UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY

FINAL EXAMINATION (SET A)
JANUARY 2016 SEMESTER

COURSE CODE	: LED21303
COURSE NAME	: AUTOMATION SYSTEM
PROGRAMME NAME	: DIPLOMA
DATE	: 25 MAY 2016
TIME	: 02.00PM – 05.00PM
DURATION	: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please CAREFULLY read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of TWO (2) sections; Section A and Section B.
4. Answer ALL questions in Section A. For Section B, answer THREE (3) questions.
5. Please write your answers on the answer booklet provided.
6. Answer all questions in English language ONLY.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

(a) Define automation system.

(2 marks)

(b) Explain three benefits of automation system.

(6 marks)

(c) Describe the meaning of a sensor and its function.

(6 marks)

(d) Draw a diagram that shows the relationship between input, output, and processor in an automated system and give one (1) example.

(6 marks)

Question 2

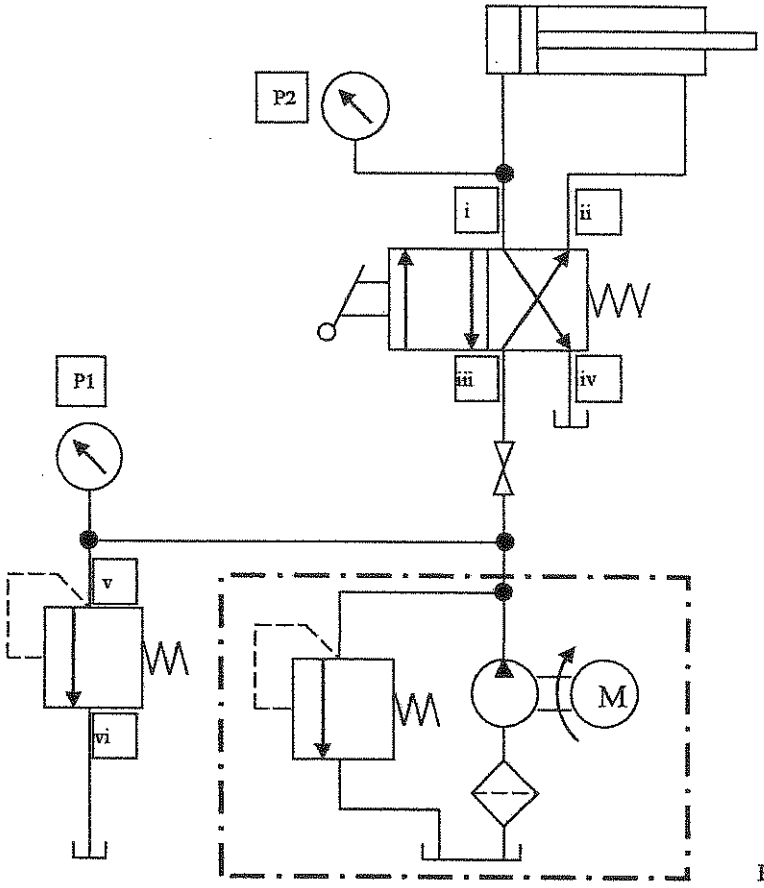
(a) List all primary levels in pneumatic system

(8 marks)

(b) Explain three (3) advantages and three (3) limitations of pneumatic systems.

(12 marks)

Question 3



P1 and P2 : pressure gauge

Figure 1: Basic hydraulic control system.

(a) Named the label of the port of each component label from (i) to (vi).

(6 marks)

(b) Explain the basic operation for the basis hydraulic system in Figure 1. The pressure is set to 5.0 MPa (50 bar) with a pressure relief valve.

(10 marks)

(c) What is the value of the pressure at P1 and P2?

(4 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer only TWO questions.
Please use the answer booklet provided.

Question 4

A sliding door is installed at Pneumatic Lab in UniKL MIMET. This door may be opened or closed by two push buttons, either from outside or inside. Design and draw a pneumatic control circuit for the system in Figure 2.

(20 marks)

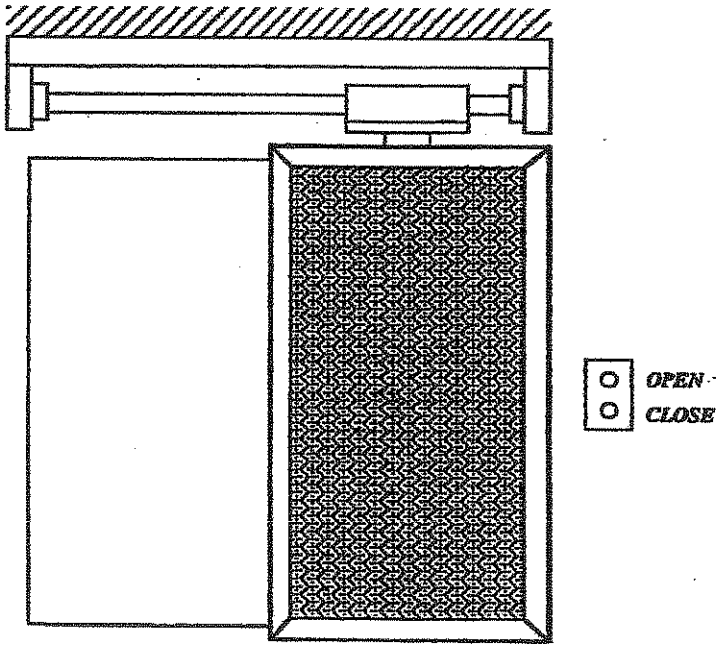


Figure 2: Sliding door system.

