

METALWORK

SCHEME OF EXAMINATION

There will be three papers, Papers 1, 2 and 3, all of which must be taken. Papers 1 and 2 will be a composite paper to be taken at one sitting.

PAPER 1: Will consist of forty multiple-choice objective questions all of which must be answered within 1 hour for 40 marks.

PAPER 2: Will consist of five essay-type questions. Candidates will be required to answer four questions within 1 hour 30 minutes for a total of 60 marks.

PAPER 3: Will consist of two practical works, one of which must be carried out by candidates within 3 hours for 100 marks. Candidates shall be allowed 10 minutes, prior to the commencement of the test to study the drawings. They will be required to make a test piece for which the appropriate drawings will be supplied.

Schools will be required to supply materials needed for the test of their candidates.

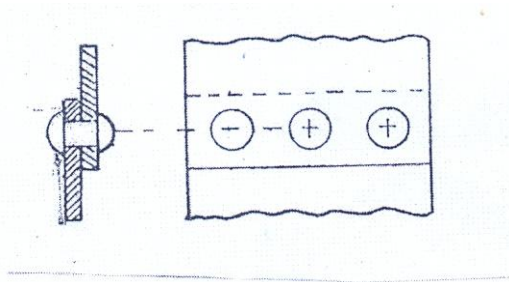
SAMPLE QUESTION

PAPER 1 **[OBJECTIVES]**

1. Which of the following should be worn when pouring molten metal?
 - A. Shield
 - B. Helmet
 - C. Mask
 - D. Goggles

2. Which of the following materials is suitable for forging?
 - A. Cast iron
 - B. Brass
 - C. Mild Steel
 - D. Bakelite

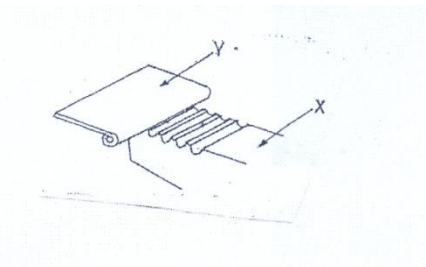
3.



The type of joint illustrated above is a

- A. double strap butt.
- B. double riveted lap.
- C. single strap butt.
- D. single riveted lap.

Use the sketch below to answer Questions 4 and 5.



- 4. The tool labeled **X** is known as
 - A. creasing iron.
 - B. bick iron.
 - C. funnel stake.
 - D. hatchet stake.

- 5. The operation being carried out on workpiece **Y** is called
 - A. raising.
 - B. wiring.
 - C. beading.
 - D. bending.

- 6. The sand used for making moulds is
 - A. dry sand.
 - B. facing sand.
 - C. green sand.
 - D. parting sand.

- 7. The statement that defines the requirements of an artifact is referred to as
 - A. brief.
 - B. specification.
 - C. analysis.
 - D. situation.

- 8. The operation performed using the tailstock is
 - A. drilling.
 - B. turning.
 - C. parting off.
 - D. screw cutting.

- 9. The micrometer reading indicated in the figure is
 - A. 10.02 mm.
 - B. 10.15 mm.
 - C. 10.20 mm.
 - D. 10.67 mm.

- 10. Which of the following materials will require carburizing during heat treatment?
 - A. High carbon steel
 - B. High speed steel
 - C. Mild steel
 - D. Cast iron

PAPER 2
[ESSAY]

- 1. (a) Copy and complete the table below:

	Soft Soldering	Hard Soldering
Flux		
Source of heat		
Thickness of parent metal		
Filler Metal		
One safety precaution		

- (b) (i) Sketch the hatchet soldering iron.
(ii) Label **two** parts of the sketch in (i).
-
- 2. (a) State **one** use of the following parts of the centre lathe.
 - (i) Tail stock

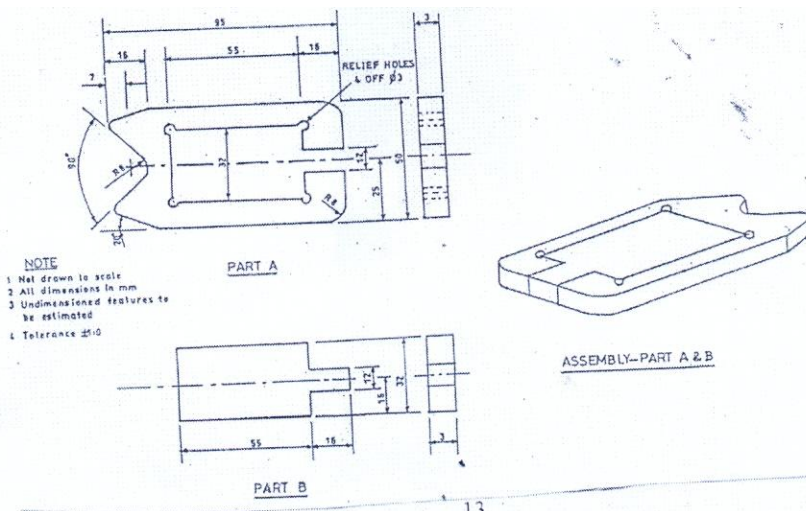
- (ii) Tool post
 - (iii) Carriage
 - (iv) Head stock
- (b) Sketch the parting off tool.
- (c) State two safety precautions to be observed when operating the centre lathe.

PAPER 3
[PRACTICAL]

1. The following materials are supplied:

- (a) **one** flat mild steel plate, 97mm x 52mm x 3mm:
- (b) **one** flat mild steel plate, 73mm x 34mm x 3mm:
- (c) **one** cotton bag 120mm x 60mm to enclose the finished work.
- (d) **two** tie-on labels.

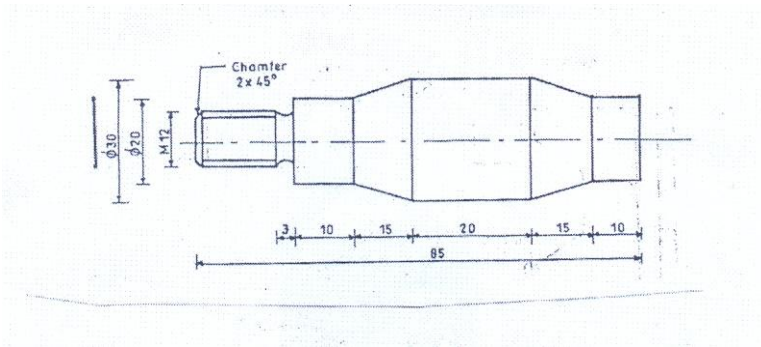
The diagram below shows the assembly and detailed view of each part of a fitting exercise. Using the materials supplied, prepare the parts and assemble the pieces.



2. The following materials are supplied:

- (a) **one** piece of free cutting mild steel rod, $\text{Ø}35\text{mm} \times 90\text{mm}$;
- (b) **one** cotton bag, $70\text{mm} \times 10\text{mm}$;
- (c) **two** tie-on labels.

The diagram below shows a detailed view of a machine part. Produce the part using the material which has been supplied.



NOTE

- 1. Not drawn to scale
- 2. All dimensions in mm
- 3. Tolerance = ± 0.5