

The Papua New Guinea University of Technology

DEPARTMENT OF MINING ENGINEERING

2020 FIRST SEMESTER EXAMINATION

Fourth Year Mineral Processing Engineering

**MP423 – SOLID/LIQUID SEPARATION & FINE PARTICLE PROCESSING**

DATE: THURSDAY, 25<sup>th</sup> June 2020

TIME: 12:50 P.M

TIME ALLOWED: 3 HOURS

**INFORMATION FOR CANDIDATES:**

1. You have ten minutes to read this question paper. You **SHOULD NOT** begin writing during this period.
2. There are **FOUR** questions altogether. Answer all **FOUR** questions.
3. **ALL** answers must be provided on the answer book provided. No other written material will be accepted.
4. Write your **NAME** and **NUMBER** clearly on the **ANSWER BOOK**. Do this **NOW**.

**Question One:**

Discuss why we carry out solid/liquid separation or dewatering in most Mineral Processing Operations.

**Question Two:**

- a) Briefly describe the difference between Coagulation and Flocculation.
- b) Discuss the various bonding mechanisms seen in a flocculation process.
- c) Discuss the various factors that might affect the flocculation process.

**Question Three:**

- a) Briefly discuss the principals of Sedimentation Separators.
- b) In a conventional thickener particles may settle in four ways; briefly describe them.

**Question Four:**

Discuss the three mechanisms of filtration and briefly describe the operating principles of the following filtration equipment and outline their advantages and disadvantages.

- a) Pressure Filters
- b) Disc and Drum filters