GENERAL AWARENESS & APTITUDE TEST
Compulsory for all Group B, C & MTS

PAPER- I
MARKS – 100.

	Mode of Examination	Scheme	No. of Questions	Marks
Paper I General Awareness & Aptitude Test	**Written Test** i) MCQ for Scheme (a) to (f). ii) Language Skills/ Basic Grammar can be of MCQ type or single word/idiom answer type (At least 2 questions from each category or not more than 3 questions from one type mentioned below) iii) English Comprehension questions will also be developed in MCQ **iv) Descriptive** Essay/Précis & Letter/ Application as per the required norm of the type and marks allotted to each question (One from the former two and one from the latter two)	a) General Intelligence and Reasoning b) General Awareness	30 (1x30=30)	30
		c) Quantitative Aptitude	15 (1x15=15)	15
		d) Basic Computer Knowledge	05 (1x5=5)	05
		e) Language Skills/ Basic Grammar	25 (1x25=25)	25
		f) Comprehension	05 (1x5=5)	05
		g) Composition: Essay/Précis & Letter/ Application	02 (2x10= 20)	20
TOTAL				**100**

* *From the given syllabus, questions have to be set for three different levels, viz,*

(i) Graduate and above (ii) Class XII and (iii) Class X

Therefore, standards of the three levels have to be maintained in consistent with the educational qualifications prescribed for the post while developing the questions basing on the framed syllabus.

General Intelligence & Reasoning *

This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning, etc.

General Awareness *

Questions in this component will be aimed at testing the candidate's general awareness of the environment around and its application to society. It will also be designed to test the knowledge of current events and of such matters of every day observations and experiences in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining to History, Culture, Geography, Economics, General Policy & Politics and Scientific Research.

Quantitative Aptitude **

Questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be the computation of whole numbers, HCF & LCM, Decimals, Percentage, Ratio & Proportion, Averages, Interest, Profit and Loss, Time and distance, Time & Work, Heights and Distances, Bar diagram & Pie chart.

Quantitative Ability ***

Questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be the computation of number systems, LCM, Decimals, Percentage, Averages, Profit and Loss, Time and distance, Heights and Distances.

Language Skills/ Basic Grammar *

Questions in this component will be aimed at testing the language proficiency, especially the basic grammar and vocabulary: Prepositions, Articles, Modals, Verbs & Subjects, Adverbs, Adjectives, Parts of Speech, Tenses, Antonyms & Synonyms, and Idioms.

Comprehension: *

A text comprehensible by candidates of a particular category and will be aimed at testing the ability to understand the content of the given text and to perceive, abstract, infer, syllogise/compare, etc the information and meanings from it. Questions will include both direct and indirect testing.

Précis also falls in this category of comprehension but for the sake of question type, this is clubbed with the category of 'composition.' This will be aimed at an exercise in comprehending the given passage and orderly presenting the crux of indispensably crucial points of the given passage. Therefore, it will also be aimed at testing the ability of reading, writing, self-expression, etc. basing on the given text and presenting it in a summarized form.

Composition: *

This component will be aimed at testing the writer's composition ability in a particular type, especially the unity, orderly, brevity, style and personal touch to the subject treated. The form of a particular type will also be tested.

Note:

* : ***For both Graduate level and below***
** : ***Graduate Level***
*** : ***Below Graduate Level***

JUNIOR ENGINEER (CIVIL)

PAPER II
MARKS: 100

Unit I: Building Materials **(20 marks)**

Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials, e.g. building stones, silicate based materials, cement (Portland), asbestos products, timber and wood based products, laminates, bituminous materials, paints and varnishes.

Unit II: Estimating, Costing and Valuation **(20 marks)**

Estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Items of work – earthwork, Brick work (Modular & Traditional bricks), RCC work, Shuttering, Timber work, Painting, Flooring, Plastering. Boundary wall, Brick building, Water Tank, Septic tank, Bar bending schedule, Centre line method, Mid-section formula, Trapezodial formula, Simpson's rule; Cost estimate of Septic tank, flexible pavements, Tube well, isolates and combined footings, Steel Truss, Piles and pile-caps; Valuation – Value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.

Unit III: Surveying **(20 marks)**

Principles of surveying, measurement of distance, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite, Leveling, Definition of terms used in leveling, contouring, curvature and refraction corrections, temporary and permanent adjustments of dumpy level, methods of contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment.

Unit IV: Environmental Engineering **(10 marks)**

Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewer, oval sewer, sewer appurtenances, sewage treatments. Surface water drainage. Solid waste management – types, effects, engineered management system. Air and Noise pollution control.

Unit V: Structural Engineering **(15 marks)**

Theory of structures, Concrete Technology, RCC Design (RCC design questions may be based on both Limit State and Working Stress methods), and Steel design and construction.

Unit VI: Road **(5 marks)**

Introduction, general principles of alignment. Classification and construction of different types of roads- Component parts road curves & gradient.

Curves-types, designation of curves, setting out simple curve by successive bisection from long chords, simple curve by offsets from long chords.

Unit VII: Building Planning & Design (10 marks)

Building rules & bye laws: Objectives & importance, Function& responsibility, lay out plan & key plan-composition of submission drawing. Provision for safety requirement of green belt and land; Computer aided drafting:-Operating system, Hardware & software, Introduction of CAD, Its Graphical User Interface. Method of Installation, Basic commands of CAD.

Building Planning:-Economy & orientation Provision for lighting and ventilation, Provision for drainage and sanitation.

Types of building Planning & design of residential, public and commercial building; Parks & play ground- Types of recreation, landscaping, etc; Concepts of design of earthquake resisting buildings- requirements resistance , safety, flexible building elements, special requirements, base isolation techniques.