

Write your name here

Surname					Other names					
Centre Number					Learner Registration Number					
Pearson BTEC Level 1/Level 2 First Certificate					<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Engineering

Unit 9: Interpreting and Using Engineering Information

Wednesday 10 January 2018 – Morning Time: 1 hour	Paper Reference 21174E
--	----------------------------------

You must have: Calculator	Total Marks
-------------------------------------	-------------

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and learner registration number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 50.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

P53278A

©2018 Pearson Education Ltd.

1/1/1/1




Pearson

Answer ALL Questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 Engineers use a range of drawings and documentation to show information effectively.

(a) Identify **two** types of documentation that are used to schedule manufacture.

(2)

- A** Parts list
- B** Gantt chart
- C** General assembly drawing
- D** Reference table
- E** Critical path analysis

(b) Engineering drawings contain different types of information.

Match the most appropriate example of information to each of these types of information.

Draw **one** line from **each** information type to **one** example of information.

(2)

Information Type	Example of information
	Current
Dimensional detail	Countersink
	Surface texture
Circuit characteristics	Orientation
	Pattern number

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) State **two** ways that engineering documentation and drawings can be damaged by physical handling.

(2)

1

2

(Total for Question 1 = 6 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



P 5 3 2 7 8 A 0 3 1 6

2 Engineering drawings are used by engineers to show the features of components.

Figure 1 shows an extract from a component drawing.

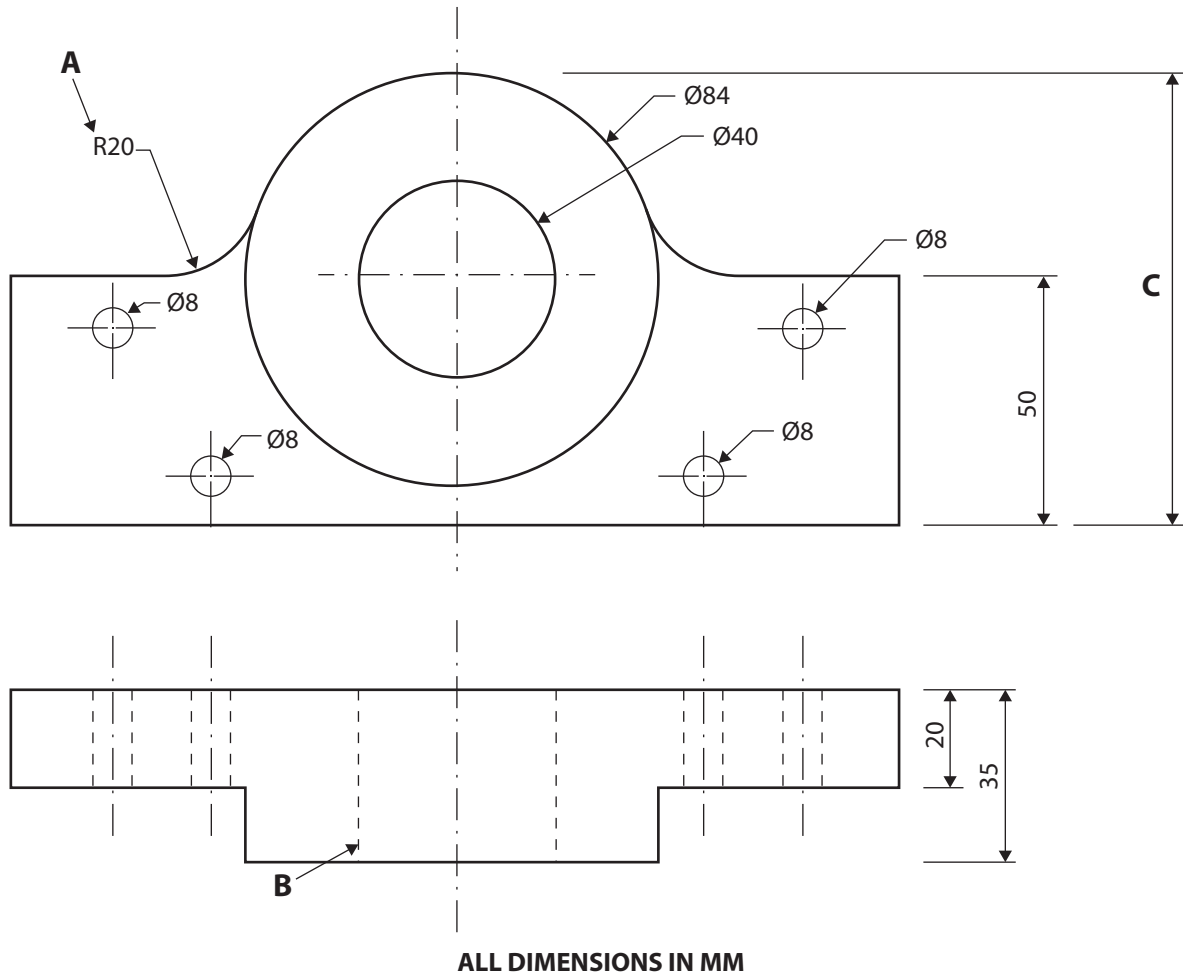


Figure 1

(a) Different linetypes and abbreviations are used on the drawing shown in Figure 1.

(i) State the meaning of the abbreviation R indicated by the letter **A**.

(1)

(ii) Identify what the linetype indicated by the letter **B** represents.

