THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering and Technology

DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING

DIPLOMA IN MECHANICAL ENGINEERING (Plant)
DIPLOMA IN MECHANICAL ENGINEERING (Chemical)
DIPLOMA IN MECHANICAL ENGINEERING (Automation)

EME 2115 : WORKSHOP TECHNOLOGY II

SUPPLEMENTARY/SPECIAL EXAMINATIONS

SERIES: APRIL 2011

TIME: 2 HOURS

Instructions to Candidates:

1. The paper consists of **FIVE** Questions.
2. Attempts any **THREE** Questions.
3. All Questions carry equal marks.

Question ONE

(a) (i) Define the term "drilling operation".

(ii) Use sketches to differentiate between the following with respect to drilling;

(I) Tapered shanks, hand reaorier and a tapered shank twist drill.
(II) Countersinking and counterboring.

(10 Marks)

(b) State **TWO** causes and **TWO** remedies of each of the following drilling problems:

(i) An oversize hole
(ii) A rough hole

(4 Marks)

(c) Sketch and label **FOUR** main parts of a bench drilling machine. (6 Marks)

Question TWO

(a) (i) State **FIVE** safety precautions to be observed with respect to milling machine.

(ii) Differentiate between the following terms with respect to milling machines.

(I) Face and form miling (use sketches).
(II) A plain horizontal milling machine and
(III) A universal horizontal miling machine

(13 Marks)

(b) Sketch and label **FOUR** main parts of a vertical milling machine. (7 Marks)

Question THREE

(a) (i) List any **FIVE** requirements of the shopping machine.

(ii) Describe with sketches, the function of the following, work holding devices for the shaping machine:

(I) Vice
(II) Parallel strips

(10 Marks)

(b) Describe with diagram(s), the slotted link, Quick Return Mechanism

for the shaping machine. (10 Marks)

Question FOUR

(a) Outline the function of the following parts of the centre lathe:

(i) The headstock
(ii) The tailstock
(iii) The lathe bed
(iv) The saddle

(8 Marks)

(b) Use sketches to describe the following operations on the centre lathe:

(i) Parting off
(ii) Turning, between centres
(iii) Drilling
(iv) Facing

(8 Marks)

(c) Sketch the following work support devices used when turning:

(i) Face plate
(ii) Three-point steady

(4 Marks)

Question FIVE

(a) (i) State **FIVE** requirements of a good cutting fluid.

(ii) List **THREE** types of cutting oils.

(iii) Explain how the cutting fluid or coolent is used when working on the center lathe.

(10 Marks)

(b) (i) State **FIVE** factory to be considered when selecting speeds and feeds for a centre lathe.

(ii) Sketch a lathe cutting tool and show the following angles:

(I) Front clearance
(II) Top rake
(III) Side rake

(iii) Outline **TWO** requirements of the lathe cutting tools. (10 Marks)