THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND COMMUNICATIONS ENGINEERING

FIRST SEMESTER EXAMINATION (2022)

EE341: COMPUTER ARCHITECTURE

TIME ALLOWED: 3 HOURS

INFORMATION FOR STUDENTS

1. You have **TEN (10) MINUTES** to read the paper.
   You must not begin writing during this time.

2. All answers must be written in the **ANSWER BOOK** supplied. **COMPLETE THE DETAILS REQUIRED ON THE FRONT COVER OF YOUR ANSWER BOOK - DO THIS NOW**.

3. Only drawing instruments and calculators are permitted on your desk.

4. Answer all questions.

5. Total available mark is 50.

6. If you are found cheating in the Examination, the penalties specified by the University shall apply.

7. **TURN OFF** all mobile phone and place them on the floor under your sit before the start of examination.

QUESTION ONE [5+5 = 10 MARKS]

a) Differentiate between Von Neumann and Harvard Architecture.
b) Explain the various performance methods used for computers.

QUESTION TWO [5+5 = 10 MARKS]

a) Represent A= B+C in all 3 architectures.
b) Explain all the variants of the General-Purpose Registers with example.

QUESTION THREE [2+2+2+2+2= 10 MARKS]

Explain the following addressing modes with diagrams:

- Implied
- Direct Addressing
- Register Addressing
- Displacement
- Relative

QUESTION FOUR [5+5 = 10 MARKS]

a) Discuss the limitations of the Instruction Level Parallelism.
b) Explain the concept of Superscalar Architecture in parallelism.

QUESTION FIVE [5+5 = 10 MARKS]

a) Explain the Cache Memory and its operations.
b) Differentiate between RISC and CISC.