



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

SECOND SEMESTER EXAMINATION FOR DIPLOMA (I) IN BUILDING CONSTRUCTION TECHNOLOGY & CIVIL ENGINEERING

WORKSHOP TECHNOLOGY 1 (MECHANICAL)

2705/104/WT- (BUILDING CONSTRUCTION TECHNOLOGY OPTION)

2707/104/WT- (CIVIL OPTION)

DATE: 3/9/2021

TIME: 8:30 – 11:30 AM

INSTRUCTIONS

Answer all questions

1. a) State and explain the **two** classes of internal combustion engines (4 marks)
b) With the aid of a sketch, describe the construction of an Internal combustion engine. (10 marks)
c) State **three** differences between an internal combustion engine and an external combustion engine (6 marks)
2. a) With the aid of well labeled sketch, describe the construction of a horizontal milling machine. (8 marks)
b) Explain the function of each of the following parts of a lathe machine:
 - i. head stock;
 - ii. lead screw;
 - iii. carriage;
 - iv. spindle. (8 marks)
c) Differentiate the operation of a diesel engine from a petrol engine. (4 marks)
3. a) Define a shaper (2 marks)
b) With the aid of a sketch, describe the construction of a shaping machine. (10 marks)
c) State and explain **four** types of operations performed in a shaping machine (8 marks)
4. a) State **four** types of milling cutters (4 marks)
b) with the aid of a sketch, state **four** types of lathe machine cutting tools (8 marks)
c) With the aid of a sketch, explain the **two** methods used in milling (6 marks)
d) Sketch and state the use of a plain mandrel during lathe work operation. (2 marks)
5. a) Sketch and explain any **five** common milling machine operations. (10 marks)
b) Sketch and explain any **five** common lathe machine operations. (10 marks)