



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

FIRST YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE

OF

**BACHELOR OF TECHNOLOGY EDUCATION IN CIVIL
ENGINEERING, ELECTRICAL ENGINEERING AND
MECHANICAL ENGINEERING**

COURSE CODE: TEC 101

**COURSE TITLE: INTRODUCTION TO TECHNOLOGY
EDUCATION**

DATE: TUESDAY 26TH JANUARY 2021 TIME: 3.00 – 5.00PM

INSTRUCTIONS:

1. This paper contains **FIVE** Questions
2. Answer question **ONE** and any other three questions
3. Marks for each question are indicated in the parenthesis.
4. Examination duration is **2 Hours**

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over.

Question 1 (14mks)

- i) What is fire? (1mark)
- ii). What you understand by the term 'fire safety'? (1mark)
- iii). When you enter the workshop you notice smoke bellowing slowly from a power machine at one end of the machine floor. State what you will do to save the situation as you put off that smoke (1mark)
- iv). Accidents in the workshop don't just occur they are caused. Name three potential sources of accidents in a workshop (3marks)
- v). Name **three** reasons that make us prevent occurrence of accidents in the workshop. (3marks)
- vi). Name **three** procedures to undertake in the event of an accident in the workshop. (3marks)
- viii) For what two reasons do we carry out first –aid on an accident victim? (2marks)

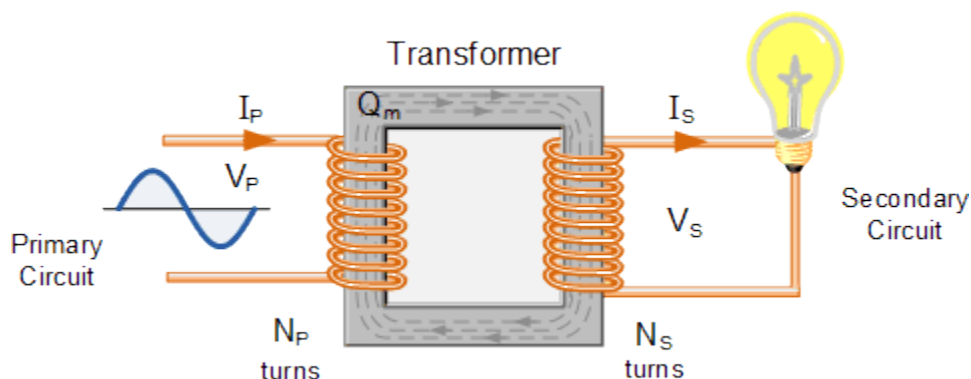
Question 2. (12mks)

Use clearly labeled diagrams to distinguish between the following Building and Civil engineering construction terms:

- i). Setting-out (3marks)
- ii). Foundation (3marks)
- (iii) What do you understand by the term 'site clearance' as used in building construction work? (1mark)
- (iv) Mention two materials you would use in each category below:-
 - a) Walling b) Roofing of a residential house. (2marks)
- (v) Make labeled diagrams and state one use of each of the tools named below:-
 - a) Claw hammer b) Hand saw as they are used in Woodworking processes.(3marks)

Question 3 (12mks)

Below is the diagram of an electric transformer. If N_p is 480 turns, V_p is 240V.



- i). what should be the number of turns in secondary coil, N_s if it carries a secondary voltage V_s of 360 volts? (2marks)
- ii). How much current should be in the secondary coil, I_s if the primary coil, I_p had 10.0 Ampres (2marks)

- iii). what is the transformer turns ratio? (1 marks)
- iv). is this a step-up or step-down transformer? (1 mark)
- v). what is the transformer stepping up? (1 mark)
- vi). what would you expect to see on the brightness of the bulb when in the secondary circuit compared to when the bulb would be in the primary circuit? (1marks)
- vii). Explain clearly what 'mutual induction' process is concerning transformers? (1 marks)
- (viii). Show using a simple line circuit that current entering a junction is equal to current leaving the same junction. Hence show that current at such a junction is equal to Zero. (2marks).
- (ix). Name two other power circuit installations or devices that would be required on a domestic /industrial wiring. (1mark)

Question 4 (12mks)

- i). Name and draw in order the four explicit stroke cycle of motor combustion engine (4marks)
- ii). With reference to tools and equipment carried out in the mechanical workshop, draw and label the following tools: a) Spring divider b) Try square c) Centre Punch d) ball pain hammer (4marks)
- (iii) Use illustrated drawings to differentiate between a steel rule and a steel ruler as an engineer's measuring tool. (2marks)
- (iv) Use neat sketches to show the difference between a hand file and a flat file. (2marks)

Question 5 (12mks)

- i). State Four main uses of computers (2marks)
- ii). what is a computer network? (1mark)
- iii). sketch any three topology examples of computer networks. (3marks)
- iv). Mention one advantage of institutional computer networks. (1mark)
- v). Distinguish between LAN and WAN as acronyms used in computer networks (2marks)

(vi). Copy and complete the following table concerning careers in Kenya. (3marks)

s/n	Academic Qualification	Job Expectation	Possible Employer
1	ICT communication	--	Safaricom Co.
2	--	Telephone operator (exchange switch box)	--
3	BTED mechanical	Mechanical Trainer at National Polytechnic	--
4	Bachelor in Nursing	--	--
5	--	Roads Surveyor	--
6	--	Electrical installation	KPL