equal marks in the aggregate, the order of merit shall be determined in accordance with the Marks secured in the Written Examination. In case of further tie, the order of merit shall be arranged in order of the date of birth, i.e., the older in age will be higher in the merit list than the younger with same marks in aggregate.

**SYLLABUS FOR THE WRITTEN EXAMINATION FOR DIRECT RECRUITMENT TO THE POST OF ASSISTANT INDUSTRIES OFFICERS UNDER "GROUP-B" CATEGORY OF ODISHA INDUSTRIES SERVICES TO BE CONDUCTED BY ODISHA PUBLIC SERVICE COMMISSION**

PAPER	SUBJECT	FULL MARKS
Paper - I	General English, General Awareness & General Aptitude	100
Paper - II	Basic Engineering	300

**I. PAPER – I : GENERAL ENGLISH, GENERAL AWARENESS & GENERAL APTITUDE**

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**(100 MARKS)**

UNIT 1 : GENERAL ENGLISH	
1.	Grammar
2.	Comprehension
UNIT 2 : GENERAL AWARENESS	
1.	Current Affairs
2.	Indian History
3.	Indian Polity
4.	Geography of India
5.	Indian Economy with special emphasis on Industry
UNIT 3 : GENERAL APTITUDE	
1.	Quantitative Aptitude (Basic Numeracy & Arithmetic)
2.	General Mental Ability
3.	Logical Reasoning
<b><i>NB : The questions will be of Class 10<sup>th</sup> standard.</i></b>	

**II. PAPER – II: BASIC ENGINEERING :**  
**(300 MARKS)**

**UNIT 1 : C & DATA STRUCTURE**

Problem-solving process: Algorithms and Flow Chart, Structure of C Program, Character set Identifiers, Keywords, Data Types, Constant and Variables, Statements, Input and Output statements, Operator and Expressions, Precedence of Operators, Control Structures (If, If-else, Switch-case, For loop, While, do-While), Functions (Built-in, user-defined), Recursive Function. Introduction to Data Structure, Linear Linked List: Creation, Insertion, Deletion. Stack, Stack applications (Infix to postfix, postfix evaluation), Queue (linear & circular).

**UNIT 2 : ENGINEERING MECHANICS**

Concurrent forces on a plane: Composition, resolution and equilibrium of concurrent coplanar forces, method of moment. Plane trusses, method of joints and method of section. Parallel forces on a plane: General case of parallel forces, center of parallel forces and center of gravity, Centroid of place and composite figures, Theorems of Pappus and Guildins. Moment of Inertia: Plane figure with respect to an axis in its plane and perpendicular to the plane, Polar moment of inertia, parallel axis theorem. Rectilinear translation: Kinematics, Principle of dynamics, D' Alembert's Principles, Principle of work and energy for a particle and a rigid body, Conservation of Energy, Principle of impulse and momentum for a particle and a rigid body, Conservation of momentum.

**UNIT 3 : BASIC MANUFACTURING PROCESS**

Lathe, Milling Machine, Drilling machine – Components, types and applications.

Foundry process/ Casting, Patterns, Pattern Materials, Pattern Allowances, Moulding Materials, Properties of Moulding Sand. Solidification of Casting, Types of Solidification, Special Casting Processes: Die Casting and Centrifugal Casting, Investment Casting, Casting defects. Welding: Classification of Welding Process, Gas Welding, Arc Welding, TIG, MIG, Resistance Welding.

#### **UNIT 4 : BASIC ELECTRICAL ENGINEERING**

D.C. Networks: Kirchhoff's Laws, node voltage and mesh current methods, delta-star and star-delta conversions, superposition principle. Single Phase and three phase AC circuit: average and effective values of sinusoids, solution of R, L, C series circuits, solution of series and parallel circuits, series-parallel resonance. Line and phase quantities, Solution of the balanced three phase circuits, measurement of power in three phase circuits. Magnet circuit & Principle of Electromechanical energy conversion: Fundamental laws of electromagnetic induction, Solution of simple magnetic circuits. DC Machine: Construction, types, emf equation of generator, torque equation of motor, speed control of DC motors. AC Machines: Single Phase Transformer: Construction, emf equation, no load and load operation, voltage regulation and efficiency.

#### **UNIT 5 : BASIC ELECTRONICS**

Semiconductor Physics: Properties of Semiconductor, current flow in semiconductors, voltage-current characteristics of a p-n junction, Rectifiers. Bipolar Junction Transistor (BJT): Device structure, types and mode of operation, static characteristics, BJT as a switch, BJT as an amplifier, concept of biasing of BJT. JFET: Physical structure, operation and static characteristics. MOSFET: Physical structure, operation and static characteristics of D- and E-type MOSFET. Integrated Circuits. Digital Electronics: Number system (Decimal, Binary, Octal and Hexadecimal), Conversion among number systems, signed-binary numbers, binary addition, subtraction, multiplication and division, logic gates, laws of Boolean Algebra, simplification of expressions.

#### **UNIT 6 : BASIC CIVIL ENGINEERING**

Residential Buildings: NBC classification, Basic Components of a building, Fundamental requirements, selection of sites. Foundations: Classification, Bearing Capacity of Soil and related terms. Properties of Construction Materials: Physical, Mechanical and durability properties. Construction materials: Stone, bricks, cement, aggregate, mortar, concrete, timber, steel, non-ferrous metals, paint, plastic, glass, adhesive, tiles, composites. Conventional Water Treatment process: Screening, Plain Sedimentation, Sedimentation aided with Coagulation, Filtration and Disinfection.

## **UNIT 7 : ENVIRONMENTAL ENGINEERING**

Air Pollution: Causes, types and sources of air pollutants, Climatic and meteorological effect on air pollution concentration, formation of smog and fumigation. Control of Particulate emission. Air Quality Criteria and Practical Emission Standard.

Sources of Water Pollution, Adverse effect on human health, environment, aquatic life and plant life. Water Pollution remedial measures, Indian Standard for water pollution Control. Disposal of domestic and Industrial Solid Wastes.

Noise Pollution: Types & effects, Noise measurements and control, permissible noise limits.

## **UNIT 8 : QUALITY MANAGEMENT**

Philosophy of Quality management, Economics of quality and measurement of cost of quality, Total Quality Management (TQM), Quality function deployment, Quality Circle, concept of Zero defect, Six Sigma, Kaizen, Poka-Yoke & Taguchi.