

द्वितीय पत्र सेवा सम्बन्धी प्राविधिक विषय

पूर्णाङ्क:- १००

1. Origin, occurrence and movement of groundwater

Hydrologic cycle, groundwater storage, water table & artesian aquifers, influent and affluent streams, factors influencing infiltration, geologic history of aquifer formation, groundwater flow, lithology of aquifers, Darcy's law, porosity, permeability and hydraulic gradient

2. Groundwater and Pollution

Sources of groundwater pollution, groundwater quality monitoring, mitigation measures

3. Well Construction and Development

- Types of wells
- Drilling methods
- Well Design
- Well Development and its importance
- Estimating & costing
- Well maintenance
- Specification of construction materials
- Contract management

4. Groundwater Exploration

Geologic and hydrologic studies, exploratory drilling, geophysical methods, groundwater monitoring, hydrogeological studies in water induced disaster mitigation

5. Well hydraulics

Converging flow, cone of depression, equilibrium well formula, yield vs well size, yield size vs drawdown, nonequilibrium well formula, modified nonequilibrium formula, time drawdown relation, distance-drawdown relation, partial penetration of aquifer, water level recovery, principle of image wells, two dimensional flow, three dimensional flow

6. Testing of water wells for drawdown and yield

Objective of test, pumping test, water level measurements, estimating well yield, estimating well efficiency

7. Groundwater Balance

Estimation of groundwater balance, groundwater balance & environment

8. Pumps

Selection of proper pumps, kind and types of pumps

9. Groundwater resources of Nepal

Known sources, previous work, agencies involved in the development of groundwater, current five year plans & Agricultural perspective plan (APP) in respect to groundwater, scenario of the groundwater balance after the end of APP period. Present status of groundwater balance. Issues & strategic options of groundwater development and management in Nepal

10. Groundwater resources of Kathmandu

Aquifer system, estimate of annual groundwater recharge, issues & strategic options of groundwater development and management

11. Geology of Nepal:

Major physiographic and tectonic divisions of Nepal, major thrusts and faults, South Tibetan Detachment Suntan (STDS), Main Central Thrust (MCT), Main Boundary Thrust (MBT), Main Frontal Thrust MFT etc.), origin of the Himalaya, major stratigraphic units of the Nepal Himalaya and their ages, inverted metamorphism in the Himalaya, granites of Nepal, tectonics, structure and the sediments of the modern foreland basin of the Himalaya

12. Effect of structural features in groundwater occurrence and movement

13. Groundwater exploitation & Environment

Water table depletion, land subsidence

14. Tubewell Irrigation management in community
