

U.G. 5th Semester Examination-2020**ENVIRONMENTAL SCIENCE****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : ENVS-H-DSE-L-02B****(Waste and Wastewater Management)**

Full Marks : 40

Time : 2½ Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** of the following: $2 \times 5 = 10$
- Differentiate between BOD and COD.
 - State the principle of activated sludge method.
 - Mention the permissible limits of *E.coli* population and BOD for discharge of wastewater.
 - What is pyrolysis?
 - What is the need of RDF process to be implemented?
 - What are the types of 'biomedical waste'?
 - Mention two agents used for tertiary treatment of wastewater.

- What are the stages of integrated waste management?
2. Answer any **two** of the following: $5 \times 2 = 10$
- State the biomedical waste management rules, 2016.
 - Briefly describe the methods for disposal of different types of hazardous waste.
 - Write a short note on the effect of landfill leachate on groundwater quality.
 - State the working principle of a trickling filter with schematic diagram.
3. Answer any **two** of the following: $10 \times 2 = 20$
- What is secondary treatment of wastewater? Explain the advantages and disadvantages of different secondary wastewater treatment strategies. $2 + 8 = 10$
 - Write short notes on the following: $5 + 5 = 10$
(i) Stack emission control (ii) Composting
 - Explain waste-to-energy concept. Discuss how this concept can be implemented at the municipality level as decentralised strategy for solid waste management. $3 + 7 = 10$
 - Explain 4R's principle in waste management. Discuss different strategies for reuse and recycling of wastewater. $4 + 6 = 10$

[Turn over]