

**SIR ARTHUR LEWIS COMMUNITY COLLEGE**  
**ENGINEERING AND THE CIRCULAR ECONOMY**  
**ACADEMIC YEAR (2024/2025) - SEMESTER ONE**  
**END OF SEMESTER EXAMINATION**

**TUTOR (S)** : Mr. Nathan Hyacinth

**PROGRAMME TITLE** : Carpentry and Joinery - Foundations

**COURSE TITLE** : Hand and Machine Tool Technology

**COURSE CODE** : CAJ101

**LEVEL** : Certificate / Year One

**DATE** : Wednesday, 18<sup>th</sup> December 2024

**COMMENCEMENT TIME** : 1:00 p.m.

**DURATION** : 2 hours

**INVIGILATOR (S)** : L. Ollivierre, J. Pistol, C. Munn, O. Richards

**ROOM (S)** : OTW-1R-08

---

**GENERAL INFORMATION AND INSTRUCTIONS**

- **This paper consists of two sections. Sections A and B.**
- **Section A** consists of Twenty (20) Multiple Choice Questions. Each question is worth one (1) mark. You are required to answer all questions on the examination paper.
- **Section B** consists of Eight (8) Short Answer Questions. Complete questions 1 - 7 on the examination paper. You are required to answer question eight (8) using the answer sheet provided.
- Students must sign IN and OUT on the examination class list.
- Students must **not** write their names on their answer sheets, only their **ID number**.
- Students are reminded to read **all** questions and instructions in each section very carefully.
- Please number your responses accordingly.
- **Note: Bags, Books as well as writing paper not given by the invigilator should be deposited at the front of the examination room or as otherwise indicated.**
- **All cell phones must be turned off during the exam.**

**DO NOT TURN THIS COVER SHEET UNTIL**  
**YOU ARE TOLD TO DO SO!!!**

**SECTION A**

**INSTRUCTIONS:** Answer **ALL** questions from this section on the examination paper.

1. Which tool could you use instead of a pencil, when you want to mark measurements very accurately?
  - A) marking gauge
  - B) tri-square
  - C) marking knife
  - D) Calipers
  
2. Which tool is best for marking deep lines?
  - A) mortise gauge
  - B) marking gauge
  - C) cutting gauge
  - D) combination square
  
3. Which saw is between 650 mm and 700 mm long, with 3–4 teeth per inch?
  - A) cross cut saw
  - B) rip saw
  - C) tenon saw
  - D) coping saw
  
4. The back saw with the fewest teeth per inch is a:
  - A) tenon saw.
  - B) bead saw.
  - C) dovetail saw.
  - D) gent's saw.
  
5. Which saw is best for cutting metal or plastic?
  - A) flooring saw
  - B) fret saw
  - C) pad saw
  - D) hack saw
  
6. Which chisel is best for convex and concave work?
  - A) paring chisel
  - B) firmer chisel
  - C) gouge chisel
  - D) bevel-edge chisel
  
7. Which plane is the best for clearing the corners of stopped housings?
  - A) rebate plane
  - B) bull nose plane
  - C) plough plane
  - D) block plane
  
8. Which hand tool is best for making small pilot holes?
  - A) rasp
  - B) bradawl
  - C) punch
  - D) countersink bit

9. Which drill bit can drill different sized holes?
  - A) Forstner bit
  - B) centre bit
  - C) twist bit
  - D) expansion bit
  
10. Which screwdriver gives the best grip?
  - A) slotted head
  - B) Phillips cross head
  - C) Posidrive
  - D) all of the above
  
11. The correct sequence for sharpening a saw is:
  - A) topping, cutting, setting, sharpening.
  - B) cutting, topping, setting, sharpening.
  - C) topping, setting, cutting, sharpening.
  - D) topping, setting, sharpening, cutting.
  
12. The sharpening angle of planes and chisels should be:
  - A) 20°.
  - B) 25°.
  - C) 30°.
  - D) 35°.
  
13. Which is the main regulation that deals with power tools?
  - A) RIDDOR
  - B) PUWER
  - C) COSHH
  - D) JARVIS
  
14. What is the correct power tool voltage on site?
  - A) 55 V
  - B) 110 V
  - C) 220 V
  - D) 240 V
  
15. If you want to drill a 13 mm hole, what size drill might you use to make a pilot hole?
  - A) 10 mm
  - B) 6 mm
  - C) 15 mm
  - D) 13 mm
  
16. What PPE must be worn when using a portable electric planer?
  - A) goggles and boots
  - B) ear defenders and gloves
  - C) dust mask
  - D) all of the above
  
17. What must you never do when operating a router?
  - A) wear PPE
  - B) cut left to right
  - C) cut right to left
  - D) wait until the machine has stopped before moving it

18. A chop saw can cut:
- A) mitres.
  - B) square.
  - C) compound.
  - D) all of the above.
19. When sanding very fine work it is best to use:
- A) a belt sander with 150-grit paper.
  - B) an orbital sander with 20-grit paper.
  - C) a belt sander with 20-grit paper.
  - D) an orbital sander with 150-grit paper.
20. Cordless tools are better because:
- A) there is no cable, so they are more portable.
  - B) the battery runs flat quickly.
  - C) they are cheaper.
  - D) they can't go in reverse.

## SECTION B

**INSTRUCTIONS:** Answer **ALL** questions in this section. Complete questions 1 to 7 on the examination paper. Complete question eight (8) using the answer sheet provided.

1. The following descriptions all refer to a folding rule, a retractable steel tape measure and a metal steel rule. Which descriptions belong to which tool? Write **'F' (for 'folding')**, **'R' (for 'retractable')** or **'M' (for 'metal')** after each description.
- A) available in a variety of lengths \_\_\_\_
  - B) may become discoloured over time \_\_\_\_
  - C) used for fine, accurate measurement work \_\_\_\_
  - D) normally 1 metre long \_\_\_\_
  - E) useful for setting out large areas or marking long lengths \_\_\_\_
  - F) has a hook \_\_\_\_
  - G) generally 300 mm or 600 mm long \_\_\_\_
  - H) made of wood or plastic \_\_\_\_
  - I) can also serve as a short, straight edge for marking out \_\_\_\_
  - J) also referred to as a bar rule \_\_\_\_
  - K) also referred to as a spring tape \_\_\_\_
  - L) can also be used on its edge for greater accuracy \_\_\_\_

**(12 marks)**

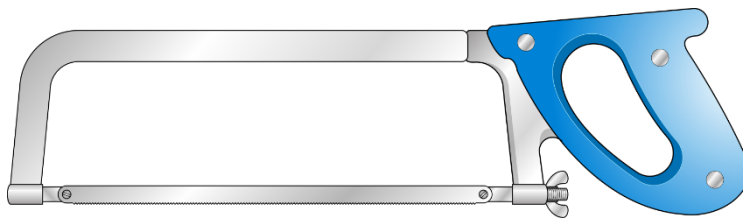
2. Draw lines to join these saws to their descriptions.

**Rip saw** used for cutting across the grain, but can also be used for short rips on light timber; typically 650 mm long with 5–8 teeth per 25 mm; teeth are bevelled across the saw; the angle of this bevel is between 60° and 75°; the cutting edge should ideally be at 45° to the work

**Cross cut saw** usually used for cutting with the grain; typically 650–700 mm long with 3–4 teeth per 25 mm; teeth are filed at 90° across the blade, shaped like chisels; the saw should be at 60° to the work to cut most efficiently

**Panel saw** used for cutting plywood, large tenons and most fine work; obtainable up to 600 mm long; usually 7–12 teeth per 25 mm  
**(6 marks)**

3. Name the saws pictured and state their main uses.



---

---

**(3 marks)**

4. Draw lines to join each type of bench plane to its description.

**Jointer/trying plane** the shortest of the bench planes; used for final finishing or cleaning up, bevelling and chamfering; can be used to follow the grain; can be used with one hand

**Smoothing plane** medium-length, generally 350–380 mm; used for rapid and accurate removal of waste material, such as dressing doors for hanging

**Jack plane** the longest bench plane, ranging from 450–600 mm; typical blade width 60 mm; generally used for smoothing long edges of timber

**(6 marks)**

5. Answer these questions about claw hammers.

A) What is the approximate maximum weight of a claw hammer?

\_\_\_\_\_

B) Why is it best to place a spare scrap of timber or hardboard under the claw when using it to remove a nail?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C) Why do many modern claw hammers have integral heads?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

D) How can you get additional leverage and withdraw a nail straighter?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(8 marks)**

6. What are G clamps particularly useful for?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(3 marks)**

7. State the typical use for the following:

A) Firmer chisel

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B) Beveled edge chisel

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Student ID # \_\_\_\_\_

C) Swan neck chisel

---

---

---

D) Paring chisel

---

---

---

E) Inside ground gouge

---

---

---

**(10 marks)**

8. Describe with sketches (**Use answer sheet provided**):

A) The grinding and honing angles of a plane iron.

**(5 marks)**

B) The profile shapes of a smoothing, jack and trying plane irons.

**(9 marks)**

**END OF EXAMINATION.**