**ST JOSEPH’S UNIVERSITY, BENGALURU - 27**

Registration Number:

Date & session:

 **M.Sc. ENVIRONMENTAL SCIENCE AND SUSTAINABILITY – I SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2023**

**(Examination conducted in November/December 2023)**

**ES 7222 – HYDROLOGICAL SCIENCES**

**(For current batch students only)**

**Time: 2 Hours Max Marks: 50**

**This paper contains ONE printed page and THREE parts**

***Instruction: Draw diagrams wherever necessary***

**PART – A**

**Answer any FIVE of the following 5q X 2m = 10m**

1. What is virtual water?
2. Differentiate lotic from lentic systems. Cite one example each.
3. What is an AQUASTAT system?
4. List any two impacts of cultural eutrophication.
5. What are coagulants? Name any two coagulants.
6. What is a lagoon? Give two examples.
7. Write any two principles of IWRM.

**PART – B**

**Write explanatory notes on any FOUR of the following 4q X 5m = 20m**

1. Fluxes of a) hydrological cycle and b) groundwater recharge
2. Consumptive and non-consumptive use of water
3. Contamination and their impact of oceans
4. Population demand forecasting methods
5. Hydrograph and its components
6. Water Quality Indices

**PART – C**

**Answer ALL of the following 2q X 10m = 20m**

1. How does the statement *'Water - the driving force of all nature'* reflect the significance and role of water in sustaining life on Earth?

**OR**

Explain the severity and impacts of water pollution in the recent years. Discuss the implications on human health. (5+5)

1. Describe the treatment of water for portable purposes.

**OR**

Discuss *'sustainable urban water management through community engagement'* to ensure water quality and quantity for future generations.