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The Assam Royal Global University, Guwahati

Royal School of Environmental & Earth Sciences

B.Sc Geology 6th Semester

Semester End Examination, June 2023

Course Title: HYDROGEOLOGY

Course Code: GEOL162C601

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.

The figures in the right-hand margin indicate marks.

Section – A

1. Attempt **all** questions. (Maximum word limit 50) 2 x 8
- Define aquifuse with example.
 - Define anisotropy and heterogeneity of aquifer.
 - Define hydraulic conductivity and storativity.
 - Differentiate between laminar and turbulent flow.
 - What is pH? What is the value of pH in ground water?
 - Define hardness of ground water.
 - Illustrate the meaning of Ghyben-Herzberg principle.
 - Define cone of ascension.

Section – B

2. Attempt **any two** of the following: 6x 2
- Illustrate the scope of hydrogeology and its societal relevance.
 - What is leaky aquifer? Explain the confined and unconfined aquifer with proper diagram.
 - Define Evapo-transpiration. Explain the different forms of condensation.
3. Attempt **any two** of the following: 7 x 2
- Define Darcy's law. Explain the validity and ranges of Darcy's law.
 - Define Reynold's number. How is Reynolds number used to classify different types of fluid flows?
 - Define Drawdown. Explain the general features of flow nets.
4. Attempt **any two** of the following: 7 x 2
- What is surface investigation of ground water? Explain Wenner and Schlumberger method of surface investigation.
 - Differentiate between Geologic log and Drilling-Time log.
 - Illustrate the chemical properties of Ground water.
5. Attempt **any two** of the following: 7 x 2
- What is salt water intrusion? Explain the causes of salt water intrusion.
 - What is losing stream? Describe the different fluctuation patterns of ground water level.
 - Explain the importance of ground water management.