Question 5

Design and draw a pneumatic control circuit for the automation system in Figure 3. *Operation of the system:*

Two cylinders are used to transfer parts from a magazine onto a chute. When a push button is pressed, the first cylinder extends, pushing part from the magazine and positions it in preparation for transfer by the second cylinder onto the out feed chute. Once the part is transfer, the first cylinder retracts, followed by the second. Confirmation of all extended and retracted positions are required.

(20 marks)

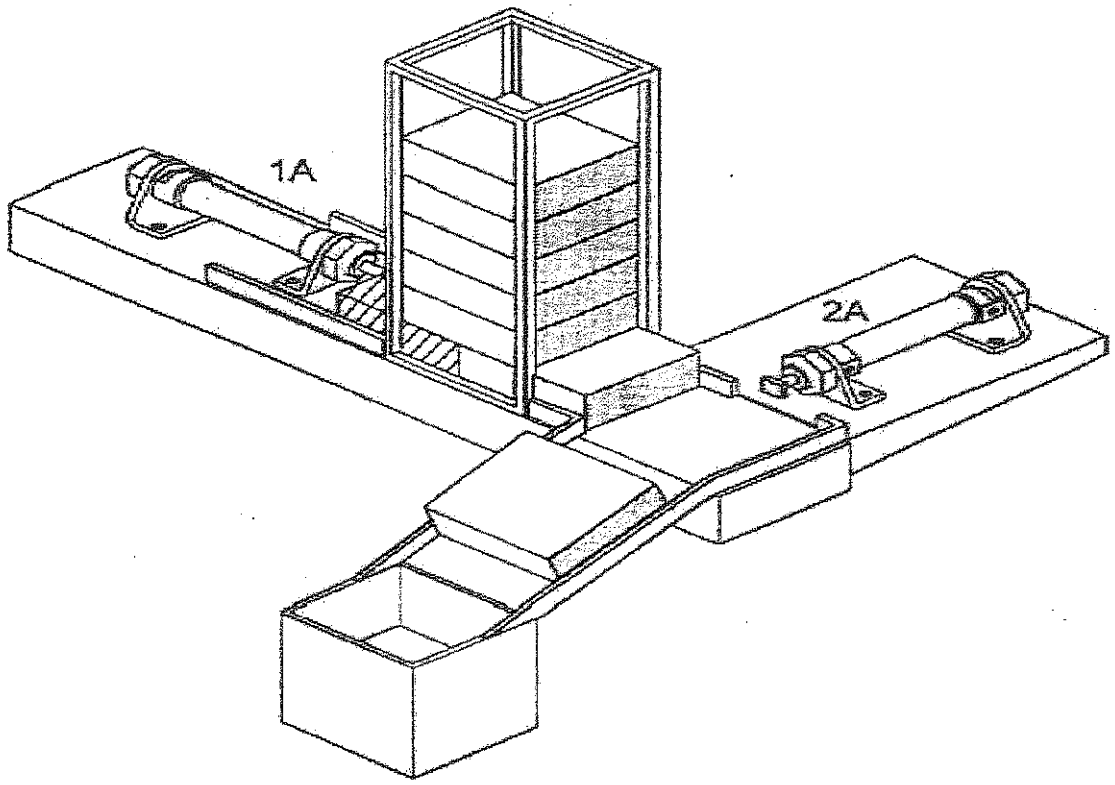


Figure 3: Transfer System

Question 6

The original sequence of the system in Figure1 is A+B+B-A-. Analyze, redesign and redraw the circuits in Figure 4, so the sequence is A+B+A-B-.

(20 marks)

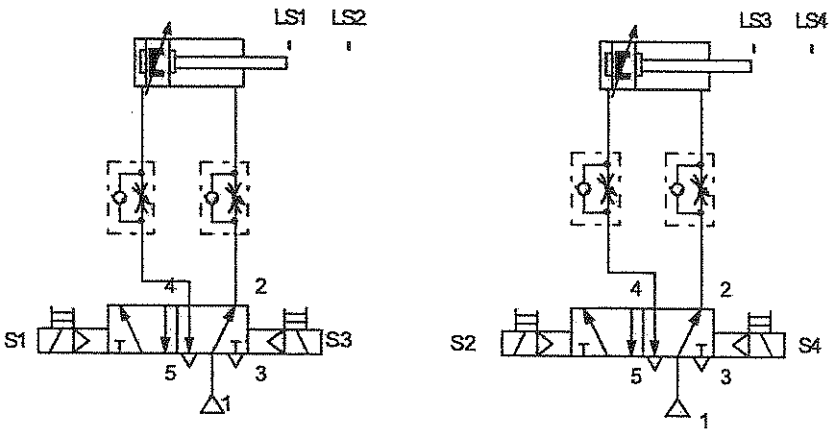


Figure 4: Pneumatic control circuit.

END OF QUESTIONS