



**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: BSC ABE. II

COURSE CODE: ABE 207

TITLE OF PAPER: WORKSHOP TECHNOLOGY

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO
OTHER QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

SECTION I COMPULSORY

QUESTION 1

a) Determine the meaning of the following colours when they are used in a farm workshop for safety observation.

- | | | |
|-------|---------------------|-----------|
| (i) | Grey | [2 marks] |
| (ii) | Yellow | [2 marks] |
| (iii) | Yellow and black | [2 marks] |
| (iv) | Red | [2 marks] |
| (v) | Light green or grey | [2 marks] |
| (vi) | Orange | [2 marks] |
| (vii) | white; | [2 marks] |

b) Figure 1 shows four types of cold chisels for workshop activities.

- | | | |
|------|---|----|
| (i) | Name the chisels
marks] | [4 |
| (ii) | Name the uses of each of the chisels in the figure.
marks] | [8 |

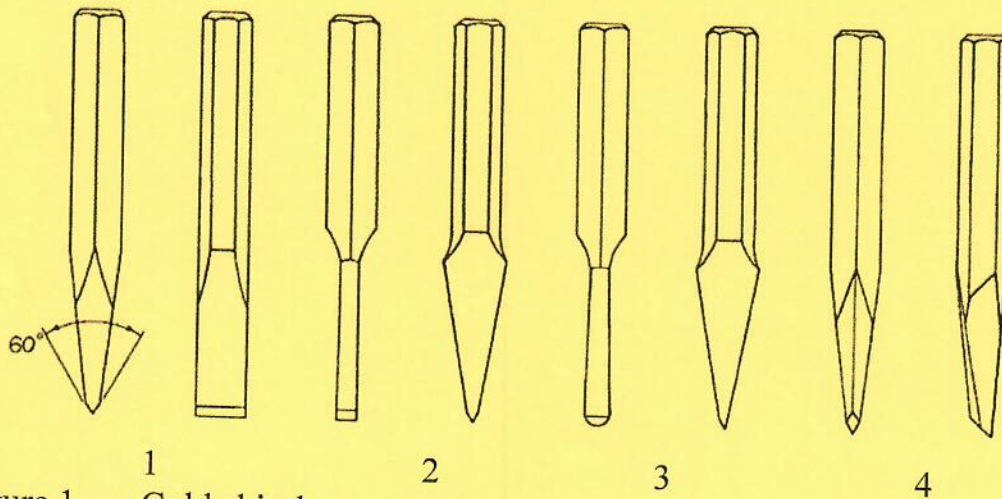


Figure 1. Cold chisels

c) Plastic is widely used in most engineering applications. Distinguish between thermoplastics and thermosetting plastics [4 marks]

- d) A fire is ignited by fuel during a refuelling action of tractors at the university farm.
- Classify the type of fire [2 marks]
 - Suggest the type of fire-fighting equipment/tools you would use to stop the fire. [4 marks]
 - State the information you would convey to the Swaziland Fire and Emergency Services when calling for help to fight the fire. [4 marks]

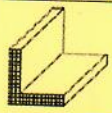
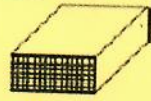
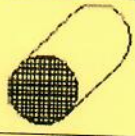
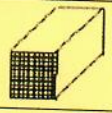
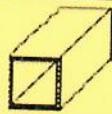
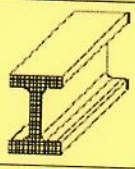
SECTION II ANSWER ANY TWO QUESTIONS

QUESTION 2

- a) Table 1 shows various forms of metals as sold at hardware stores in the Kingdom of Swaziland.

- Name the various forms in the table [5 marks]
- Give the various dimensions necessary to describe the metal form. [15 marks]

Table 1 Forms of metals that are sold in the hardware stores.

	SHAPE/FORM	NAME	STANDARD DIMENSIONS
0		Angle iron	Width x height x thickness (x 6m)
1			
2			
3			
4			
5			

- b) What are the advantages and limitations of cold worked metals in engineering applications? [10 marks]

QUESTION 3

- a) Distinguish between ferrous and non-ferrous metals. [4 marks]
- b) Give three examples ferrous and non-ferrous metals. [6 marks]
- c) Briefly explain the following terms as used in heat treatment of steel:
i. Tempering; [3 marks]
ii. Annealing; [3 marks]
iii. Quenching; and [3 marks]
iv. Normalising. [3 marks]
- d) Give one example for each of the terms in b) above. [4 marks]
- e) Materials for mould making must withstand molten metal at high temperatures. What property should such materials exhibit? [4 marks]

QUESTION 4

- a) Figure 2 shows a measuring instrument for speed.
i. What is the smallest graduation? [3 marks]
ii. What is the reading to the accuracy of the instrument? [4 marks]
- ii. What is the span of the instrument? [3 marks]

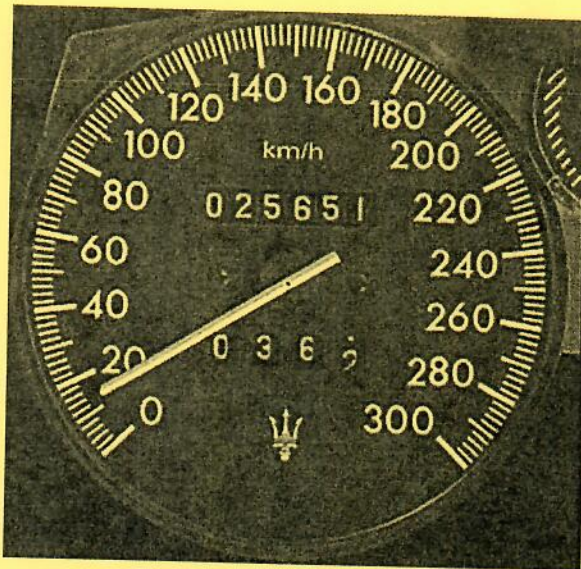


Figure 2. An automobile speedometer

- b) Distinguish between marking and measuring tools. [10 marks]
- c) Describe the various measurements one can make with an engineer's try-square. [10 marks]