(1)



(b) Engineers add dimensions to drawings so components can be made.

Calculate the overall dimension indicated by the letter **C**.

(2)

(c) A component drawing is one example of a working drawing.

Identify **two** other types of working drawing.

(2)

- A** Flow chart
- B** Machinery handbook
- C** Orthographic projection
- D** Installation
- E** Zeus chart

(Total for Question 2 = 6 marks)



3 Engineering organisations use signs to highlight health and safety.

(a) (i) Give **two** examples of mandatory health and safety signs.

(2)

1

2



© iStock / Getty Images Plus
(Background is green)

Figure 2

(ii) Name the health and safety sign shown in Figure 2.

(1)

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(b) Explain **one** reason why a metal storage cupboard in a workshop may need to display warning signs.

(2)

.....

.....

.....

.....

(Total for Question 3 = 5 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



4 A small engineering company carries out activities to manufacture storage units from sheet materials. Customers provide the company with drawings of what they require.

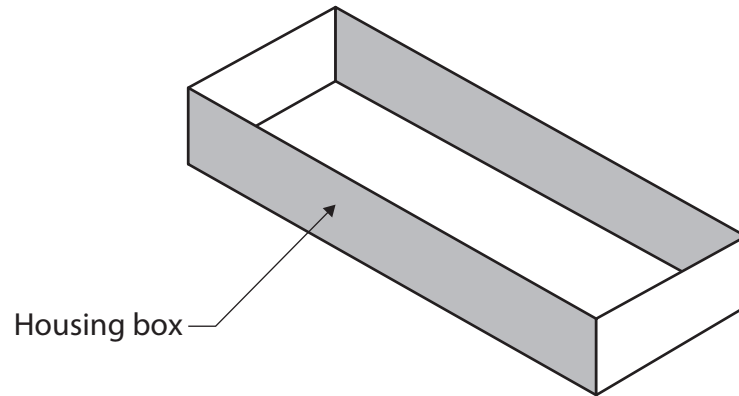


Figure 3

(a) Name the type of drawing shown in Figure 3.

(1)

(b) The company produces a production plan for each type of storage unit that they manufacture.

State **two** pieces of information that would be found on a production plan.

(2)

1

.....

2

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) Some of the storage units are welded.

State **two** reasons why technicians refer to weld procedure specifications before welding the storage units.

(2)

1

.....

2

.....

(d) Explain **one** reason why a technician would refer to a bend allowance chart when preparing materials for the storage units.

(2)

.....

.....

.....

.....

(Total for Question 4 = 7 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



5 SW3 Engineering produce bench drills which are sold by retailers for the Do-It-Yourself (DIY) market. SW3 Engineering make the components for the bench drills and assemble them.

(a) Technicians use individual operation sheets when making batches of the components.

State **two** advantages of using operation sheets when making batches of components for the bench drills.

(2)

1

2

(b) SW3 Engineering produce drawings for the components they make. The drawings contain mechanical symbols.

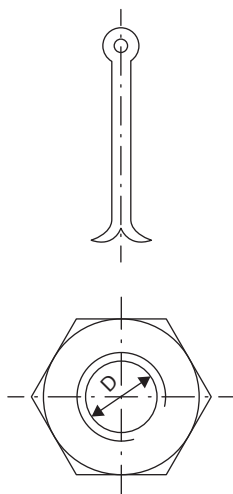
Match the most appropriate mechanical component name to each of these mechanical component symbols.

Draw **one** line from each mechanical component symbol to **one** mechanical component name.

(2)

Mechanical Component Symbol

Mechanical Component Name



Bolt

Nut

Spring

Drive mechanism

Split pin

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- (c) SW3 Engineering regularly updates the designs of their bench drills to make sure that they continue to meet the needs of the DIY customer.

Explain **one** reason why it is important that SW3 Engineering maintains accurate issue and amendment dates on their engineering drawings in this situation.

(2)

.....

.....

.....

.....

- (d) SW3 Engineering monitors quality when producing the bench drills using Pareto charts.

Explain **two** ways that the use of Pareto charts can benefit SW3 Engineering.

(4)

1

.....

.....

.....

2

.....

.....

.....

(Total for Question 5 = 10 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



6 3RF Engineering carries out engineering maintenance activities for electricity supply companies to make sure that their tools, portable equipment and vehicles perform as they are designed to when they are being used.

(a) Technicians at 3RF Engineering consult recent test reports before carrying out maintenance on portable equipment.

Explain **one** advantage of using test reports in this situation.

(2)

.....

.....

.....

.....

(b) 3RF Engineering keeps records of all test reports and maintenance activities using an ICT-based system.

Explain **one** advantage to the electricity supply company of 3RF Engineering providing it with access to the records stored on the ICT-based system.

(2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) Explain **two** advantages to the electricity supply company that result from technicians at 3RF Engineering using a scheduled maintenance plan when carrying out maintenance procedures on vehicles.

(4)

1

2

(Total for Question 6 = 8 marks)



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

- 7 3JW Engineering employs skilled technicians who design and manufacture one-off components and products.

Currently, the technicians need to design and make replacement components for workshop equipment.

Discuss whether referring to the machinery handbook would be appropriate in this situation.

Ruled area for student response with horizontal dotted lines.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 7 = 8 marks)

TOTAL FOR PAPER = 50 MARKS



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE



P 5 3 2 7 8 A 0 1 5 1 6

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE

