

Q. No.	Question (Marks)	Refer to Note:
1	Use the hydrological cycle to highlight why water is considered a scarce resource and discuss how it contributes to the unequal distribution of water resources. How does this affect certain populations around the world more than the others. Use sketches to explain your answers. (25)	Lesson 1
2	The time of concentration (t_c) of a catchment area may be estimated using the following empirical equation. $t_c = \frac{1.8 (1.1 - C) \sqrt{3.28D}}{S^{\frac{1}{3}}}$ Where; “t_c” is in minutes “C” is the run-off coefficient (coefficient: do not have units. 0 is no run-Off, 1 is all rainfall becomes run-off. See some values below) $C = 0.70 - 0.95$ for urban areas $C = 0.10 - 0.25$ for rural areas “D” is the overland distance in metres “S” is the percentage (%) slope Using the above equation explain how flash floods are influenced by the urbanisation of the landscape. (25)	Lesson 1
3	a. Draw a schematic of a wastewater treatment plant and label the key processes involved. (15) b. Draw a schematic of an aeration tank unit and use it to explain what happens to domestic effluent inside an aeration tank. (10)	Lesson 2 Lesson 3
4	A wastewater sample is analysed and contains 50mg/l of ethylene glycol ($C_2H_6O_2$) and 70mg/l of phenol (C_6H_6O). Determine the COD and TOC. (25)	Lesson 4
5	Describe the following; • Biochemical Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Organic Carbon (TOC) • Future Oxygen Demand (25)	Lesson 4
6	a. Explain how climate change is linked to pollution. (5) b. Give three examples of noticeable changes to climatic conditions that are the result of global warming. (3) c. What is bioaccumulation?	Lesson 6

Q. No.	Question (Marks)	Refer to Note:
	(5) d. Give two examples of highly toxic chemical pollutants and explain how these could be harmful to humans. (12)	