KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER
MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN RENEWABLE ENERGY AND BIO FUELS TECHNOLOGY

COURSE CODE: **REN 121**

COURSE TITLE: **INTRODUCTION TO MANUFACTURING PROCESSESS**

DURATION: 2 HOURS

DATE: 21/07/2021 2:00-4:00PM

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other**ONE** (1) Question.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of printed pages. Please Turn Over

SECTION A: QUESTION ONE IS COMPULSORY

(QUESTION ONE : 30 MARKS)
(a)Sketch a lathe machine and label SIX main parts

(6 marks)

(b) Illustrate the principle of a cylindrical grinder

(6 marks)

(c) (i) State THREE safety precautions observed in sheet metal SOLDERING process
(ii)State THREE advantages of Tungsten innert Gas welding

(6 marks)

(d) Describe the following heat treatment processes
(i) Annealing
(ii)Hardening

(6 marks)

(c) sketch the following drilling operations
(i) spot facing
(ii) reaming
(iii)counterboring

(6 marks)

SECTION B: ANSWERR ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 MARKS)

(a)Describe the drive mechanism of a shaper

(12 Marks)

(b)Illustrate the gang milling operation

(8 marks)

(QUESTION THREE : 20 MARKS)
(a)State FOUR types of tool cutting material applied on metal

(4 marks)

(b)With the aid of sketches, describe the working principle of a cupola furnace

(16 marks)

(QUESTION FOUR: 20 MARKS)

(a) Explain the shearing principle applied to metal
(8 marks)

(b)Explain upsetting as a forging operation

(12 marks)

(QUESTION FIVE: 20 MARKS)

(a)Describe the principle of the following joining processes

(i) **Spot welding**, a resistance welding procss

(ii) Arc welding

(20 marks)