

**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

**HIGHER SCHOOL CERTIFICATE EXAMINATION**

**1999**

# **INDUSTRY STUDIES**

**2 UNIT**

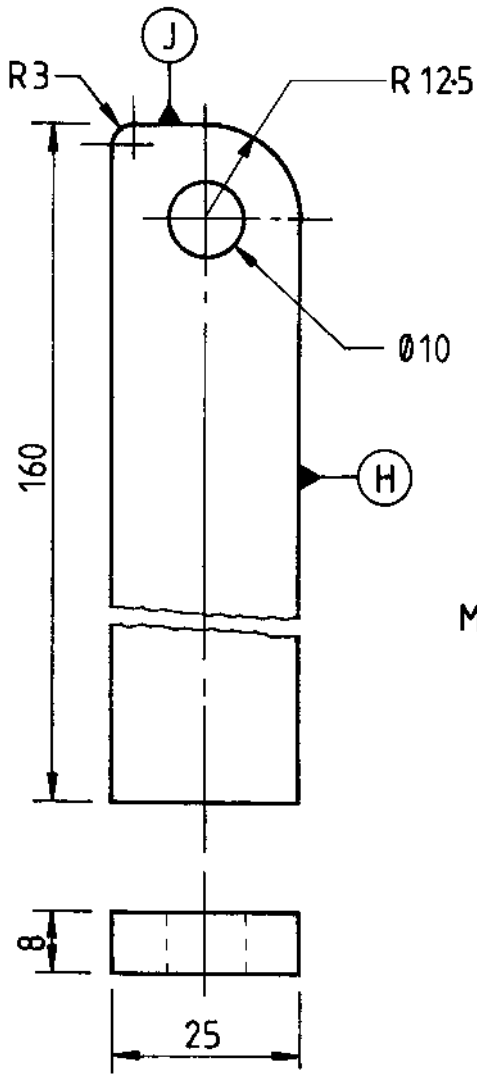
## **METAL AND ENGINEERING STRAND PRACTICAL EXAMINATION**

*(50 Marks)*

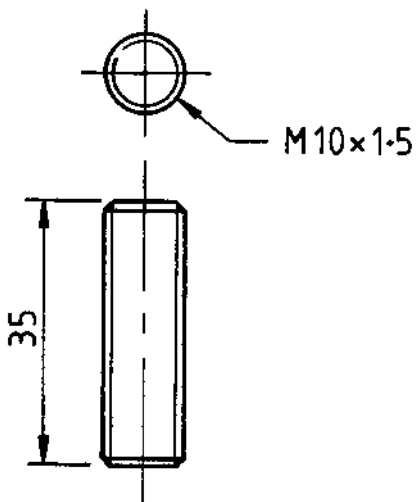
*Time allowed—Two hours*

### **DIRECTIONS TO CANDIDATES**

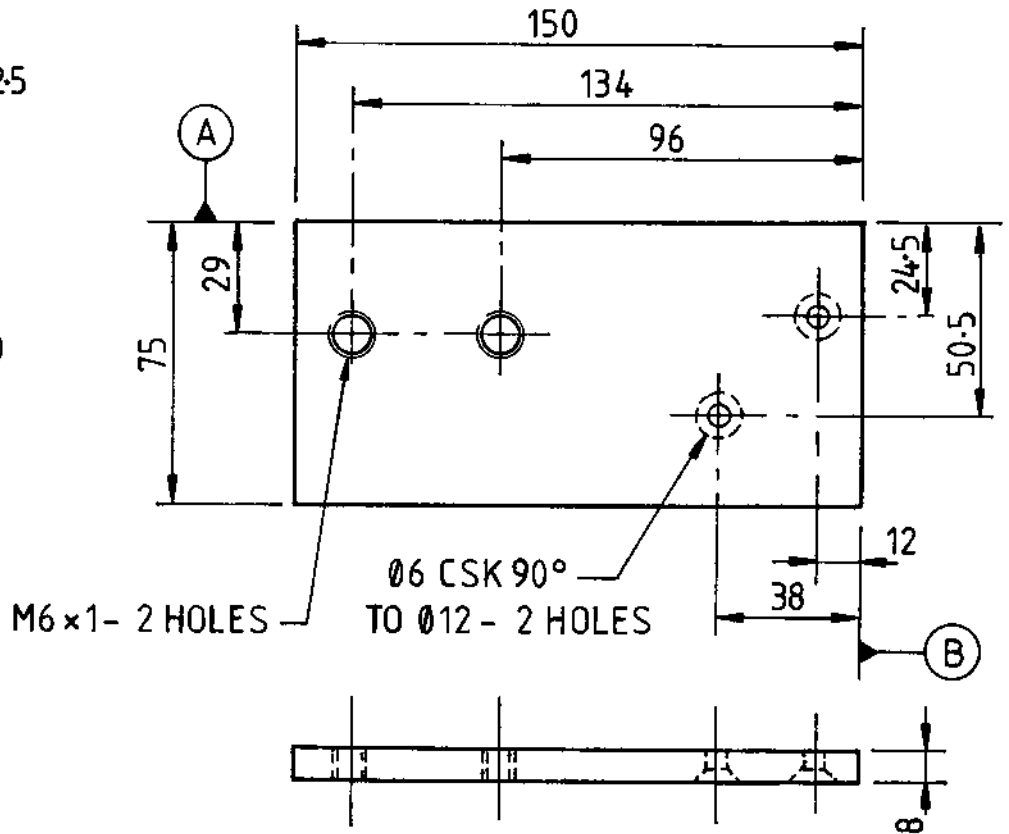
- The product should be assembled prior to presentation for assessment.
- All items **MUST** be clearly labelled with your Student Number and be sealed and presented in a plastic A4 envelope.
- All materials and equipment will be provided before the commencement of the examination.
- Each candidate is to be provided with only one set of materials for the examination.
- Occupational Health and Safety standards must be observed.



ITEM 4 Scale 1:1



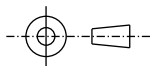
ITEM 5 Scale 1:1



ITEM 1 Scale 1:2

8	Ø10 flat washer	Stock	3
7	M10 × 1.5 hex. nut	Stock	2
6	M6 × 1 countersunk socket screw × 12	Stock	4
5	Axle, Ø10 brooker rod	Stock	1
4	Handle	MS	1
3	Pivot bracket, equal angle	MS	1
2	Strike plate	MS	1
1	Base	MS	1
ITEM	DESCRIPTION	MAT'L	REQ'D

