



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2018/2019**

COURSE NAME : FURNITURE MANUFACTURING  
AND PROCESS

COURSE CODE : BPP 30703

PROGRAMME : BPP

EXAMINATION DATE : DISEMBER 2018 / JANUARY 2019

DURATION : 3 HOURS

INSTRUCTION : ANSWER ALL QUESTIONS  
PROVIDED

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

**TERBUKA**

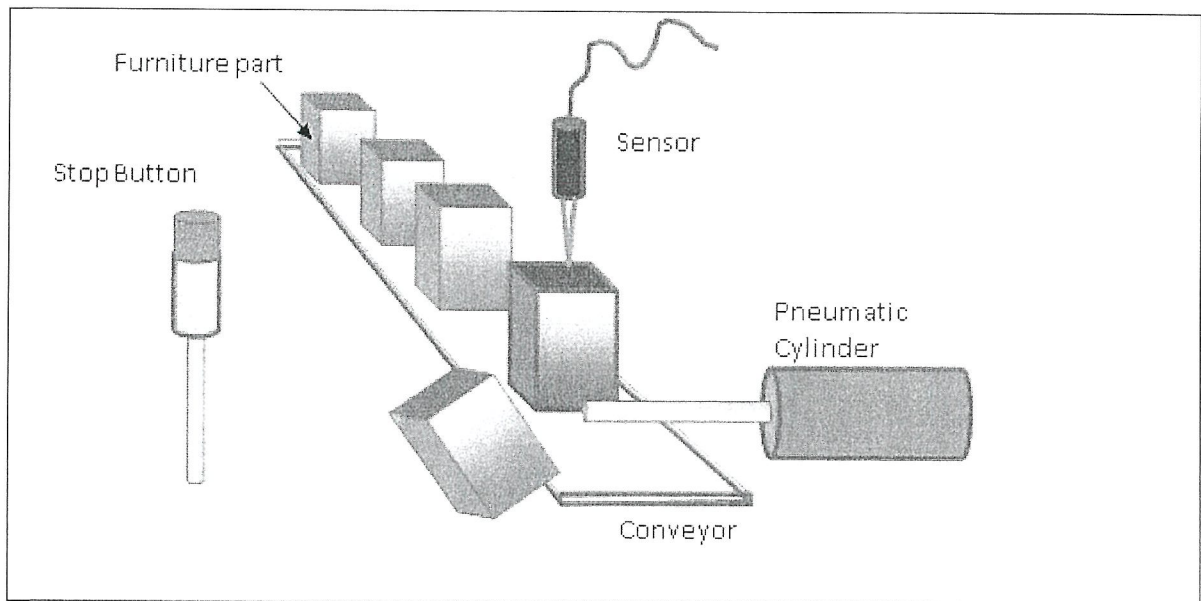
- Q1** (a) What is the definition of furniture in term of manufacturing process?  
(4 marks)
- (b) List down **THREE (3)** advantages of furniture manufacturing and process in furniture industry.  
(6 marks)
- (c) Explain **THREE (3)** types of machinery that involve in furniture manufacturing process.  
(10 marks)
- Q2** In Furniture Manufacturing, hydraulic system is used in the production process especially in assembly line.
- (a) What is the definition of hydraulic and give **ONE (1)** simple example of hydraulic system in furniture manufacturing process?  
(5 marks)
- (b) Draw and label a pure hydraulic circuit and electrical circuit to move a double acting cylinder by pressing push button A. The cylinder will be automatically retracted after reaching the maximum stroke and the pressure in the hydraulic system also must be controlled. Name all the components in the circuit.  
(15 marks)
- Q3** In furniture manufacturing process, pneumatic and hydraulic have their own advantages and give a lot benefits to furniture manufacturing industry.
- (a) Identify **THREE (3)** advantages of pneumatic.  
(6 marks)
- (b) Discuss the pneumatic application in furniture manufacturing and process.  
(4 marks)
- (c) Compare **THREE (3)** different things between pneumatic and hydraulic?  
(10 marks)



**Q4** A double acting pneumatic cylinder extends when push button A or B is pressed. The cylinder remain in this condition for 10 seconds before retract when touching a limit switch.

- (a) Discuss the definition of relay in electro-pneumatic system. (4 marks)
- (b) Explain the application of relay in electrical circuit. (4 marks)
- (c) Illustrate a pneumatic circuit for this system by applying relay application. (12 marks)

**Q5** An automation system is used in furniture manufacturing production line as shown in **Figure Q5**. Make a Programmable Logic Controller (PLC) program to activate the double acting cylinder. When you push start button A, double acting cylinder will extend and retract for 10 times to push the furniture part in the conveyer. This process will stop when stop button is pushed. Use single solenoid control valve.



**Figure Q5: Conveyor automation system**

- (a) Draw the pneumatic diagram. (4 marks)
- (b) Draw electrical circuit. (6 marks)
- (c) Design ladder diagram. (10 marks)

- END OF QUESTIONS -

