

प्रदेश लोक सेवा आयोग, मधेश प्रदेश  
इन्जिनियरिङ्ग सेवा, जियोलोजी समूह, हाइड्रोजियोलोजी उपसमूह, अधिकृत नवौं तहको खुला र अन्तरसेवा प्रतियोगितात्मक  
परीक्षाको पाठ्यक्रम

द्वितीय पत्र सेवा सम्बन्धी प्राविधिक बिषय

पूर्णाङ्क:-१००

- 1. Origin, occurrence and movement of groundwater**  
Hydrologic cycle; Groundwater storage; Geologic formation as aquifers; Phreatic, semiconfined and confined aquifers; perched aquifers; Hydraulic conductivity; Porosity; Darcy's law
- 2. Groundwater exploration**  
Geologic and hydrologic studies; Application of surface geophysics to groundwater investigations, Geophysical borehole logging and interpretation
- 3. Well Hydraulics**  
Steady and non-steady flow; Two-dimensional and three-dimensional flow equations; Partially penetrated aquifers; Theory of image wells; Well interference; Evaluation of aquifer properties
- 4. Well Construction, completion and Development**  
Types of wells; Site selection; Well components; Drilling methods; Well design; Selection of casing and screen; Well Completion; Naturally developed wells; Filter pack; Well development and its significance; Specification of Construction Materials, Cost estimation and Contract management
- 5. Well and aquifer evaluation**  
Type of pumping tests; Test procedure; Interpretation of pumping tests and its significance; Specific capacity and Well efficiency
- 6. Pumps**  
Rotodynamic and positive-displacement pumps; Pump selection criteria.
- 7. Well and pump maintenance**  
Corrosion and incrustation; Evaluation of pump and well performance; Well maintenance and rehabilitation
- 8. Groundwater Chemistry**  
Common contaminants, their impacts and remediation techniques
- 9. Groundwater Balance**  
Recharge, Discharge and storage; Concept of Safe Yield
- 10. Groundwater resources of Nepal**
  - Overview of Nepal's hydrogeology
  - History and status of groundwater uses in Nepal

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**11. Groundwater Resources of Madhesh Province**

- Hydrogeologic characteristics and Aquifer Systems,
- Groundwater budget, depth and yield
- Groundwater uses in Agriculture, Drinking water and industry

**12. Groundwater management practices in Nepal with special referrance to Madhesh Province.**

- Water level measurement
- Recharge and Discharge components and measurements
- Environmental impacts of groundwater abstraction
- Conjunctive use of Groundwater and surface water
- Adaptive and Resilient Groundwater governance including community involvement
- Challenges of groundwater management (Fluctuation in water levels; Well interference; Seasonal Water logging and flooding; Contamination; Deforestation; Urbanization; Encroachment in recharge zone; Climate change impacts on groundwater recharge)
- Significance of Rainwater harvesting
- Groundwater resource evaluation
- Tubewell irrigation systems
- Agriculture Development Strategy,2015 in the context of Groundwater use
- Irrigation Master Plan,2019 (updated 2024) in the context of Groundwater use
- Case studies