

Date: 6-12-2022 ( 1pm)

Registration number:

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

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

**SEMESTER EXAMINATION: OCTOBER 22**

(conducted in DECEMBER 2022)

**ESS 7222: HYDROLOGICAL SCIENCES**

**TIME: 2 HOURS MAX MARKS: 50**

**This question paper contains ONE printed side and THREE parts**

**Draw diagrams and write examples wherever necessary**

**PART – A**

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

1. Distinguish between ‘unit operation’s and ‘unit processes’ in waste water treatment.
2. What are refractory organic compounds? Give examples.
3. What is biomagnification? Explain with a diagram.
4. What are the objectives of wastewater treatment?
5. List the various aspects of water governance.
6. What is Methaemoglobinemia? What is its common name?
7. List the synthetic organic water pollutants with an example each.

**PART – B**

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

1. Endosulfan episode and its impacts on public health
2. Methods employed in hard water reclamation
3. Activated Sludge Process (ASP) with its merits and demerits
4. The need for rainwater conservation and watershed development
5. Water stress and human rights for water
6. Consumptive and non-consumptive uses of water

**PART – C**

**Answer all the questions 2q X 10m = 20**

1. a. What are the unique properties of water related to life principles? Cite relevant examples. (7+3)

**OR**

b. Illustrate various stages involved in sewage treatment with its advantages and disadvantages. (8+2)

1. a. Explain the politics of water sharing, Inter-basin transfer of water and its implications. (3+5+2)

**OR**

b. Define Integrated Water Resources Management? Explain its Principles, Stages in IWRM planning and implementation. (2+8)

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