

REVISED SYLLABUS 2022

DEPARTMENTAL PROMOTION EXAMINATION FROM RESEARCH OFFICER TO SENIOR RESEARCH OFFICER (CEMENT & CONCRETE)

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

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)

Cement: Types of cement, Tests for Cement, chemical analysis of cement, Manufacturing of cement (Dry and wet process), bleeding of cement paste and mortar and porosity of hydraulic cement.

Testing of Cement (Physical testing): Determination of Soundness of Cement, Determination of Consistence of standard cement paste, Determination of initial and final set, Determination of specific surface area (fineness of cement) and Determination of comprehensive strength of hydraulic cement

CONCRETE AND AGGREGATE TESTING

Aggregate: Types of Aggregate, Grading analysis, Specific gravity, Water absorption, Unit weight and voids in aggregate, Loose and rodded density, Clay lumps and friable particles, Soundness of aggregate, Flakiness and elongation indices, Aggregate impact value, Aggregate crushing value, Shapes and size of concrete aggregate, Test method for compressive strength of cylindrical concrete specimens, Flexural strength of concrete and Loss angles abrasion test for Aggregates.

Fresh Concrete: Slump test, Casting of cylinders and cubes, Air entertainment and Unit weight

Hardened Concrete: Crushing strength of concrete cylinders, Crushing strength of concrete cubes and Non-destructive testing of concrete

Steel Testing: Type and shapes of steel bars, Grades of the steel bars, Calculation of unit wt. of the steel bar, yield and tensile strength of steel bars, bend test and chemical composition of steel.

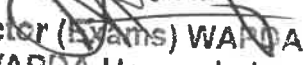
Computer (Information Technology): Introduction to Computer System, M.S. Word and M.S. Office: Characteristic of computer, types of computer, computer hardware and software, types of memory and functions, operating systems, input/out and storage devices, main features of utility of MS Word, MS Excel,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

Reference Books

- Properties of Concrete by A.M. Neville.
- Design and control of concrete mixture (Portland Cement Association), ASTM 04.01&04.02.
- 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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