



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND  
TECHNOLOGY**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS FOR THE DEGREE IN SCIENCE IN  
RENEWABLE ENERGY TECHNOLOGY AND MANAGMENT**

**SECOND YEAR RESIT EXAMINATION 2020/21 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

---

**COURSE CODE: TET 3215**

**COURSE TITLE: WORKSHOP PROCESS AND PRACTICE I**

**EXAM VENUE: STREAM: BSc REN TECH & MGT**

**DATE: ../11/2020 EXAM SESSION:**

**DURATION: 2 HOURS**

---

**Instructions**

- 1. Answer question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

**Question ONE:      This Question is Compulsory**

- a) Thread-cutting taps are supplied in sets of three. Name each of the three taps and outline how they are used. (3 marks)
- b) State three safety precautions which must be observed in respect of moving about in a workshop. (3 marks)
- c) A Vernier caliper for measuring the external size of an object reads 1.165 cm. Sketch the section of the vernier scales (*main* and *vernier* scales) showing this reading. (3 marks)
- Distinguish between the terms *bench work* and *fitting* as used in workshop processes and practice. (2 marks)
- d) A micrometer gauge has a *main scale* reading of 2.5 mm, a *thimble* reading of 0.38 mm, and a *zero error* of -0.03 mm. Find the *final/actual* reading of the micrometer. (3 marks)
- e) Explain the importance of staggering the teeth of hacksaw blades. (2 marks)
- f) What is the purpose of using flux in soldering. (2 marks)
- g) Sketch the cross-sectional profiles of four different files, naming each. (2 marks)

**Question TWO**

- a) Sketch the following types of screws:  
(i) Counter-sunk head    (ii) Round head    (iii) Grab screw    (iv) Hexagon head. (8 marks)
- b) What is a self-tapping screw; use neat sketches to illustrate your answer. (3 marks)
- c) Distinguish between bolts and screws. (4 marks)

**Question THREE**

- a) State ten general workshop safety rules. (9 marks)
- b) What safety precautions should be observed when working with the following hand tools:  
i)File                      i)Hacksaw                      iii)Hammer (6 marks)

**Question FOUR**

- a) Explain the meaning of the term *gauge*, as used in reference to *limit systems*. (7 marks)
- b) Outline the application of limit gauges, with an example of cylindrical plug gauge. (8 marks)

**Question FIVE**

- a) What is the *dial indicator* used in workshop practice? (6 marks)
- b) Describe the mechanism of operation of lever-pointer type dial indicator. (9 marks)