

**21APG3C10L****M.Sc. III Semester Degree Examination, April/May - 2023****APPLIED GEOLOGY****Hydrogeology****(CBCS)**

Time : 3 Hours

Maximum Marks : 70

Note : Answer **any five** of the following questions with Question **No. 1 (Q1) Compulsory**, each question carries **equal** marks.

1. Answer the following : 14
 - (a) Describe the geologic and hydrogeologic characteristics of an aquifer that play in determining its hydrological properties.
 - (b) What are the common geological formations that host groundwater and how do their properties affect groundwater occurrence and flow ?

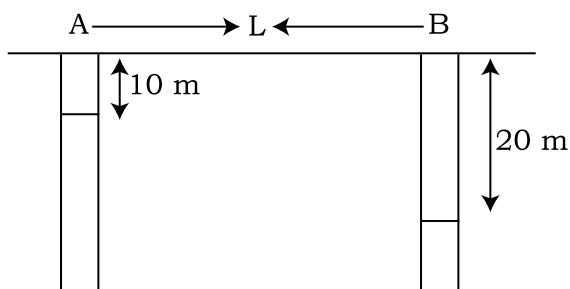
2. Answer the following : 14
 - (a) Explain the laboratory method for determining hydraulic conductivity(K).
 - (b) Discuss the validity of Darcy's Law in describing the flow of water through porous media and the factors that may limit its applicability.

3. Answer the following : 14
 - (a) Discuss the importance of groundwater recharge and the impact that changes in recharge rates can have on groundwater resources.
 - (b) Describe the process of steady radial flow towards a well and explain the factors that can affect the drawdown and pumping rate of the well.

4. Answer the following : 14
 - (a) Discuss the advantages of using groundwater as a source of drinking water and compare it with surface water sources in terms of quality, availability and reliability.
 - (b) Compare and contrast the construction process for shallow and deep wells and discuss the advantages and disadvantages of each type of well.



5. Answer the following : 14
- (a) What are the main sources of contamination in groundwater and how can contamination occur through natural processes and human activities ?
 - (b) Describe the role of regulatory agencies in monitoring and managing groundwater quality for different uses.
6. Describe the hydrological cycle and the processes involved in the movement of water through the atmosphere, land, and oceans. 14
7. Answer the following : 14
- (a) What is a flow net and how is it used to visualize groundwater flow and calculate flow rates ?
 - (b) In the given data the well A and B situated in the same aquifer, the initial rising level of the well A is 10m and well B is 20m, and the distance between A and B well is 100m. Determine the hydraulic gradient.



8. Write a short note on : 14
- (a) Confined and unconfined aquifer
 - (b) Semi-confined aquifer
 - (c) Land subsidence

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