



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

DIPLOMA IN MECHANICAL ENGINEERING

DIPLOMA IN MOTOR VEHICLE ENGINEERING

2502/106WT; 2503/106WT WORKSHOP TECHNOLOGY

DATE: 14/12/2020

TIME: 8.30-11.30 AM

INSTRUCTIONS TO CANDIDATES

Answer all questions

All questions carry equal marks

1.
 - a)
 - i Define the term 'brazing'.
 - ii State two factors to be considered when making a brazed joint. (4 marks)
 - (b) Explain how the following sheet metals are manufactured stating the application for each sheet metal.
 - i. tin plate;
 - ii. galvanised iron. (6 marks)
 - (c) Outline the procedure for soldering two pieces of tin plate. (10 marks)
 2.
 - (a) State two objectives of heat treatment in steels. (2 marks)
 - (b) Explain the following terms as used in heat treatment of steels
 - i. process annealing; -
 - ii. nitriding (6 marks)
 - (c) Sketch the following tools and state the use of each tool
 - i. folding bar;
 - ii. anvil;
 - iii. dividers. (6 marks)
 - (d) Explain the meaning of the following terms:
 - i. quality control;
 - ii. material handling;
 - iii. waste management. (6 marks)
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3. (a) State any four general safety precautions to be observed while in the workshop (4 marks)
- (b) Describe four classes of fire and name their extinguishers. (8 marks)
- (c) Explain the steps to be taken in case of an electric shock in the workshop. (8 marks)
- 4 (a) Illustrate the features of the following workshop tools:
- i. hacksaw;
- ii. vee-block (6 marks)
- (b) i Name the three taps present in a set.
- ii State the use of the taps named in b(i) above. (6 marks)
- (c) With the aid of sketches, explain **two** types of hand filing operations. (6 marks)
- 5 (a) Explain any four safety precautions to be observed during handling and storage of gas cylinders. (8 marks)
- (b) With the aid of sketches, explain the following gas welding techniques:
- i. leftward welding;
- ii. rightward welding. (6 marks)
- (c) Illustrate any three arc welding defects stating the cause in each case. (6 marks)