

IM.Sc. App. Geo Sem.-6 Examination

AGL-310

Hydrogeology

April-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q-I	A define hydrology and hydrogeology, state the significance of each (with atleast 5 points) and describe the role and significance of infiltration and condensation in groundwater systems (fig must)	7
	B write a detailed note on all the possible factors influencing the groundwater movement	7

or

Q-I	A write a detailed note on the role of porosity and permeability in GW movement (fig must)	7
	B write a note on the significance of groundwater resource management	7

Q-II	A state the Darcy's law and write in detail on its significance, applicability and limitations	7
	B define hydraulic conductivity, hydraulic gradient, effective porosity, intrinsic permeability, aquitard, vadose water, secondary permeability, embankments, piezometer, artesian well	7

or

Q-II	A write a note on the laminar and turbulent flow and Reynolds number (fig must)	7
	B write a detailed note on the confined and unconfined aquifers (fig must) – definition, role, significance, types with examples	7

Q-III	A write a note on all the possible GW contamination routes and sources, major contaminants, its effect on environment and ecology and mitigation methods	7
	B write in detail artificial GW recharge methods, its significance and limitations (fig must)	7

Or

(P.T.O)

Q-III	Awrite a note on any two surface and subsurface methods for GW exploration with the significance and limitations of each	7
	Bwrite a note on the significance and ways of GW monitoring with special emphasis on arid and glacial regions	7

Q IV	Awrite a note on all the chemical properties influencing the GW quality	7
	Bwrite a note on the challenges of GW over extraction- its negative impacts and possible ways of mitigation	7

or

Q-IV	Awrite in detail on the impacts of salt water intrusion on groundwater quality and its management (fig must)	7
	Bconsidering all the possible controlling factors, write a note on the role of seasonal variability on GW recharge	7

G-V	MCQs attempt any seven out of twelve	14
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- 1) Define scalar quantity
 - 2) Define vector quantity
 - 3) Define specific retention
 - 4) Define specific yield
 - 5) Provide the definition of aeration zone and show its location
 - 6) What is aquiclude
 - 7) define artesian well
 - 8) Define perched aquifer
 - 9) With diagram show all the stages of GW cycle
 - 10) State any 5 rocks which are good aquifers
 - 11) Define aquifuge
 - 12) Provide figure for vadose zone
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