

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

**FINAL EXAMINATION
JANUARY 2016 SEMESTER**

COURSE CODE	: JQD 21702
COURSE TITLE	: FUNDAMENTALS OF INDUSTRIAL ENGINEERING
PROGRAMME LEVEL	: DIPLOMA
DATE	: 25 MAY 2016
TIME	: 9.00 AM – 12.00 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 TWO (2) sections.**
 - 4. Answer ALL questions in Section A. Choose TWO (2) questions in section B.**
 - 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 4 PAGES OF QUESTIONS EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer ALL questions****Please use the answer booklet provided****Question 1**

Industrial Engineering is the branch of engineering that deals with the creation and management of systems that integrate people, materials, equipment and energy in productive ways.

- i. List-out **TWO (2)** main contributions of Frederick Taylor in the development of Industrial Engineering? (4 marks)
- ii. In manufacturing, list out **THREE (3)** main roles and function of industrial engineers? (6 marks)
- iii. Explain **THREE (3)** basic rules when calculating productivity? (6 marks)
- iv. If an operator works at 105% productivity level, how many units of calculator he/she will be able to produce in 8-hrs shift, given the standard time is 200 sec? (4 marks)

Question 2

- i. List out **THREE (3)** most important types of manufacturing waste. (6 marks)
- ii. List out **TWO (2)** Principle of Motion Economy on the "use of human body" (4 marks)
- iii. There are **THREE (3)** approaches that can be used to develop time standard. Explain the three methods on how the IE develop an engineered time standard. (10 marks)

Question 3

- i. In manufacturing flow, explain what is meant by "push system" (6 marks)

- ii. Suggest **TWO (2)** conditions when conveyor system is more preferable compared to cell production system. (6 marks)

- iii. Explain what is meant by HMLV production? (4 marks)

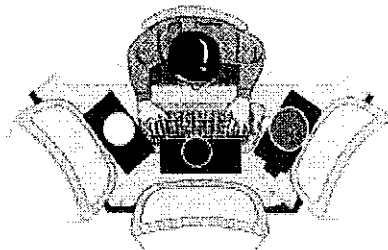
- iv. Suggest what production system is preferable when running HMLV production. (4 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer TWO (2) questions only
 Please use the objective answer sheet provided.

Question 4

- i. Explain the purpose of using Man and Machine Chart. (8 marks)
- ii. Based on the below man and machine process details, draw a Man and Machine Chart. Then analyses and explain the finding. (12 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

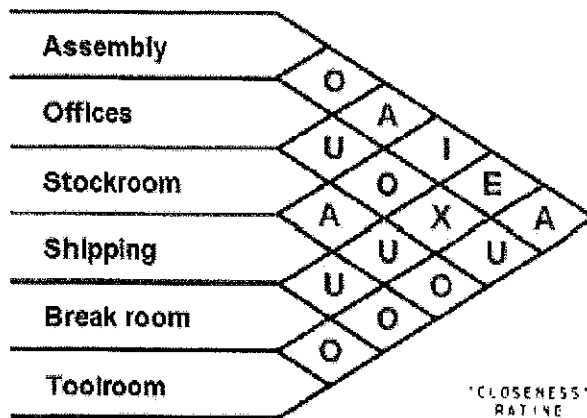
Question 5

- i. Explain the purpose of using stopwatch Continuous Time Study. (8 marks)
- ii. Based on the below Time Study Chart, determine the standard time. (12 marks)

CONTINUOUS TIME STUDY

ELEMENT DESCRIPTION	OBSERVATIONS										TOTAL TIME OBS	AVERAGE TIME	RATING	LEVELED TIME	
	1	2	3	4	5	6	7	8	9	10					
TP						F									
Assembly 1	R	35	11	43	20	59	42	18	53				95%		
	T														
STD ALLOWANCE (___ x 12.5%)															
SPECIAL ALLOWANCE (___ x 2%)															
STD MIN PER CYCLE															

Question 6



- i. Explain the purpose of using Activity Relationship chart. (8 marks)

- ii. List-out the "Closeness Rating" used in the above activity relation chart. (6 marks)

- iii. Explain what are the differences in term of the application between Activity Relationship chart and From-To chart. (6 marks)

END OF EXAMINATION PAPER

