MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN MECHANICAL ENGINEERING (PLANT OPTIONS)

WORKSHOP TECHNOLOGY

DATE: 16/4/2019 **TIME: 2.30-5.30 PM**

INSTRUCTIONS:

This paper consists of SIX questions

Attempt any FIVE questions

QUESTION ONE (20 MARKS)

a) Explain the logical procedure of carrying out soft soldering. (12 marks)

b) Using clearly labeled sketches, explain the following soldering operations;

i. sweating, (4 marks)

ii. Floating. (4 marks)

QUESTION TWO (20 MARKS)

a) Define the term drilling. (3 marks)

b) State four safety precautions to be observed when working on a drilling machine (8 marks)

c) With the aid of a diagram, explain how the drive is transmitted from the motor to the drill bit on a pedestal drilling machine. (9 marks)

QUESTION THREE (20 MARKS)

a) Explain three factors to consider choosing the work holding method to be used when working on a drilling machine. (6 marks)

b) Using a sketch, show how clamping plates can be used as a work holding method on a drilling machine. (5 marks)

c) using a sketch, explain the following operations carried out on the drilling machine;

i. counter boring, (3 marks)

ii. spot facing,

iii. Boring. (3 marks)

QUESTION FOUR (20 MARKS)

a) Define the term grinding. (2 marks)

b) Explain the following elements of a grinding wheel giving an example of each;

i. abrasives, (4 marks)

ii. Bond. (4 marks)

c) Explain the following grinding faults stating their possible causes;

i. loading (5 marks)

ii. Glazing. (5 marks)

QUESTION FIVE (20 MARKS)

a) explain the following grinding fault remedies;

i. wheel truing (5 marks)

ii. wheel dressing (5 marks)

b) Explain any four elements to be stated when specifying the grinding wheel. (4 marks)

c) Explain the procedure to be followed when mounting a new grinding wheel on a machine (6 marks)

QUESTION SIX (20 MARKS)

a) using a sketch explain the following lathe operations;

i. parting off

ii. knurling,

iii. boring,

iv. under-cutting (8 marks)

b) Explain the following taper turning methods on the lathe machine stating two advantages and one advantage of each;

i. compound slide method, (4 marks)

ii. Tailstock set over. (4 marks)

c) Using a sketch explain how work can be held between centers on a lathe machine. (4 marks)