



DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)

HOME SCHOOLING SELF-STUDY WORKSHEET ANSWER SHEET

SUBJECT	WELDING & METALWORK	GRADE	11	DATE	JULY 2020
TOPIC	TERM 1 CONTENT	TERM 1 REVISION	(√)	TERM 2 CONTENT	()

1.1 Reporting to persons in charge:

The worker must report:

Maintenance requirements of machines or machines or equipment so that the flow of production is not interrupted. √

Progress on work in operation. √

Problems encountered in the manufacturing process. √

Material and equipment requirements. √

Accidents immediately. √

ANY (1)

1.2 Categories of OHS:

Conditions. √

Actions. √

(2)

1.3 Angle grinder:

Safety guard must be placed before you can start the grinding process. √

Use the correct grinding disc for the job. √

Make sure that there are no cracks on the disc before you start a job. (Any 3)

Protective clothing and eye protection are essential when working with an angle grinder √ (3)

1.4 Eliot-lighter

Flint lighter gives off sparks, matches and gas lighters give a continuous flame.

(2)

1.5 Surface grinder ✓

Understand the operating instructions applicable to your machine. ✓

Never clean or adjust the machine while it is in motion. ✓

Do not use excessive force when drilling into the work piece. ✓ (Any 3)

Protective clothing and eye protection are essential when operating a surface grinder. ✓ (3)

1.6 Welding helmet

Protects the welder from arc rays. ✓

Protects the welder from flying sparks. ✓

Protects the welder from flying molten metal. ✓

Shields the welder's face from excessive heat. ✓ (Any 3)

1.7 General machine safety

No machine may be operated if any of the guards are missing or broken. ✓

All moving parts must be covered by rigidly constructed guards. ✓

If access to a machine is necessary, the guard must be able to hinge or slide open while the machine automatically switches off. ✓ (ANY 3)

1.8 Drill press safety

Clamp the work piece securely to the table and do not hold it by hand. ✓ (1)

1.9 Surgical gloves

- To avoid a possibility of getting infection from the wound. ✓
- To prevent possibility of further infecting the wound. ✓ (2)

QUESTION 2: TOOLS

Guillotine

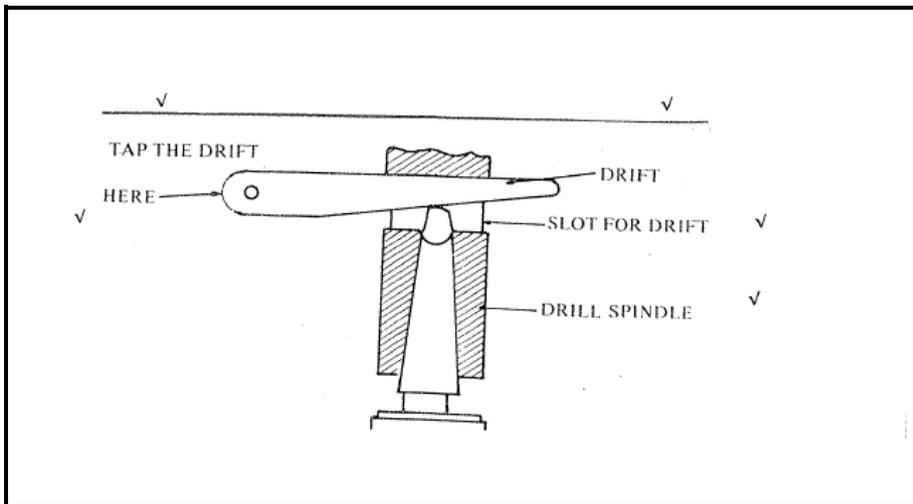
2.1 A manual guillotine is designed to cut sheet metal that is not thicker than 1,2mm. ✓

It is usually able to accommodate sheets not wider than 1,2 m. ✓ (1)

2.2 Purpose of extension bars

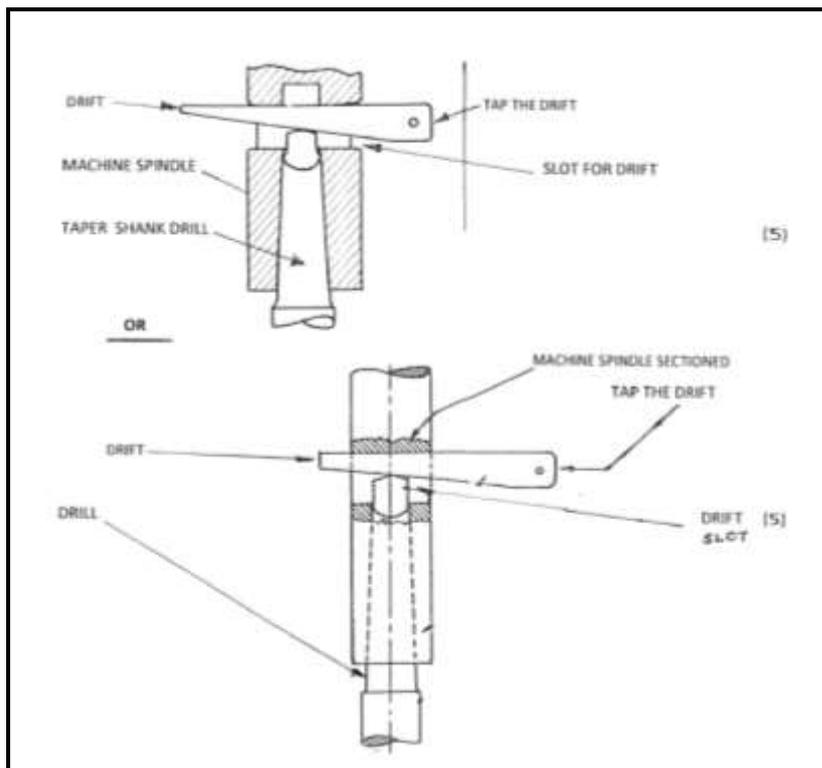
Lengthens the work surface and supports longer material. ✓ (2)

