3.17 METALWORK (445)

3.17.1 Metalwork Paper 1 (445/1)

SECTION A (40 marks)

Answer ALL questions in this section in the spaces provided.

		and the second s	
1	(a)	Outline a problemethat is likely to occur as a result of:	
		(i) scribing a line using a dot punch;	(1 mark)
		(ii) odot punching using a scriber	(1 mark)
	(b)	Outline three methods of extracting a broken tap from a hole.	(3 marks)
2	(b) (a)	State two uses of a template.	(2 marks)
note &	(b)	With the aid of a sketch outline the procedure of locating the centre of around using an oddleg callipers.	d bar (2 marks)
	(c)	With reference to finishing of metal surfaces:-	
		(i) state two reasons for painting;	(1 mark)
		(ii) list two methods of applying paint.	(1 mark)
3	(a)	List two uses of a drift in forging.	(1 mark)
	(b)	te two precautions to be observed when twisting a metal bar to avoid uneven twist. (1 mark	
4	(a)	Give two reasons for using hollow metals in making furniture.	(1 mark)
	(b)	State four safety precautions to observe when using a grinding machine.	(2 marks)
5	(a)	List four specifications to consider when buying a rivet.	(2 marks)
	(b)	State three factors to consider when selecting spelter for brazing.	(3 marks)
6	(a)	List four methods of holding a work piece on a lathe machine.	(2 marks)
	(b)	State two reasons for knurling.	(1 mark)

		and the second s	
7	(a)	Outline three functions of an electrode that during the arc welding process.	(3 marks)
	(b)	Outline three functions of an electrode thix during the arc welding process. List two broad uses of metals.	(1 mark)
8.	(a)	$\alpha \nabla$	(2 marks)
	(b)	A metal work company is to be established in a new premises.	(2 1)
		Outline four considerations to be taken into account during this process.	(2 marks)
9	(a)	Explain the purpose of annealing metals.	(1 mark)
	(b)	Outline the annealing process.	(2 marks)
10	(a) c5	Use sketches to show:	
<	Exec &	(i) a double hem edge;	(1 mark)
hote	(a) es	(ii) a false wire edge.	(1 mark)
	(b)	State one resulting property of alloying steel with each of the following eleme	ents:-
		(i) Manganese	
		(ii) Chromium	

(3 marks)

Nickel

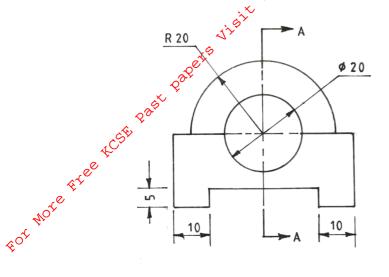
(iii)

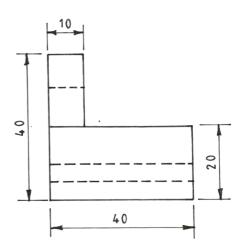
SECTION B (60 marks)

Answer question 11 and any other three questions in the spaces provided.

Candidates are advised to spend NOT MORE THAN 25 MINUTES on question 11.

Figure 1 shows orthographic views of a machined block drawn in first angle projection.





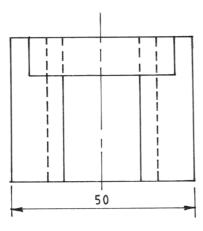


Fig. 1

Draw full size, the following;

(a) the oblique view of the block;

(10 marks)

(b) the sectional end elevation through A-A.

(5 marks)

- 12 (a) With reference to brazing outline:-
 - (i) **four** points to consider in order to obtain a strong brazed joint;

(4 marks)

(ii) **four** safety precautions to be observed while brazing.

(2 marks)

- (b) With respect to arc welding:-
 - (i) state **three** points to consider when selecting an electrode; $(1\frac{1}{2} \text{ marks})$
 - (ii) Name and illustrate two methods of starting an arc. (6 marks)
 - (iii) List **three** methods of inspecting the quality of a weld. $(1\frac{1}{2} \text{ marks})$
- With the aid of labelled sketches, outline the following lathe procedures:
 - (a) Drilling (8 marks)
 - (b) Parting off (7 marks)
- Figure 2 shows an iron box stand made of mild steel plate.

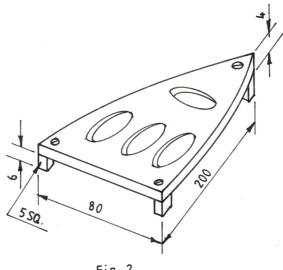


Fig. 2

(a) Prepare a cutting list for the stand.

(3 marks)

- (b) Outline the procedure of:-
 - (i) making the stand; (9 marks)
 - (ii) case hardening the stand. (2 marks)
- (c) Name **two** appropriate methods of finishing the stand. (1 mark)
- 15 (a) With the aid of sketches outline the procedure of making a grooved seam. (6 marks)
 - (b) Outline the procedure of soldering a grooved seam. (6 marks)
 - (c) Give **two** examples where a grooved soldered seam is used. (1 mark)
 - (d) Outline the procedure of cutting a 100 mm diameter hole on a sheet metal using curved snips. (2 marks)