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| **University of Science and Technology of Hanoi**  \*\*\*  **Retake Examination (Open Book)**  **Subject: Algebraic Structure**  **Sheet**: 02 **No of pages**: 01 | | ***Intake****: BI10-ICT* ***Academic year****: 2020 - 2021*  ***Date****: 30/06/2021* ***Time****: 60 minutes*  ***Important instructions***  *(according to lecturer’s decision)*  Copying from any source leads to 0 for the final mark. | |
| **Pathway coordinator** |  | **Lecturer (or Head of Subject)** | **Dr. Đoàn Nhật Quang** |
| **Student name** |  | **Student’s ID** |  |

**Problem 1** (5pts)

Solve the following linear system where x, y

Specify your algebra development to justify answer.

**Problem 2** (5pts)

Give an example of a cyclic group U . Justify the generator of the cyclic group.

**Problem 3** (5pts)

Using induction to prove that the following statement is true for all positive integers n:

**Problem** 4 (5pts)

A function f is defined by f:

f(x) = 3x (mod 12)

Is the function **homomorphic**? **isomorphic**? Justify your answer.

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