

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY
SECOND SEMESTER EXAMINATION
CII 324- ENVIRONMENTAL CHEMISTRY I
MONDAY 03RD NOVEMBER 2022- 12.50 PM

TIME ALLOWED: 2 HOURS

INFORMATION FOR CANDIDATES

- 1 You have 10 minutes to read through the question paper. You **MUST NOT** begin writing in the answer booklet during this Time.
- 2 **ANSWER ALL QUESTIONS.**
- 3 Answers must be written on the Answer Booklet provided, show all working out and Calculations where required.
- 4 Write your full Name, Student Number, and course code clearly on the Answer Booklet. **Do that Now.**
- 5 Calculators are permitted in the Examination room. Lecture notes, note books, plain papers and textbooks are **NOT** allowed.
- 6 Mobile Phones and other electronic devices are not allowed.
- 7 **DO NOT** over write.

MARKING SCHEME: [50 marks]

- 1 (a) Define environmental chemistry and state one of the importance of studying it. [2 marks]
- (b) State any three main missions of an environmental chemist? [3 marks]
- (c) What are the biotic and abiotic components of the environment? [3 marks]
- (Total = 8 marks)
- 2 (a) Explain briefly the sources, mechanism and effects of green house gas effect. [5 marks]
- (b) (i) Describe the sources of carbon monoxide (CO). [2 marks]
- (ii) What is CO poisoning? [3 marks]
- (c) Briefly explain how settling chamber can be used as one of the air pollution control device. [3 marks]
- (Total = 13 marks)
- 3 (a) (i) Describe any two characteristics of clean water. [2 marks]
- (ii) How water can be contaminated from water pollutants? [2 marks]
- (b) Describe the causes and effect of eutrophication? [3 marks]
- (c) Briefly describe wastewater treatment from primary to secondary and finally to tertiary treatment, in order to be reused. [6 marks]
- (Total = 13 marks)
- 4 (a) What is soil pollution and its major sources? [2 marks]
- (b) Describe the *in-situ* soil decontamination and state the factors affecting soil decontamination. [3 marks]
- (c) (i) Describes any two importance of biogeochemical cycles in the ecosystem. [2 marks]
- (ii) Explain how these cycles can be affected by presence of pollutants. [2 marks]

- (d) (i) Briefly explain the sulphur cycle in the natural environment. [3 marks]
- (ii) State the natural source of sulphur as air pollutant. [2 marks]
- (iii) How these sources can affect the cycle [2 marks]

(Total = 16 marks)

THE END.