



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

**SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING
FIRST YEAR FIRST SEMESTER EXAMINATION FOR
DIPLOMA IN MECHANICAL ENGINEERING
STRUCTURAL FABRICATION TECHNOLOGY 1**

DATE: 3/9/2021

TIME: 2:30 – 5:30 PM

INSTRUCTIONS:

Answer ALL the questions.

Neat and Clear drawings are an integral part of this examination.

1. (a) Differentiate between permanent and temporary fastening in Mechanical Engineering industry. (2 marks)
- (b) Name and sketch FIVE types of rivets. (10 marks)
- (c) With the aid of sketches, explain FOUR faults that may occur during the riveting process. (8 marks)
2. (a) Differentiate between soldering, brazing and welding processes. (3 marks)
- (b) Illustrate THREE types of soldered joints. (6 marks)
- (c) With the aid of sketches describe the procedure for soldering two pieces of sheets (7 marks)
- (d) Explain the terms sweating and tinning with regard to soft soldering. (4 marks)
3. (a) Name and sketch the THREE types of flames used in gas welding. (6 marks)
- (b) Explain the procedure for:
 - (i) lighting the oxyacetylene flame.
 - (ii) testing leaks on oxyacetylene equipment. (9 marks)
- (c) State FIVE safety precautions to be observed in gas welding processes. (5 marks)

4. (a) List FOUR types of equipment used oxyacetylene and state their uses. (6 marks)
- (b) Illustrate the following riveted joints:
(i) lap joint
(ii) butt joint. (4 marks)
- (c) With the aid of a sketch describe the leftward gas welding technique. (4 marks)
- (d) Outline Two ways of avoiding the following welding defects:
(i) Undercut
(ii) lack of fusion
(iii) porosity. (6 marks)
5. (a). State THREE sources of fuel used in soldering. (3 marks)
- (b) Sketch the setup for gas welding equipment. (7 marks)
- (c) Explain the types of fluxes used in soldering process and state ONE example in each case. (4 marks)
- (d) Sketch and distinguish between Oxygen and Acetylene cylinders with regard to welding equipment. (6 marks)