

**UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY**

**FINAL EXAMINATION
JANUARY 2016 SEMESTER**

COURSE CODE : JCB 10403
COURSE TITLE : INTRODUCTION TO WORKSHOP PRACTICE
PROGRAMME LEVEL : BACHELOR
DATE : 22 MAY 2016
TIME : 2.30 PM – 5.30 PM
DURATION : 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
 2. This question paper is printed on both sides of the paper.
 3. This question paper consists of **ONE (1)** section.
 4. Answer **FOUR (4)** questions **ONLY** in Section A.
 5. Please write your answers on the answer booklet provided.
 6. Please answer all questions in English only.
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THERE ARE 5 PAGES OF QUESTIONS EXCLUDING THIS PAGE.

SECTION A (Total: 100 marks)**INSTRUCTION: Answer FOUR (4) questions ONLY.****Please use the answer booklet provided.****Question 1**

- (a) The Daniel's Flying Club recently stored and repaired a newly arrived aircraft in a hangar located at the back of their facility. Recommend the type of layout for the operation of Daniel's Flying Club.
(2 marks)
- (b) ASIMO Robot is an example of an automation by Honda, Japan. Describe the word ASIMO by providing its full word and indicate the total degrees of freedom for ASIMO robot.
(3 marks)
- (c) With your own words, distinguish the difference between Production and Manufacturing.
(4 marks)
- (d) Explain **THREE (3)** areas that a computer can assist the maintenance department in an industry.
(6 marks)
- (e) Evaluate all the components of the 5S System.
(10 marks)

Question 2

- (a) Name **ONE (1)** tool to identify the unneeded items during the sort phase of the 5S System. (2 marks)
- (b) In order for an operation especially the production to have a continuous improvement on its processes, there are three phases that serve as a basic guide to get the most out of improvements at minimum cost. Discover the **THREE (3)** phases. (3 marks)
- (c) Identify the name of the Production Process job method for the brand Nell Mineral Water production. Explain the reasons for your answer. (4 marks)
- (d) Interpret the word *OSHA*. Your interpretation must include the full word that *OSHA* stands for and the purpose of *OSHA*. (6 marks)
- (e) As we know that in any organization, in order to protect the workers from any potential hazards, it is good that we identify the risks that may occur at the work place. Analyze the method to calculate *RISK*. Classify the **THREE (3)** types of *Risk Exposure*. (10 marks)

Question 3

- (a) The two important factors to be considered in order to determine the requirements for a plant layout are the 'Space Requirements' and 'Activity Relationship'. State **THREE (3)** structured analysis tools that are used as the methods to identify hazards in a facility.
(3 marks)
- (b) Recognize **THREE (3)** factors that determine space requirement in a facility.
(3 marks)
- (c) The Open Plan Office may have advantages and disadvantages. Justify **ONE (1)** advantage and **TWO (2)** disadvantages for the Open Plan Office.
(3 marks)
- (d) The responsibility to identify hazards is usually done through a special exercise.
- i. Outline the name of the exercise and the name of the department in any organization that is usually responsible to conduct it.
(2 marks)
- ii. Suggest **TWO (2)** areas that the results of the hazards can be identified from a facility.
(4 marks)
- (e) Explain **FIVE (5)** basic requirements of a good plant layout.
(10 marks)

Question 4

- (a) Explain the differences between Repair and Preventative Maintenance. (4 marks)
- (b) There are three common sources of accidents that might occur at work place. Outline **THREE (3)** of the sources and provide example for each of them. (6 marks)
- (c) Based on Figure 1, explain each of the stage by providing example in your explanation.

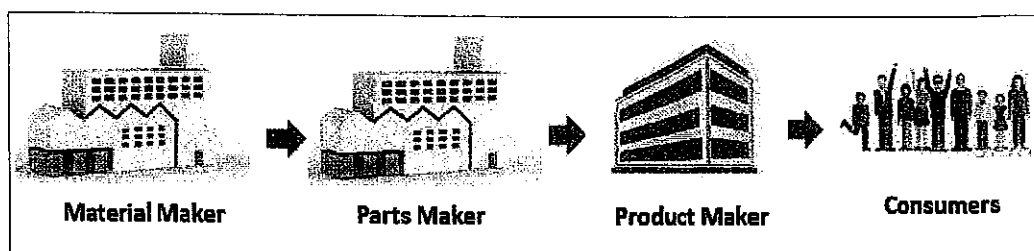


Figure 1: Product Manufacturing Flow

- (d) Table 1 shows a part of an excel sheet of one of the methods to identify hazards. It can also be used to investigate the root causes of problems or issues arise in the operation of an industry. Based on Table 1:
 - i. Indicate the name of the method. (2 marks)
 - ii. The value of RPN will change after the 'Recommended Action' has been done. Predict whether the RPN value will be increasing or decreasing after the action is done. (2 marks)
 - iii. Explain the term *RPN* from Table 1. In your explanation, show the formula to obtain the value of RPN. (5 marks)

Table 1: Method to Identify Hazard

Process Function	Potential Failure Mode	Potential Effects of Failure	SEV	Potential Cause(s)/ Mechanism(s) of Failure	OCC	Current Process Controls	DET	RPN	Recommended Action(s)
The highest value process steps from the C&E matrix.	In what ways might the process potentially fail to meet the process requirements and/or design intent?	What is the effect of each failure mode on the outputs and/or customer requirements?	How Severe is the effect to the customer?	How can the failure occur? Describe in terms of something that can be corrected or controlled. Be specific.	How often does the cause or failure mode occur?	What are the existing controls and procedures (inspection and test) that either prevent or detect occurrence?	How well can you detect cause or FM?		What are the actions for reducing the occurrence, or improving detection, or for identifying the root cause if it is unknown? Should have actions only on high RPN's or easy fixes.

Question 5

- (a) 'The failure of one machine will stop the entire line'. Provide the type of production flow that this statement refers to.
(2 marks)
- (b) Investigate **FOUR (4)** examples of visual controls that can be found at UniKL MITEC Laboratory.
(4 marks)
- (c) A Lean organization prioritizes the customer values and focuses its key processes to continuously increase it. The ultimate goal of implementing the Lean is to provide perfect value to the customer through a perfect value creation process that has zero waste. Outline **SEVEN (7)** types of wastes that Lean is concentrating upon.
(7 marks)
- (d) On the 20th April 2010, a gas release and subsequent explosion occurred on the Deepwater Horizon oil rig working on the Macondo exploration well for British Petroleum (BP) in the Gulf of Mexico. The fire burned for 36 hours before the rig sank, and hydrocarbons leaked into the Gulf of Mexico before the well was closed and sealed. The accident had to do with a well integrity failure, followed by a loss of hydrostatic control of the well. This was followed by a failure to control the flow from the well with the equipment, which allowed the release and subsequent ignition of hydrocarbons. At the initial stage of the explosion, the emergency functions failed to seal the well. Consequences of the accident resulted in the death of 11 people and devastation to the community, ocean, and aquatic life. Based on this case study:
- i. Indicate **TWO (2)** costs associated with the accident occurred at the mentioned place.
(2 marks)
 - ii. Recommend the steps to investigate the accident.
(10 marks)

END OF EXAMINATION PAPER