NUT CRACKER

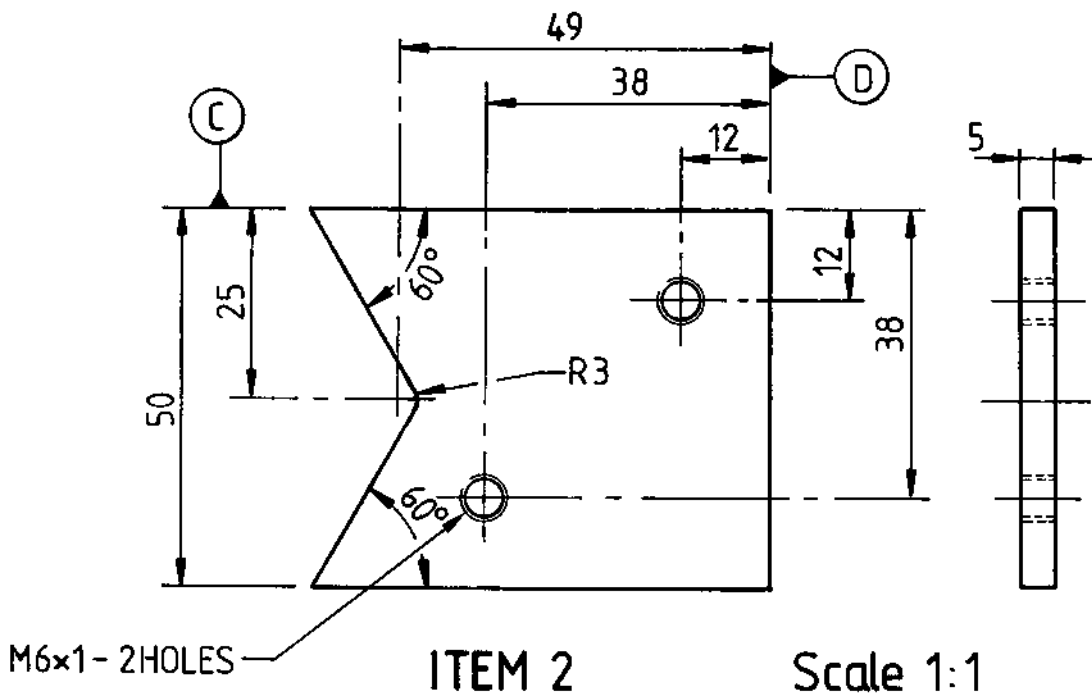
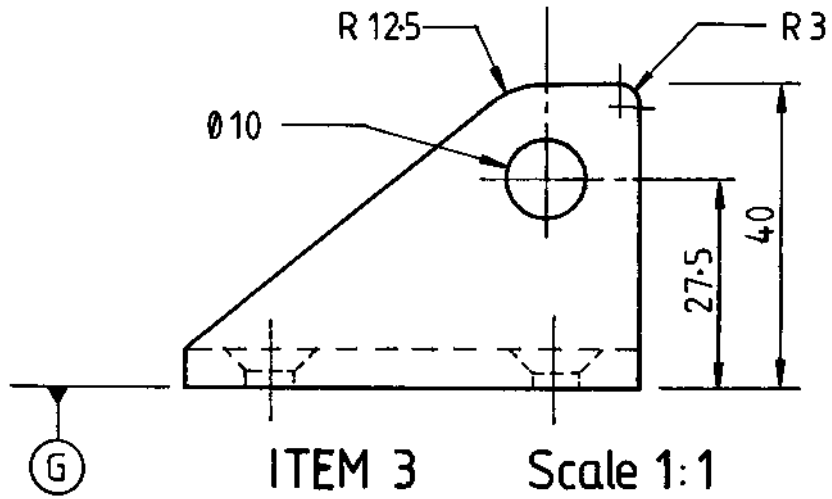
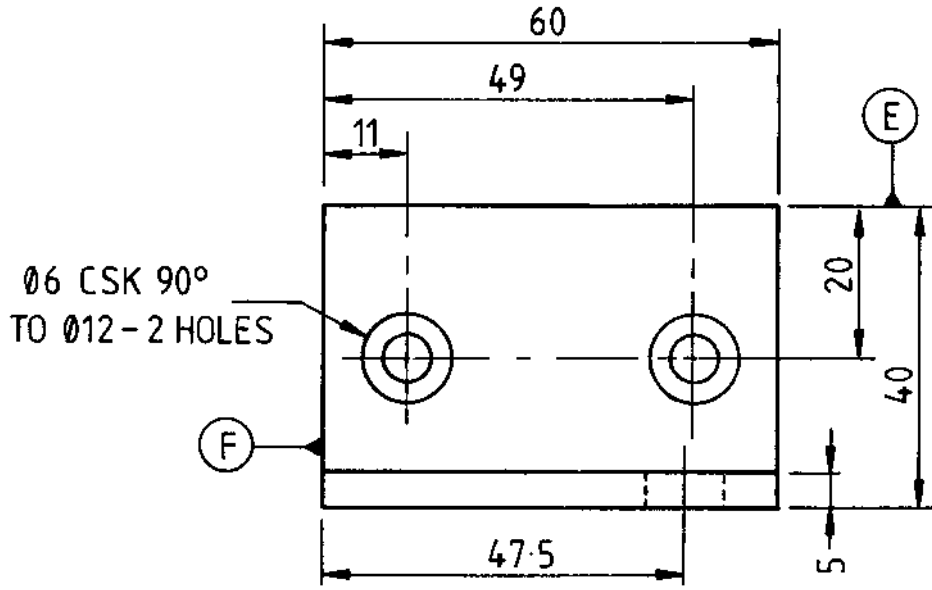


