

# CETSE 2023 SYLLABUS FOR ITEM No.7 (Sectional Overseer Gr II) (Agriculture)

## **BUILDING MATERIALS:**

- Brick: Composition, Classification, manufacturing process and uses.
- Concrete: Composition & promotion of ingredients, mixing and placing, water cement ration.
- Timber: Classification & structure, defects, disease & decay, seasoning & use.
- Paint, Varnished & Distemper: Purpose of painting, ingredients of paint & varnished, purpose of applying distemper & process of distempering.

## **BUILDING CONSTRUCTION:**

- Bearing Capacity of Soil: Determination of bearing capacity of soil, method improving bearing capacity of soil.
- Foundation: Definition, load on building, types of building foundation.
- Stair Case: Location, types of stair case & importance of stair case with reference to building construction.
- Roof.
- Details of Doors & Windows.

## **SURVEYING:**

- Chain Survey: Definition, principles of chain survey, error due to incorrect ranging, error in length. Numerical problems.
- Compass Survey: Definition, basis difference between chain & compass survey, bearing of lines, types of meridians, whole circles & quadrantal bearing. Numerical problems.
- Leveling: Definition of different terms in leveling methods of finding out reduced level, fields book recording, effects of curvetion & refraction. Numerical problems.
- Contouring: Definition, uses and characteristics of contour, methods of contouring.
- Plane Table Surveying: General description, accessories of place table, setting up of place table, orientation, two point & three point problem.

## **HYDRAULICS:**

- Hydrostatics: Density, specific gravity, surface tension viscosity & their units, definition of pressure, intensity of pressure, atmospheric pressure, gauge pressure, total pressure, centre of pressure, buoyancy, centre of buoyancy, metacentre & metacentric height. Numerical problems.
- Hydrodynamics: Basic equation of fluid flow & application, equation of continuity of liquid flow, Bernoulli's theorem & its application, venturimetre, orifice meter, pitot tube. Numerical problems.
  - a. Definition of various hydraulic co-efficients and their relationship. Numerical problems.

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- b. Difference between notches and weirs deduction of discharge formula for different types of notches. Numerical problems.
- c. Flow of water through pipes, various losses in flow through pipes, derivation of formula. Numerical problems.
- Hydraulics Machines: turbine-general classification & principles. Types of pump- centrifugal pump & reciprocating pump.

### **IRRIGATION AND HYDRAULIC STRUCTURES:**

- Introduction: Definition necessity for irrigation, types of irrigation in India.
- Rainfall and Run off: Measurement of rain, rain gauge, run off, factors effecting run off, characteristics of catchment area, factors effecting run off.
- Water Requirement of Crops: River, lake, well, tube well, yield from these sources, river head work.
- Storage Dam: concrete dam and earth dam, materials used for construction, advantages and disadvantages, construction of dams.
- Lift Irrigation: Wells, dupe wells and tube wells.

### **DESIGNING, DRAWING AND DETAILING:**

- Introduction: Details of R.C.C. beam, slab, column, lintel, footing and stair case.
- Design of R.C.C. Member: beam, slab, column, column footing, numerical problems.
- Design of simple Steel Structure: types of joints, permissible stresses in rivets, design of joints, framed connection & seat connection. Numerical problems.

### **ESTIMATING:**

- Introduction: General idea of estimating, use of standard estimating forms, use of schedule of rates.
- 10. Earthwork: Unit of measurement, different methods of calculating quantity of earth. Numerical problems.
- 11. Road Work: Unit of measurement, method of estimating various items of works.
- 12. Masonry Work: Units of measurement, method of estimating brick masonry & reinforces brick masonry.
- 13. Concrete Work: Unit of measurement, method of estimating mass-concrete and reinforced concrete work and shuttering.
- 14. Rate Analysis: analysis of rates of brick, plain cement concrete work, R.C.C. work, door, window, plastering, R.C.C. floor, white washing, shuttering, D.P.C. & carriage of materials.
- 15. Types of Estimate: Plinth area estimate, cubic rate estimate, detailed estimate, revised estimate, supplementary estimate, annual repair estimate, contingency and work charged establishment, departmental charge, bill of quantities & costing. Numerical problems.