



MACHAKOS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL & MANUFACTURING
ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN
MECHANICAL ENGINEERING
(PLANT OPTIONS)
MODULE I
WORKSHOP TECHNOLOGY

INSTRUCTIONS

TIME: 2hrs

This paper consists of SIX questions

Attempt any FIVE questions

1. 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)
2. a) define the term drilling. (3 marks)
- b) State four safety precautions to be observed when working on a drilling. (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)
3. 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)

4. 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)
5. 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)
6. 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)