NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

INDUSTRIAL AND MANUFACTURING ENGINEERING DEPARTMENT

Bachelor of Engineering Honours Degree in Industrial and Manufacturing Engineering

PART I FIRST SEMESTER EXAMINATIONS - DECEMBER 2011

INTRODUCTION TO INDUSTRIAL ENGINEERING

COURSE CODE - TIE 1105

Examination duration 3 hours

INSTRUCTIONS TO CANDIDATE

Answer: Five Questions (Four from Section A and compulsory question in Section B)

SECTION A

Qu.1 a) Briefly explain the difference between Chemical Engineering and Manufacturing Engineering? [10]

b) Briefly explain activities that an Industrial and Manufacturing engineer would do at a Food manufacturing company like Lobels Bakery. [10]

Qu.2 a) Describe one course within Industrial and Manufacturing Engineering programme that can be used to improve productivity after a method study activity. [8]

b) Explain briefly the last four steps in method study procedure. [12]

Qu.3 a) Explain five factors that influence task learning. [10]

b) Briefly explain one technique within direct work measurement. [10]

Qu.4 a) How can features of the product affect the work content of a given operation? [10]

b) How can inefficient operation/methods of the process affect the work content of the job? [10]

Qu.5 a) How can better management influence productivity related to cost and time to yield results? [8]

b) Briefly explain one technique within indirect work measurement. [12]

SECTION B

Qu 6 a) A work sample taken over a 160 hour work month produced the following results shown in Table 6.1. What is the standard time for the job? [5]

Table 6.1: Work sample

Units manufactured	220
Idle Time	20%
Performance rating	90%
Allowance time	10%

b) Table 6.2 shows time study observations for a metalworking process. On the basis of these observations, find the standard time for the process, assuming a 25% allowance factor. [15]

Table 6.2 Time study for Metalworking process

		Observations (Minutes per cycle)						
Element	Performance Rating	1	2	3	4	5	6	7
1	90%	1.80	1.70	1.66	1.91	1.85	1.77	1.60
2	100%	6.9	7.3	6.8	7.1	15.3*	7.0	6.4
3	115%	3.0	9.0*	9.5*	3.8	2.9	3.1	3.2
4	90%	10.1	11.1	12.3	9.9	12.0	11.9	12.0

*Disregard – unusual observations

END OF EXAM