NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING

BACHELOR OF ENGINEERING HONOURS DEGREE INDUSTRIAL AND MANUFACTURING ENGINEERING

1ST SEMESTER DECEMBER 2011 EXAMINATIONS

WORKSHOP TECHNOLOGY I COURSE CODE: TIE 1103

EXAMINATION DURATION 3 HOURS

Instructions to Candidates

1. Candidates to answer **FIVE** questions only
2. Question Number 1 is compulsory
3. All questions carry 20 marks each

QUESTION 1

From your recent visit to a local workshop, explain using realistic examples of how the following challenges can be addressed?

a) Uninterrupted flow of movement [4]
b) Ensuring appropriate dress and behavior code [4]
c) Accountability of machine and general tool accessories [4]
d) Prompt reaction to an emergency involving power machines [4]
e) Avoidance of distraction while on different and or unrelated activities [4]

QUESTION 2

Briefly explain what you understand by the following terms giving one example each of its advantage and disadvantage:

a) Precision measurement [5]
b) Direct measurement [5]
c) Transfer measurement [5]
d) Gauging [5]

QUESTION 3

Communication plays a very important role in regulating activities in a workshop. How are the following messages communicated?

a) Entry prohibited [3]
b) Danger from potential overhead moving objects [3]
c) Possibility of electrocution [3]
d) Slippery floors [4]
e) Fire escape [3]
f) Potential exposure/contamination with radiation [4]

QUESTION 4

a) Explain the principle of the vernier caliper.
b) Using a vernier caliper with an accuracy of 0.02, make simple sketches to show following settings:
   i) 3.76mm [2]
   ii) 11.22mm [2]
   iii) 9.48mm [2]
   iv) 7.02mm [2]
   v) 49.96mm [2]
c) Draw and fully label the main features of a vernier height gauge. [10]

QUESTION 5

a) State the types of datums as used in measuring and dimensioning purposes [12]

b) Explain fully and give examples of the meaning of the following terms as relating to measurement in engineering:

- i) Precision [2]
- ii) Accuracy [2]
- iii) Reliability [2]
- iv) Repeatability [2]

QUESTION 6

i) Accidents are caused and not created. Discuss [10]

ii) List and explain five ways of preventing a fire when using or storing flammable liquids [5]

iii) List and explain five rules when running a workshop. [5]

END OF EXAM