

SYLLABUS FOR GENERAL KNOWLEDGE - FOR DIPLOMO HOLDERS

1. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ -1- ಸಾಮಾನ್ಯಜ್ಞಾನ

200  
100 ಅಂಕಗಳು

General Paper- Covering General Knowledge topics relating to Current Events, General Science, Indian History, Indian Geography, Social Science, General Mental Ability, matters of every day observation and practical knowledge as may be expected of a person who as passed the prescribed qualifying examination.

2. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ- 2 ಸ್ಪರ್ಧಾತ್ಮಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ- 2000 ಅಂಕಗಳು

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I. MATERIALS OF CONSTRUCTION

Stones: classification, characteristics, properties and uses, quarrying, deterioration, retardation, preservation and decay of stones, artificial stones and tests on stones.

Timber: classification and sources, defects, decay and its prevention, seasoning and conservation of timber.

Bricks: manufacturing, uses, classification, requirement of good bricks, types of bricks and their uses, test of bricks and their objectives, substitute for bricks.

Clay products: characteristics, types and uses of clay tiles, terracotta, application of clay bricks in engineering field, ceramic tiles, commercial sizes of ceramic tiles, popular brand names.

Ferrous metals: types, properties and uses of ferrous metals. Market forms of cast iron, wrought iron and mild steel, deformed bars - their types, properties and uses, high tensile steel - its types, properties and uses.

Non ferrous metals: properties, uses and advantages of non-ferrous metals - copper, aluminum, zinc and tin, their market forms and application in engineering field.

Alloys: types, properties and uses-aluminum alloys, copper alloys and steel alloys.

Cement: definitions -composition of ordinary cement, functions of ingredients of cement, manufacturing of ordinary cement, storage of cement, hydration of cement, types of cement and their specific uses and properties, tests on cement as per specification, field tests on cement.

Coarse and fine aggregates: sources, functions of fine and coarse aggregate in mortar and concrete, properties of fine and coarse aggregates, bulking of sand, tests on fine and coarse aggregates and objectives.

Mortar: definition, classification and suitability of different mortars.

Cement concrete: ingredients, advantages, grades of concrete, RCC-advantages, uses and properties.

Paints, varnish and distempers: objects of paints, ingredients of paints and their functions, characteristics of good paint, types and brands available in the market, objects of varnishes, ingredients of varnishes and their functions, types of varnishes, objects of distempers, properties of good distempers, types of distemper, cement paints and market forms of cement paint and brands available in market, methods of painting varnishing and distempers.

Miscellaneous and modern building materials: glass and glass wool, plastic, fibre reinforced plastic, asbestos, asphalt, metal paste, sealants for joints, steel putty, heat insulating materials, electrical insulating materials, sound insulating materials, water proof compounds, thermocol, p.v.c., epoxy, polyurethane, geotextiles, ferro-cement products, cladding materials.

## II. SURVEYING

Definition, principles of surveying, chain surveying, compass surveying, leveling, contouring, computation of area and volume, principles of Theodolite surveying, traversing and its plotting and applications.

Trigonometrical levelling, tacheometry - principles and applications.

Curves: types of curves, elements of a simple circular curve, preparation of curve table and setting out of curves by chain and tape and instrument method, obstacle in curve ranging, definition and elements of a compound curve, setting out compound curve and simple problems, definition and elements of a reverse curve, transition curves, requirements and length of transition curve, functions of transition curves.

Modern surveying: remote sensing, global positioning system, geographical information system.

Modern surveying instruments: (i) electronic theodolite (ii) EDM (iii) total station

## III. SOLID MECHANICS

Composition and resolution of forces moments and their applications, parallel force and couples.

Geometrical properties of sections.

Properties of materials — elasticity, plasticity, hardness, toughness, brittleness, ductility, creep, fatigue, stress, strain, elongation, types of stresses and strains, elastic limit, Hooke's law - stress strain diagram — working stress, yield stress, ultimate stress and breaking stress, factor of safety, linear strain, lateral strain, volumetric strain and Poisson's ratio, elastic constants- Young's modulus, rigidity modulus & bulk modulus and their relations, bars of varying cross section, composite sections, temperature stresses and strain, strain energy, resilience, proof resilience and modulus of resilience, equation for strain energy stored in a body. Bending moment and shear force: theory of simple bending, slope and deflection of beams by moment area method, columns and struts, torsion.

## IV. CONSTRUCTION TECHNOLOGY

Soils: types of soils and their suitability to construction of the structures, bearing capacity and determination of safe bearing capacity of the soils by plate load test, method of improving the safe bearing capacity, SBC values for various types of soils.

*Foundations*: definition and purpose of foundation, types of foundations, causes for failure of foundation and preventive measures.

*Stone masonry*: types and construction and uses of stone masonry.

*Brick masonry*: types and construction and uses of brick masonry.

*Dampness and prevention of dampness*: definition and causes of dampness, effects of dampness and prevention of dampness, materials used for damp proof course.

*Plastering, pointing and painting*: objects of plastering and requirements of good plaster. method of cement plastering, types of plaster finishes, method of pointing and types of pointing, methods of painting, distempering and varnishing on different surfaces.

## V. CONCRETE TECHNOLOGY

Ingredients of concrete, water cement ratio, properties of fresh and hardened concrete, concept of design mix, methods of curing, admixtures. special concretes - high performance concrete, self compacting concrete, fiber reinforced concrete, high volume fly ash concrete, foam concrete and ready mix concrete, geo-polymer concrete. Working stress and limit state methods of designing of beam, slabs, columns and footings.

Introduction, types and advantages and disadvantage of prestressed concrete and comparison with RCC. Concrete mix design: introduction, properties of concrete, methods of proportioning concrete mix. special concrete: ferro cement concrete, fiber reinforced concrete and its types, light weight concrete, polymer concrete and its types, foam concrete, high strength concrete. Concreting under special conditions: introduction, cold weather concreting, hot weather concreting, underwater concreting, concreting in alkali soils. Handling and transportation of concrete, construction and earth moving equipments.

**VI. TRANSPORTATION ENGINEERING**

Introduction to highway engineering, alignment and surveys of roads, geometries of roads. rigid pavements and flexible pavements.

Tunnel engineering: introduction, tunnel surveying, size and shape of tunnels, construction of tunnels, tunnel lining, ventilation of the tunnels, drainage of tunnels.

**VII. DESIGN OF STEEL AND MASONRY STRUCTURES**

Introduction to steel structures, design of bolted joints, design of welded joints, design of steel beams, design of steel columns, design of steel column bases, design of steel compression member, design of steel tension members.


Analysis and design of masonry dams, analysis and design of retaining walls.

**VIII. ESTIMATING AND COSTING**

Introduction to estimation, specifications, analysis of rates, detailed and abstract estimate. detail estimates and abstract of cost of culverts, lined canal, tank weirs, tank sluice.

**IX. CONSTRUCTION MANAGEMENT**

Construction planning and organization, contracts and tenders, measurement of works and stores management, inspection and quality control, safety in construction works, entrepreneurship and management.

  
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ಸಂಪರ್ಕ ಮತ್ತು ರಕ್ಷಣೆಗಳು (ದಕ್ಷಿಣ)  
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