



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY
DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

CARPENTRY AND JOINERY TECHNOLOGY

MODULE: Woodworking Machines

PAPER NO: 311/22/M06

DURATION: 3 Hours

NOVEMBER/DECEMBER 2025 EXAMINATION

REQUIREMENTS

A3 Bond paper, Drawing instruments and answer booklet.

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five (5) questions.**
- 2. Each question carries 20 marks.**

This paper consists of 3 printed pages.

QUESTION 1

- (a) Explain the term woodworking machines. (2 marks)
- (b) Explain five advantages of using machines over hand tools. (10 marks)
- (c) Identify four safety colour symbols and codes. State meaning for each symbol. (8 marks)

QUESTION 2

- (a) Describe four principles to be considered when constructing a woodworking machines shop. (4 marks)
- (b) Make illustrations of the following operations on a surface planner
- (i) edging (2 marks)
- (ii) surfacing (2 marks)
- (iii) edging and surfacing (2 marks)
- (c) Sketch a three pin plug, identify each pin and colour code. (6 marks)
- (d) State four electrical rules observed when using machines. (4 marks)

QUESTION 3

- (a) List down two functions performed by circular saw. (2 marks)
- (b) Discuss four advantages of using circular saw over dimension saw. (4 marks)
- (c) Draw a section of circular saw. Show direction cutting by arrow head. (14 marks)

QUESTION 4

- (a) Illustrate with neat and clear diagrams the following molds performed by spindle moulder
- Ovals
 - Round over
 - Behave
 - Plough (trenching)
 - Coving
- (b) Calculate the rim speed (peripheral speed) of a saw blade with diameter of 550mm and a spindle speed of 1750 rev/min. (15 marks)

QUESTION 5

- (a) List three functions of a riving knife. (6 marks)
- (b) List down four safety precautions which must be observed when using dimension saw. (4 marks)
- (c) Illustrate with neat and clear diagrams blade section of a dimension show the following parts
- Riving knife
 - Top crown guard
 - Feed
 - Blade
 - Distance between riving knife and blade
 - Extension flange
 - Distance between work piece and extension flange (10 marks)

QUESTION 6

- (a) Draw and label a dimension saw blade (teeth) and label all parts. (12 marks)
- (b) Discuss six causes of kick back in sawing timber. (6 marks)
- (c) Define the term kick back in machining. (2 marks)

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