7. Explain the key components of sediment transport in rivers. With example and suitable diagram explain the influence of flow fluctuations on the movement of sediment?

8. Describe the boundary layer structure of channel flow with a labeled diagram. What logarithmic law of the wall? How can it be used to calculate shear stress?

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1211 **I**

Unique Paper Code : 2193010005

Name of the Paper : River Science

Name of the Course : **B.Sc. (Hons) Geology (NEP)**

Semester : V

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer any **five** questions.
3. **All** Questions carry equal marks unless mentioned.

1. Discuss how variations in flow regime can influence habitat diversity and species adaptation in river systems. Provide examples of river ecosystems where hydrology plays a critical role in sustaining biodiversity.

2. Discuss the challenges and methods in implementing an integrated approach to stream and watershed management in urban areas.

3. Explain how factors such as incision, abrasion, and weathering contribute to shaping bedrock channels. Explain how these processes influence landscape development over time, with examples from tectonically active regions.

4. Analyse the role of drainage network organization in controlling water and sediment flux transfer within a river basin.

5. What are the channel bed and bank processes that shapes a river? Describe the processes involved in the cycle of bank retreat, including a clear diagram, and explain the factors influencing bank stability, such as shear strength and bank height.

6. Write short notes on any **six** of the followings :

   (i) Factors influencing hydrograph shape

   (ii) Various discharge measurement methods

   (iii) Hypsometric interval and its applications

   (iv) Hydraulic radius

   (v) The Exner equation

   (vi) Elongation ratio

   (vii) Three states of soil moisture

   (viii) Mean boundary shear stress