

29.17 METAL WORK (445)

29.17.1 Metal Work Paper 1 (445/1)



MANYAM FRANCHISE
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SECTION A (40 marks)

Answer ALL the questions in this section.

- 1** (a) State **four** safety precautions to be observed when using a feeler gauge. (2 marks)
- (b) Distinguish between:
- (i) gross pay and net pay;
- (ii) change and balance. (2 marks)
- 2** (a) State the reason for applying chalk on a file when filing. (1 mark)
- (b) With the aid of a sketch explain the term “kerf” as applied to metal cutting. (1½ marks)
- 3** (a) Name **three** marking out tools required when setting a measurement on a scribing block. (1½ marks)
- (b) List **four** specifications required when purchasing rivets. (2 marks)
- 4** Use labelled sketch to show the:
- (a) length of an outside caliper;
- (b) setting of an inside caliper using a rule. (4½ marks)
- 5** (a) Explain the effect of varying the clearance angle when chipping with a chisel. (2 marks)
- (b) State **four** effects of using a twist drill bit with unequal lip angles. (2 marks)
- 6** (a) State the difference between tinplating and galvanising.
- (b) Explain **two** methods of galvanising materials. (2 marks)
- 7** (a) List **five** materials used in making soft hammer heads. (2½ marks)
- (b) Name **three** types of tinsmith hammers. (1½ marks)

8 (a) Define the following terms as applied to brazing;

- (i) spelter;
- (ii) capillary action.

(2 marks)

(b) Figure 1 shows a cross-section of a forge.

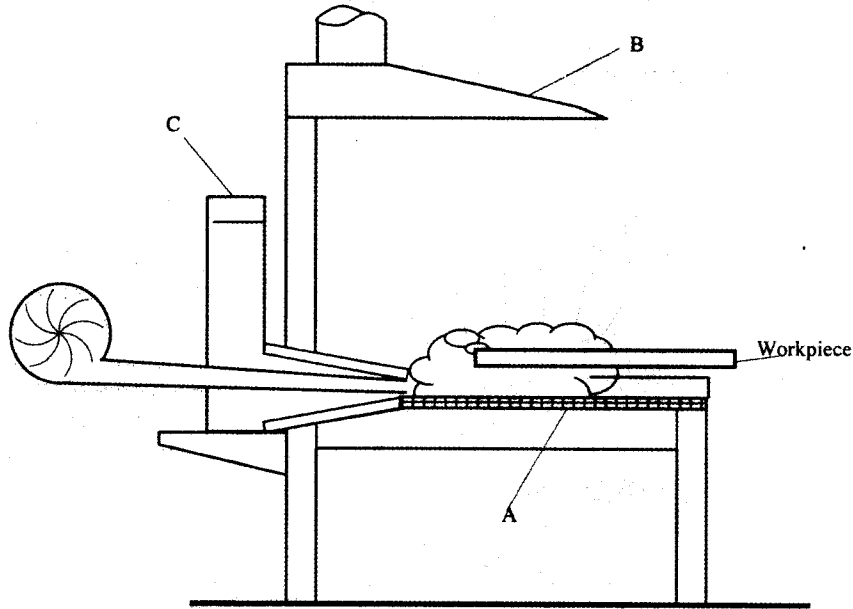


Figure 1

(i) Name appropriate material for constructing part A and state **one** reason for using it.

(ii) State what would happen if part B is faulty.

(iii) Name part C and state its function.

(3 marks)

9 (a) Use a labelled sketch to show the rightward welding technique.

(2 marks)

(b) State **three** advantages of using rightward over leftward welding techniques.

(3 marks)

10 Figure 2 shows an isometric drawing of a block.

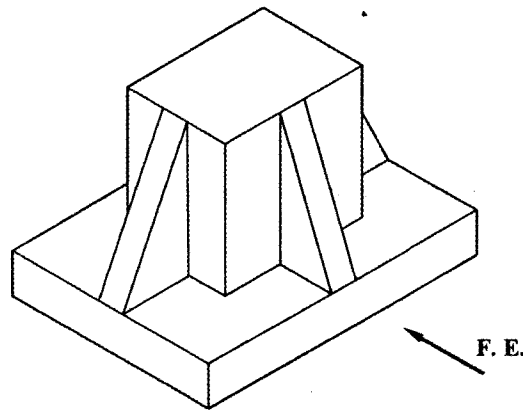


Figure 2

Sketch in third angle projection, the orthographic views of the block.

(5½ marks)

SECTION B (60 marks)

*Answer question 11 and any other **THREE** questions from this section.
Candidates are advised to spend not more than 25 minutes on question 11.*

- 11** Figure 3 shows orthographic views of a block drawn in first angle projection. On the isometric grip paper provided draw the isometric view of the block taking X as the lowest end. (15 marks)

