

U.G. 1st Semester Examination - 2021**ENVIRONMENTAL SCIENCE****[HONOURS]****Course Code : ENVS-H-CC-L-02****(Environmental Chemistry and Environmental Physics)**

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: $2 \times 5 = 10$
 - a) Write the difference between primary standard and secondary standard solution with an example of each.
 - b) Deduce the molecular formula and name of CFC-12.
 - c) Give the strategic classification of different water quality parameters.
 - d) The first ionization energies of alkaline earth metals are higher than those of the alkali metals. Explain.
 - e) State the significance of humus and saccharides in soil.

- f) Why is NO_2 more significant species than SO_2 in atmospheric chemical reaction?
 - g) Define maximum mixing height.
 - h) What do you mean by Rayleigh scattering?
2. Write short notes on any **two** of the following: $5 \times 2 = 10$
 - a) Photochemical smog
 - b) Soil components
 - c) Arsenic: Sources and biochemical effects
 - d) Chemical bonds: Types and examples
 3. Answer any **two** of the following: $10 \times 2 = 20$
 - a) Explain the following terms (with example) in relation to pollutants: receptor, sink and pathway. What are the main components in acid rain? State two main ways of acid deposition. $6 + 2 + 2 = 10$
 - b) Explain the acid-base and ion-exchange reactions in soil. Discuss the effects of DDT and its accumulation in aquatic food chain. $5 + 5 = 10$
 - c) State Kirchoff's law of radiation. Calculate the coefficient of emission if 512 J of radiant

heat incident on a body absorbs 224 J. Explain hydraulic potential with a neat sketch. How do hydroelectric power plants work?

$$2+2+3+3=10$$

- d) The Minamata Chemical company discharges Hg into Minamata Bay, but the fish in the bay were found to contain CH_3Hg^+ . How can you explain the missing link? Why is alcohol more polar than carbonyl? Write a short note on diffusion and dispersion of pollutants into the atmosphere.

$$3+2+5=10$$