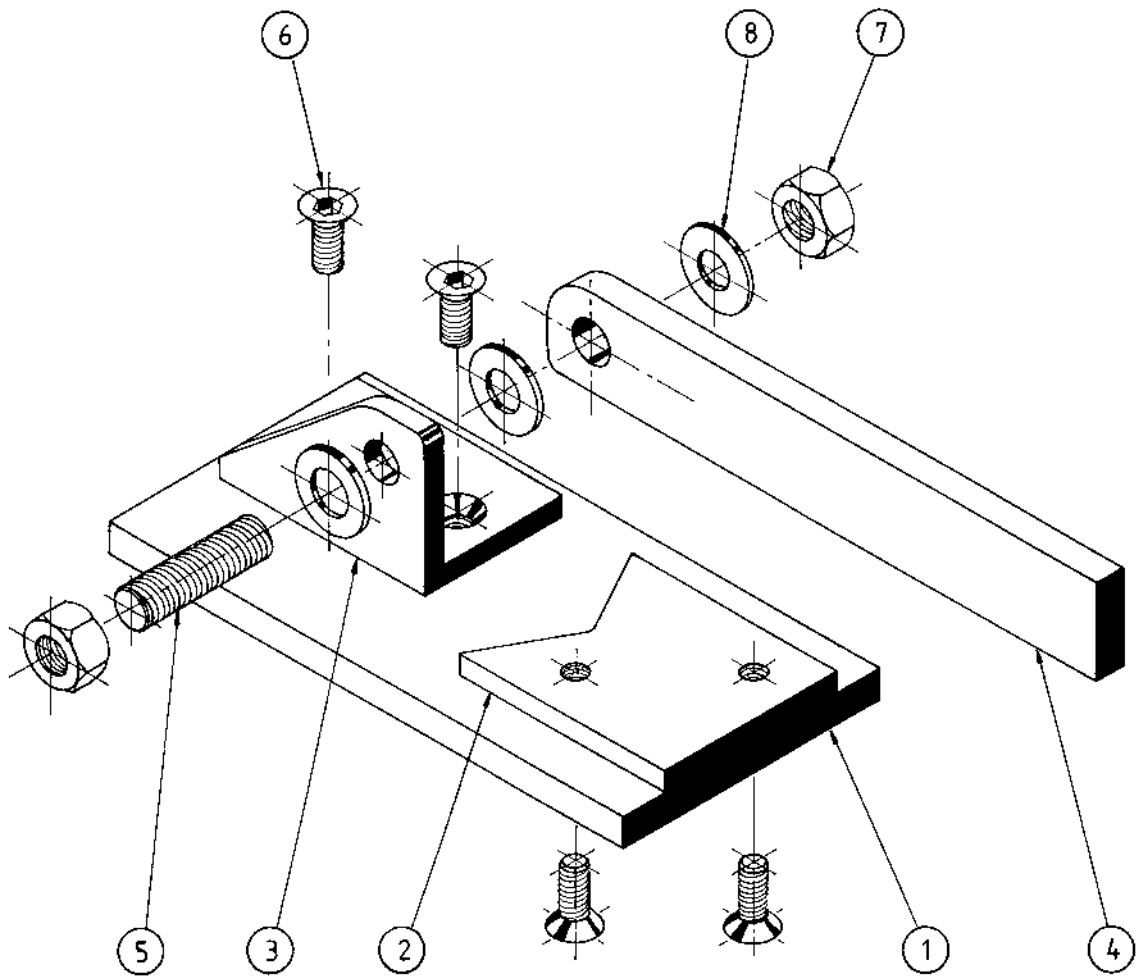
REF.: NSW HSC 1999

SCALE  
As indicated

TOLERANCE  
Linear ±1 mm, angular ±0.5°

DRAWING NO.  
1





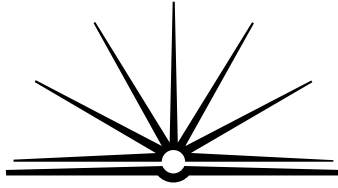
#### NOTES

- Items 6, 7 and 8 will be provided to students as purchased items.
- Deburr all items prior to assembly.
- Item 6 to finish 0.5 mm below surfaces on items 1 and 3.
- Item 7 to be assembled finger tight.
- Datum surfaces B, D, F, G and J to be filed flat and square.
- The nut cracker to be assembled for presentation as per exploded view.
- Student number must be attached to the assembled project.
- Items 1 and 6 to be left full length, as supplied for the examination.

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**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

**HIGHER SCHOOL CERTIFICATE EXAMINATION**

**1999**

# **INDUSTRY STUDIES**

**2 UNIT**

**METAL AND ENGINEERING STRAND**

**MATERIALS AND EQUIPMENT LIST**

**FOR THE**

**PRACTICAL EXAMINATION**

**FOR THE INFORMATION OF TEACHERS,  
COURSE DELIVERERS AND CANDIDATES**

## MATERIALS

The following are the materials required for students presenting for the 1999 2 Unit Industry Studies Practical Examination in the Metal and Engineering strand. All material is black mild steel unless specified in the materials list.

- $75 \times 8 \times 150$  long, flat bar  $\times 1$  off
- $25 \times 8 \times 180$  long, flat bar  $\times 1$  off
- $50 \times 5 \times 75$  long, flat bar  $\times 1$  off
