

REVISED SYLLABUS 2022

DEPARTMENTAL PROMOTION EXAMINATION FROM RESEARCH OFFICER TO SENIOR RESEARCH OFFICER (SOIL MECHANICS & FOUNDATION / SOIL CHEMIST)

PAPER-I CURRENT AFFAIRS & RULES & REGULATIONS **100 marks**
(Pass marks 47)
(Note: Passing in each part is mandatory to clear paper-1)

Part-I Current Affairs **33 marks**
(Pass marks 40%)

Current Affairs paper will be set from leading issues published in the newspaper for the last 3 months. The following books may be consulted.

- Monthly Current Affairs Digest by Tariq Mahmood Dogar
- Monthly Current Affairs Digest by Dr. Safdar Mahmood
- Any other Current Affairs Digest

Part-II Rules and Regulations (Books allowed) **67 marks**
(Pass marks 50%)

- The Pakistan WAPDA Employees (E&D) Rules, 1978
- The Pakistan WAPDA Employees (Retirement) Rules, 1979
- The Pakistan WAPDA Leave Rules for WAPDA Employees 1982
- The Pakistan WAPDA TA Rules 1982
- WAPDA Act
- Conduct Rules
- Medical Attendance Rules.

Reference Books

- WAPDA Manual of General Rules amended upto 2014 (including addendums)

PAPER-II TECHNICAL **100 Marks**
(Pass marks 50)

Nature of soils: Cohesion, Internal friction, Plasticity, effects of density on behaviour of soils, effects of moisture on performance of soils, Groundwater. Optimum Moisture content, effect of seasonal weather changes, determination of soil plasticity, liquid and plastic limits (i) General properties of Soil Material (Classification and identification of soils, particle size/sieve analysis of soils various system of analysis, Textural Classification of soils, Grouping of soils); (ii) Triaxial testing of soil, Consolidation, Consolidated Un-drained (CU) & Consolidated Drained (CD), Major principle Stress (iii) Uniaxial Compressive strength, Modulus of Elasticity and Poisson's Ratios (iv) Calibration of Machines, Gauges and Equipment and (v) Shear Box Test, Coefficient of Consolidation, Permeability Coefficient (By falling and Constant Head method). Proctor Compaction, CBR Test. Determination of bearing capacity of Soils by various methods. Plate load test, Standard penetration test (SPT), Technical report writing for Geotechnical Investigations,

Chemical Analysis: pH & ECe Determination, Estimation of cations and anions, SAR determination, Gypsum requirement, Gypsum contents, Organic matter/humus determination, Boron estimation, Calcium carbonate percentage and Determination of exchangeable sodium (ES) cation exchange capacity (CEC), Soil pH relationship with Na_2CO_3 and cation exchange capacity (CEC), Inflow and outflow chart depicting different soil lab. Analysis activities


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Computer (Information Technology): Introduction to Computer System, M.S. Word and M.S. Office: Characteristic of computer, types of computer, computer hardware and software, types of memory and functions, operating systems, input/out and storage devices, main features of utility of MS Word, MS Excel, MS Power Point, Internet and E-mail.

Reference Books

- Soil Laboratory Testing by K.H. Head (Vol. I, II, III).
- Soil Testing by Joseph E. Bowles.
- American Standing Testing Methods (ASTM) for Soil Testing.
- Microsoft Office 2007/2010, by Gary B. Shelly, Thomas J. Cashman and Misty E. Vermaat.
- Window 7 Step by Step by Joan Lambert and Joyce Cox (Available Online).

NOTE (1) One question from Computer (Information Technology) is **compulsory** to be included in Paper-II (Technical).

NOTE (2): The paper will be 50% objective and 50% subjective.


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