

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

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**FINAL EXAMINATION  
JANUARY 2016 SEMESTER**

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**COURSE CODE : JQB20303**  
**COURSE TITLE : INTRODUCTION TO INDUSTRIAL ENGINEERING**  
**PROGRAMME LEVEL : BACHELOR**  
**DATE : 20 MAY 2016**  
**TIME : 9.00 AM – 12.00 PM**  
**DURATION : 3 HOURS**

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**INSTRUCTIONS TO CANDIDATES**

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- 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 sections.**
  - 4. This question paper consists of five questions. Answer FOUR (4) questions only.**
  - 5. Please write your answers on the answer booklet provided.**
  - 6. Table and formula are enclosed as reference.**
  - 7. Please answer all questions in English only.**
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**THERE ARE 3 PAGES OF QUESTIONS EXCLUDING THIS PAGE.**

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

Ahmad is a second year student at UniKL-MITEC enrolling in Quality Engineering program. One of the subjects that he must take is Introduction to Industrial Engineering.

- i. Define Industrial Engineering and give **THREE (3)** examples of Industrial Engineers main functions in manufacturing setting. (10 marks)
- ii. Upon graduation, Ahmad will become a Quality Engineer. Justify **THREE (3)** reasons why the quality engineer needs to learn and understand Industrial Engineering. (10 marks)
- iii. A group of ten new operators were asked to run a production line that will assemble a newly introduced product. If they are working on 7 hours-shift and the standard time for the product is 1.5 minutes; calculate the expected number of output. (5 marks)

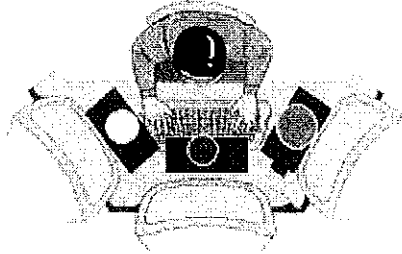
**Question 2**

Methods engineering is used to improve productivity and reduce costs in both direct and indirect operations of manufacturing. It involves the use of Principle of Motion Economy and various tools and techniques.

- i. Explain the **THREE (3)** Principles of Motion Economy. (9 marks)
- ii. Explain **TWO (2)** purpose of using Left-hand and Right-hand chart. (6 marks)

- iii. Based on the below man and machine process details, draw a Man and Machine Chart and determine the relevant information needed to do manning.

(10 marks)



Load = 20 sec  
Machine time= 70 sec  
Unload = 10 sec

Load = 30 sec  
Machine time= 80 sec  
Unload = 20 sec

Load = 20sec  
Machine time= 90sec  
Unload = 10 sec

### Question 3

Work Measurement use various techniques with purpose to find out how long a job or part of a jobs should take to complete. The most common use of Work Measurement is for the development of engineered time standards.

- i. Explains **THREE (3)** reasons why we need to develop engineered time standards.  
(10 marks)
- ii. MOST, MTM and Stop-watched time study are most widely used techniques in Work Measurement. Discuss **THREE (3)** factors that need to be considered before choosing which techniques best to be used.  
(10 marks)
- iii. Usin Bolt holds the 100-meter world's record by clocking in 9.58sec. Is the time taken considered as engineered standard? Justify your answer.  
(5 marks)

**Question 4**

AB-Electronics Sdn. Bhd is a company that produced hand-phones. Most of the models are high-mixed low volume type. For final assembly most of the models run on Cell Manufacturing system except on few which still using conveyor system. However, for their latest hand-phone model QB-20302, the engineer has decided to use conveyor system instead of cell system.

- i. Justifies **TWO (2)** possibilities that the engineer has decided to use conveyor system instead of cell manufacturing system for the new model. (10 marks)
- ii. Discuss **THREE (3)** advantages using conveyor system. (6 marks)
- iii. States **THREE (3)** advantages using cell manufacturing system. (6 marks)
- iv. Given a conveyor line expected output is 500pcs per shift and the working hour is 8-hrs. Determine the target tack-time if the line efficiency is 85%. (6 marks)

**Question 5**

- i. Explain **THREE (3)** main objective of Facilities Planning. (6 marks)
- ii. Explain the application of Activity Relationship chart in determining a good layout. (7 marks)
- iii. List-out **TWO (2)** differences in-term of applications between Activity Relationship chart and From-To chart. (4 marks)
- iv. Discuss the features and characteristics' of the following layout:  
→ Process Layout and Product Layout. (8 marks)

**END OF EXAMINATION PAPER**