- $40 \times 40 \times 5 \times 110$  long equal angle  $\times 1$  off
- M10  $\times 1.5$  brooker rod  $\times 60$  long  $\times 1$  off (cadmium plated or galvanised)  
(also known as M10  $\times 1.5$  all-threaded bar)
- M10  $\times 1.5$  hexagonal nuts  $\times 2$  off (plated to suit brooker rod)
- $\text{Ø}10$  washers  $\times 3$  off (plated to suit above)
- $\text{Ø}6 \times 1$  countersunk socket screws (set screw, allen key), 12/16 long (optional), 4 off

## EQUIPMENT LIST

The only power equipment that may be used for this task is:

- drill press
- hacksaw
- cut-off saw.



## AVAILABILITY OF MATERIALS

Materials used in the Metal and Engineering Practical Examination are standard items and are available from engineering materials suppliers.

The approximate prices are listed below.

### Metals

<i>Description</i>	<i>Length available</i>	<i>Approximate cost/length</i>
50 × 5 flat bar mild steel	6 m	\$19.40
75 × 8 flat bar mild steel	6 m	\$43.70
25 × 8 flat bar mild steel	6 m	\$18.40
40 × 40 × 5 equal angle mild steel	7.5 m	\$32.00
M10 × 1.5 brooker rod (all-threaded bar)	3 m 1 m	\$8.70 \$4.00

### Others

<i>Description</i>	<i>Quantity supplied</i>	<i>Approximate cost</i>
M6 × 1.0 countersunk socket screws Allen key drive	Each	Appr. \$0.60
Ø10 washer, cadmium plated or galvanised*	Each	\$0.02
M10 × 1.5 hex. nuts*	Each	\$0.25

\*NOTE. Zinc-plated items are not essential for these TWO parts. Black mild steel items are also available and may be used.

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