

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY
SECOND SEMESTER EXAMINATION – 2021
CH324 – ENVIRONMENTAL CHEMISTRY I
THURSDAY 4th NOVEMBER 2021- 12:50 PM
TIME ALLOWED: 2 HOURS

INFORMATION FOR CANDIDATES:

1. You will have 10 minutes to read the question paper. You **MUST NOT** begin writing in the answer book during this time.
2. **ANSWER ALL QUESTIONS.**
3. All answers **MUST** be written on the answer book provided.
4. Calculators are permitted in the examination room. Lecture notes, notebooks, plain papers, and textbooks are **NOT** allowed.
5. Mobile phones are not allowed. **SWITCH OFF THE MOBILE PHONES.**
6. Show all working and calculations in the answer book.
7. **DRAW any FIGURES** clearly and visibly.
8. **DO NOT** over write
9. Write your name and number clearly on the front page of the answer book. **DO IT NOW.**

MARKING SCHEME: [TOTAL 50 MARKS]

1. (a) Briefly explain what you understand by CO₂ capture and sequestration? [4 marks]

(b) Why is CO₂ capture and sequestration so important? [3 marks]

(TOTAL: 7 MARKS)

2. (a) Mention FOUR key ingredients needed for ozone formation in the lower atmosphere (the Troposphere). [4 marks]

(b) Starting from carbon monoxide, CO, outline the chemical reactions leading to the formation of ozone in the troposphere. [5 marks]

(c) Explain ONE chemical strategy to reduce ozone formation in the troposphere. [4 marks]

(TOTAL: 13 MARKS)

3. (a) What role do Chlorofluorocarbons (CFCs) play in the destruction of Ozone in the upper atmosphere (the Stratosphere)? Illustrate with equations. [7 marks]

(b) Briefly explain the role of Polar Stratospheric Clouds (PSCs) in ozone destruction in the stratosphere? [3 marks]

(TOTAL: 10 MARKS)

4. (a) What is carbon, or emissions trading? [2 marks]
- (b) How would emissions trading likely affect global climate change? [4 marks]
- (c) What were the Kyoto Protocol, and Paris Agreement all about? [4 marks]

(TOTAL: 10 MARKS)

5. (a) Mention THREE ways mining companies discharge Mine tailings. [3 Marks]
- (b) Mention key routes for the discharge of emerging pollutants ,such as Pharmaceuticals, into water bodies, such as Oceans? [3 marks]
- (d) Mention TWO Case Studies of discharge of mine tailings in Papua New Guinea. For each, mention how the waste is discharged. [4 marks]

(TOTAL: 10 MARKS]

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