

### 3.19.2 Power Mechanics Paper 2 (447/2)

#### STATION 1

In the space provided, sketch in good proportion an exploded view of a differential assembly.  
Label **four** parts. (10 marks)

#### STATION 2

Use the materials, tools and equipment provided to make the sheet metal object shown in **figure 1**.

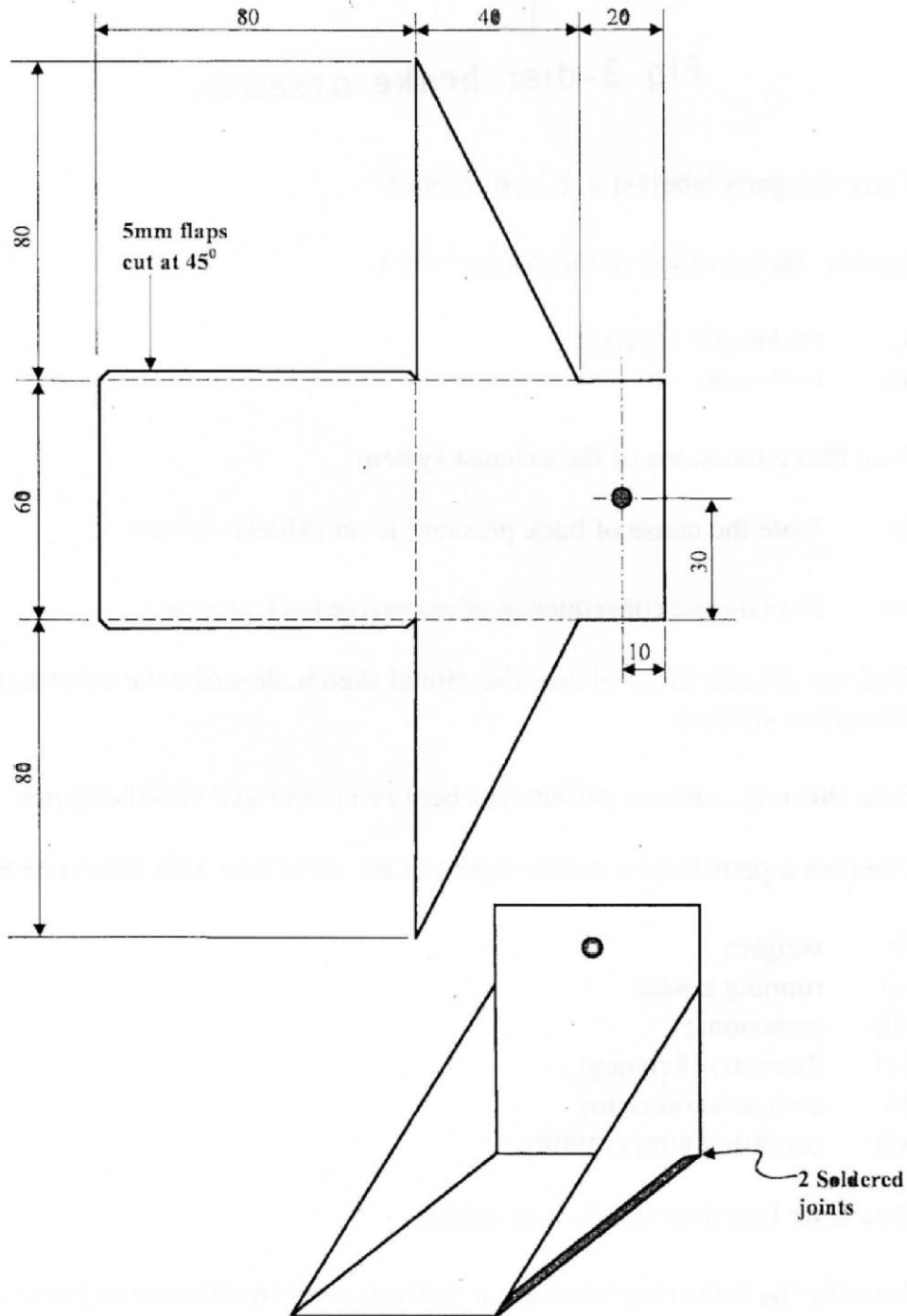


Figure 1

### STATION 3

Identify the parts and components labelled **P** to **T** and in each case, state the vehicle system it belongs to and its purpose. Complete the table below. (10 marks)

PART	NAME	VEHICLE SYSTEM	PURPOSE
P			
Q			
R			
S			
T			

### STATION 4

Using the instruments, materials and battery provided:

- (a) Measure and record in the table below the cell voltage and the specific gravity for each of the cells.

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CELL NUMBER	VOLTAGE	SPECIFIC GRAVITY	STATE OF CHARGE
1			
2			
3			
4			
5			
6			

- (b) Using the reading obtained in (a) above, comment on the state of the battery charge in each case. (10 marks)

### STATION 5

Identify the parts labelled **A, B, C, D, E** and name the vehicle system in which each is used. For each part, identify **ONE** defect and state its effect on vehicle performance. Complete the table below. (10 marks)

PART	NAME	VEHICLE SYSTEM	DEFECT	EFFECT
A				
B				
C				
D				
E				

### STATION 6

Using the components and materials provided, connect a **FOUR** lamp lighting circuit which satisfies the following conditions:

- (i) lamp 1 and 2 are in series;
- (ii) lamp 3 and 4 are in parallel;
- (iii) the lamps are controlled by switch S such that when lamps 1 and 2 are ON, lamps 3 and 4 are OFF. (10 marks)

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### STATION 7

On the vehicle provided:

- (a) Measure the free brake movement. (8 marks)
- (b) Comment on the state of the brakes. (2 marks)

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## STATION 8

On the engine provided:

- (a) Show the examiner **FOUR** visible components of the lubrication system. (4 marks)
- (b)
  - (i) Check the oil level;
  - (ii) Comment on the state of the oil level and the oil to the examiner. (6 marks)

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## STATION 9

On the single cylinder engine provided, determine the compression ratio. (10 marks)

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## STATION 10

On the multi-cylinder engine provided, carry out the following tasks:

- (a) Remove the contact breaker points;
- (b) Tell the examiner about the condition of the contact breaker points;
- (c) Replace the contact breaker points and set the gap to 0.4 mm. (10 marks)

**LET THE EXAMINER CHECK YOUR WORK.**