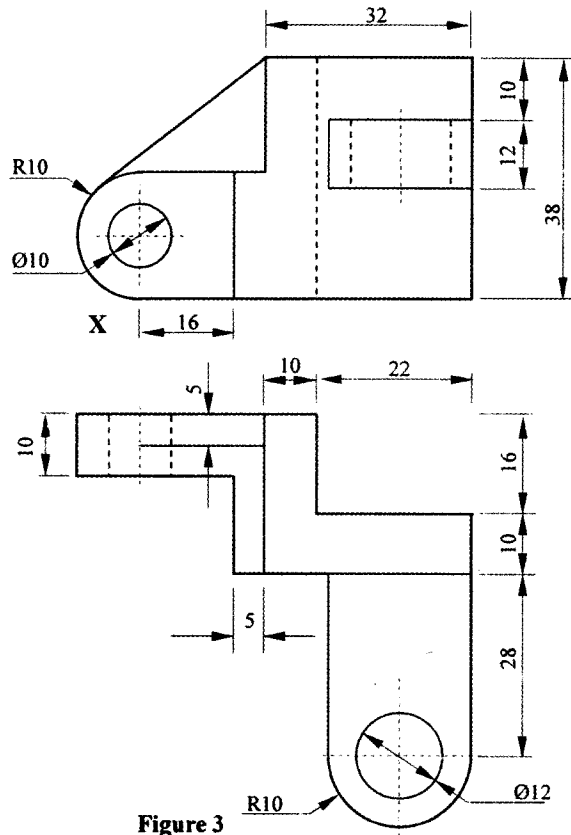


Figure 3

- 12** (a) Using labelled sketch, show and name the **three** commonly used types of fits. (9 marks)
- (b) Sketch and show the following readings:
- (i) a 12.65 mm on a micrometer scale;
 - (ii) a 46.98 mm on vernier scale of 0.02 mm accuracy. (6 marks)

- 13 (a) Outline the procedure of:
- (i) lacquering a surface using a brush;
 - (ii) preparing a ready-made article for planishing;
 - (iii) planishing the article in a(ii).
- (8½ marks)
- (b) With respect to oxy-acetylene welding equipment:
- (i) use labelled sketches to show the three types of welding flame;
 - (ii) outline the procedure of testing the equipment for leaks.
- (6½ marks)
- 14 Figure 4 shows a garden trowel with a curved blade and a tang to be made from 1.6 mild steel sheet and 8.0 diameter mild steel rod respectively.

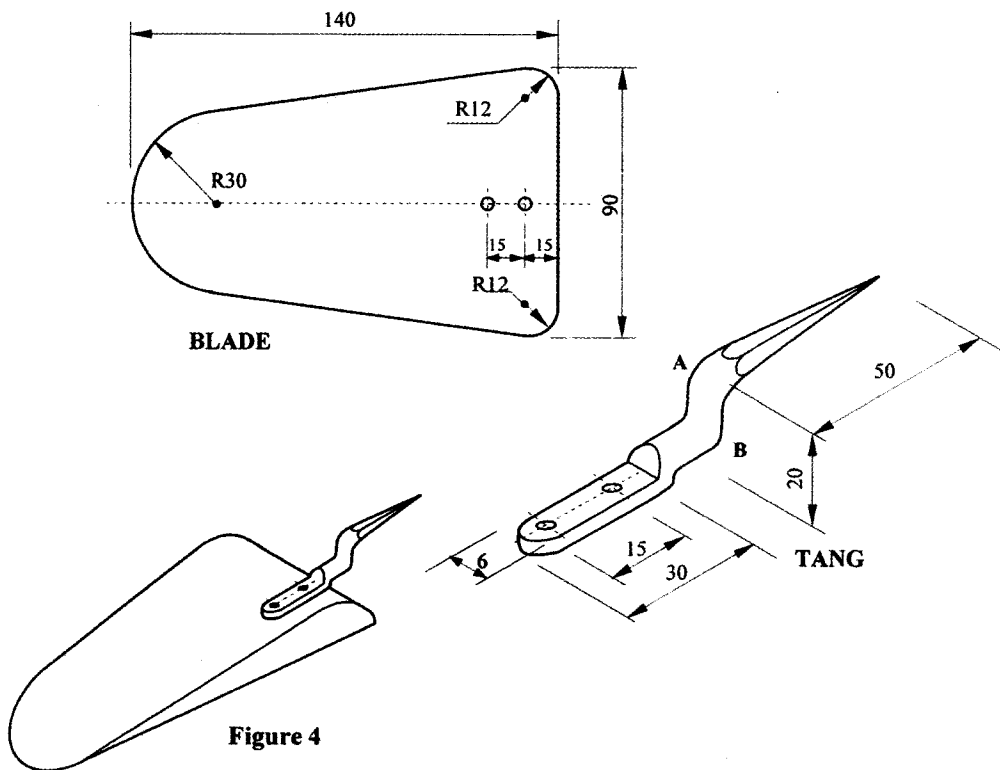


Figure 4

With the aid of five different sketches, outline the procedure of making the trowel and list all the tools used in each step. (15 marks)

- 15 (a) With the aid of sketches, show and name **two** types of soldering bits. (3 marks)
- (b) Figure 5 shows a bottle opener made from a 3.0 mild steel plate 105 x 25 x 3.

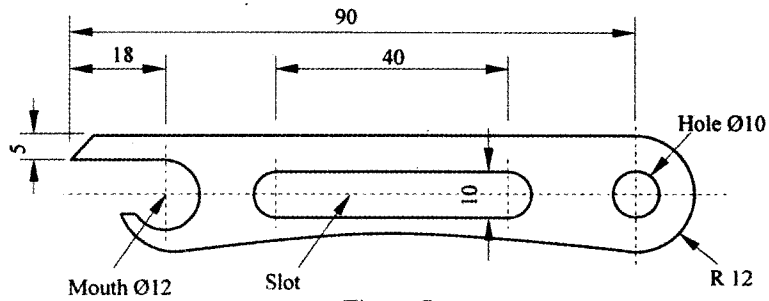


Figure 5

Outline the procedure of:

- (i) marking the opener to the required size;
- (ii) shaping the opener to size;
- (iii) making the opener resistant to wear;
- (iv) finishing the opener by oil blacking.

(12 marks)