

**SYLLABUS FOR ENTRANCE EXAMINATION FOR THE POST OF SDE
(CIVIL) IN PUNJAB IRRIGATION DEPARTMENT**

TOTAL QUESTIONS: 150

TIME ALLOWED: 3.00 HOURS

SECTION A: GENERAL (60 QUESTIONS)

General Awareness and General Knowledge: General information about the state of Punjab and India, Economy, Science and Technology, Current Events, Political Awareness/Polity, Persons in News, Places in News, Important Awards & Honors, Sports

Analytical Ability, Logical, quantitative and visual-spatial reasoning

Computer knowledge: Introduction of Computer and History, Operating Systems, PC and System Software, Computer Network, Computer Devices, Windows, MS Word: MS Excel, Internet Programming Language (HTML/DHTML), Security Aspects for PC, e world, Advanced Technology Regarding Computer, Various Uses of Computer.

General Punjabi up to Matric standard

General English (Up to Graduation standard): Passage, Common Errors, Sentence Improvement, Fill in the blanks, Antonyms and Synonyms, Use of Propositions, Nouns, Adverbs and Adjectives.

SECTION B: PROFESSIONAL (TOTAL: 90 QUESTIONS)

IRRIGATION ENGINEERING AND WATER RESOURCES

Physical properties of fluids, Types of fluids. Fluid statics, Fluid kinematics, Fluid dynamics, Flow through pipes, Laminar and turbulent flow, Boundary layer theory, Drag and lift, Flow measurement devices, Dimensional and model analysis, Open channel flow, gradually and rapidly varied flow

Hydrologic cycle, Precipitation, Abstraction from precipitation, Runoff, Hydrograph, Floods, Flood routing, Streamflow measurements, groundwater and well hydraulics.

Water requirement of crops, irrigation Canal and its design, Diversion weir and barrage, causes of failure of hydraulic structures founded on previous foundations, Bligh's creep theory and Khosla seepage theory, Canal fall, energy dissipation works, canal head regulator, canal outlet, Cross drainage works.

Water sources, Water supply systems, Water quality, Pumps and pumping stations, Water treatment and its various units, Sewage and storm water, Characterization of sewage, sewerage systems, Sewage treatment, Sewage treatment plant with its various components

and their design, Imhoff tanks, septic tanks, oxidation pond, oxidation ditch, stabilization pond, Disposal of treated water, Plumbing.

GENERAL CIVIL ENGINEERING

Stresses and strains, bending moment and shear force diagrams, Analysis of determinate and indeterminate structures, Influence line diagrams.

Cement, aggregate, bricks, stones, Timber, lime and mortar, admixtures and super plasticizers, Properties of fresh and hardened concrete, Mix design of concrete.

Chain surveying, Traversing, Plane table survey, Compass survey, Leveling, Theodolite and tachometry survey.

Limit state design method for design of reinforced concrete elements in flexure, shear, bond and torsion, using IS:456-2000. Design of basic steel structure elements as per IS:800-2007.

Index properties and engineering properties of soil, seepage and permeability, Compaction, Consolidation, Effective stress principle, Shear strength, Soil exploration, Earth pressure, Stability of slopes, Bearing capacity, pile foundations, caissons and wells.

Geometric design of highways, Design of rigid and flexible pavements, Highway drainage, Highway maintenance, Railway Engineering.