



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)