Syllabus for Ph.D. Admission Test
Session 2021-22
<u>School of Water Resources Engineering</u>

Research Methodology (Total Marks 25)

Concept of measurement. Scales of measurement - Nominal, Ordinal, Interval, Ratio. Error in measurement; Design of experiment, Concept of independent & dependent variables; Data preparation and analysis (frequency tables, bar charts, pie charts, percentages), Error analysis. Concepts of accuracy, precision and resolution. Sensitivity analysis. Sample problems in measurement in research. Concepts of set theory and probability, Linear algebraic equations. Differential equations – linear ODEs and PDEs. Complex numbers, Statistical methods, Concept of central tendencies, measurement of dispersion. Curve fitting, correlation and regression. Concept of different numerical methods. Background of Basic Physical Science for Research - Concept of units and dimensions, Basics of water resources and hydraulic engineering.

Water Resources Engineering (Total Marks 25)

The syllabus of the section is the same as the areas of the Research Field which was published in the Admission Notice dated 12th June 2021. The same is given below:

Advanced Water & Wastewater treatment technologies ● Digitization of the water industry ●Waste Management using recycled materials ●Stilling Basin, Sediment Transport & Bank Erosion, Groundwater ●Seawater Intrusion ● Hydraulics & Sediment Transport ● Groundwater modeling, GIS Application in Water Resources Engineering, Water Quality Modeling, Water Treatment ●Environmental Engineering and Management