2.3 Using a taper drift



OR

(5)



2.4 Lighting up procedure for oxy acetylene:

- Ensure all the safety factors are met.
- With the torch valves locked, open the acetylene cylinder valve.
- Open the acetylene control valves on the blow torch and adjust the regulator to set the correct working pressure.
- Close acetylene control valve on the blow torch and repeat the above procedure for the oxygen side. ✓

- Open the acetylene control valve on the blow torch, adjust it to slightly release acetylene gas and then use a spark lighter to set up the flame.
- Open the oxygen control valve on the blow torch and adjust the flame to get a flame of choice. (ANY 5)

2.5 Cable conditions

- Cable must be of good flexibility.
- Cable must be of the correct capacity.
- Cable must not have loose connections to avoid overheating and current loss. (ANY 2)

Question 3: Welding Terminology (Specific)

3.1 Template

A template is an exact replica of a project or part of a project which has to be made. (2)

3.2 Advantages of templates:

- Unskilled workers can use templates relatively easy.
- Accuracy is maintained as mistakes are minimised.
- More production is achieved as time wasting is minimised.
- The job becomes easier to accomplish (ANY 2)

3.3 Roof truss

It is a frame used to support a roof covering and to provide a structure which overhead cranes can be fixed. (1)

3.4 Roof truss calculations

$$\begin{aligned} 3.4.1 \text{ Pitch} &= \frac{\text{rise}}{\text{span}} \\ &= \frac{3000}{12000\text{v}} \\ &= \frac{1}{4} \text{ or (1 in 4) or } 1:4 \text{ v} \end{aligned}$$

$$\begin{aligned} 3.4.2 \text{ Slope} &= \frac{\text{rise}}{\text{part of span over which the rise takes place}} \\ &= \frac{3000}{6000\text{v}} \\ &= \frac{1}{2} \text{ or (1 in 2) or } 1:2 \text{ v} \end{aligned}$$

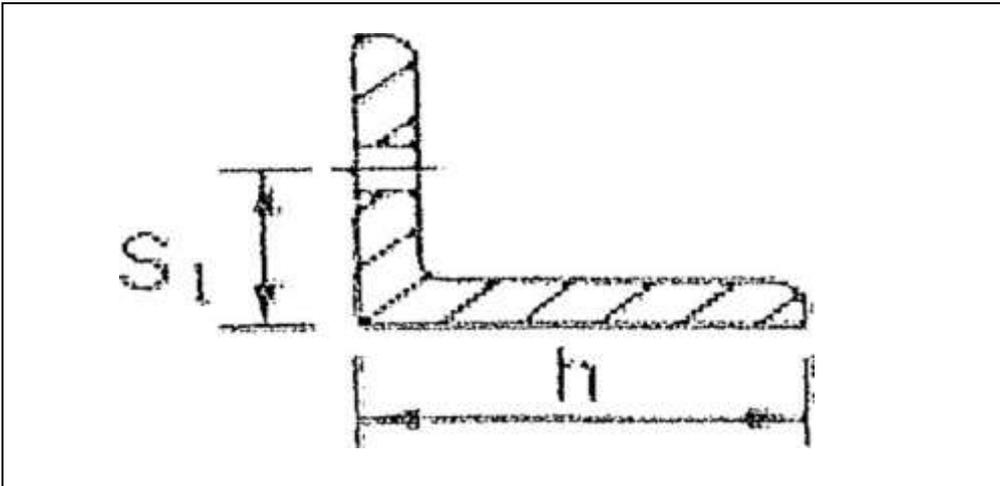
3.4.3 Rafter length = $(C^2) = A^2 + B^2$

$$C = \sqrt{6^2 + 3^2}$$

$$C = 6,7 \text{ m}$$

(1)

3.5 Back mark:



(2)

3.6 Methods of reducing:

- Skip welding method.
- Alternate welding method.
- Back step welding.

(ANY 1)