

Write your name here

Surname					Other names				
Centre Number					Learner Registration Number				
Pearson BTEC Level 1/Level 2 First Certificate									

Engineering

Unit 9: Interpreting and Using Engineering Information

Wednesday 13th January 2016 – Morning Time: 1 hour	Paper Reference 21174E
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You do not need any other materials.	Total Marks
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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 ►

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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 different types of drawings to show information effectively.

(a) Identify **two** types of graphical representations.

(2)

- A** Installation
- B** Sketches
- C** Sub-assembly
- D** Flow charts
- E** Standardised layouts

(b) Different linetypes are used by technicians when producing engineering drawings.

(i) Match the most appropriate linytype name to each of these drawing linytypes.

Draw **one** line from **each** drawing linytype to **one** linytype name.

(2)

Drawing linytype

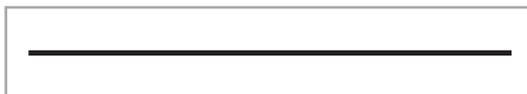
Linytype name



Visible outline

Hidden detail

Centre line



Dimension line

Linear tolerance

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(ii) Give **two** reasons for using different linetypes on engineering drawings.

(2)

1

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2

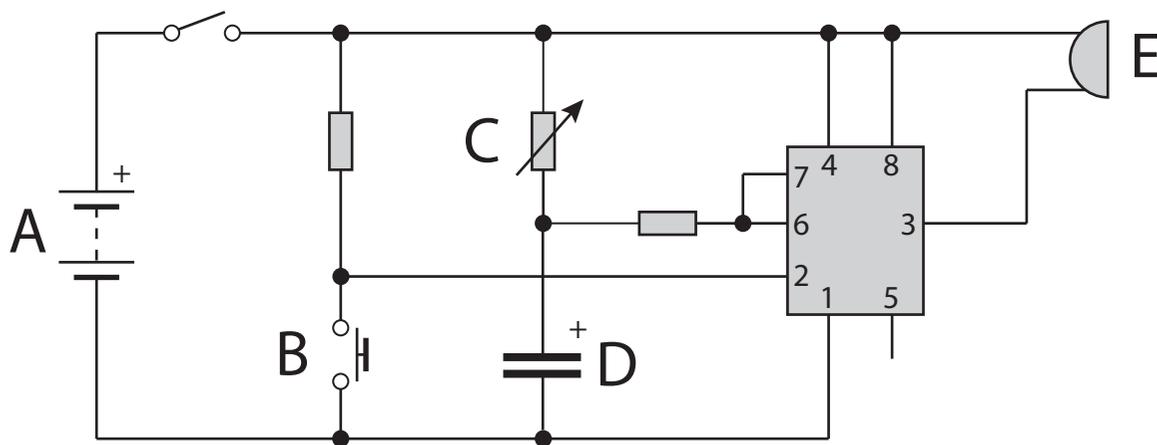
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(Total for Question 1 = 6 marks)

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- 2 (a) The schematic diagram shows an electronic circuit. Five of the electronic circuit components are labelled A-E.



Identify the **two** components named below using the appropriate labels A-E.

- (i) Battery

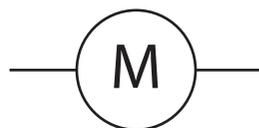
(1)

- (ii) Push switch

(1)

- (iii) Name the component shown by the circuit symbol.

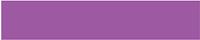
(1)

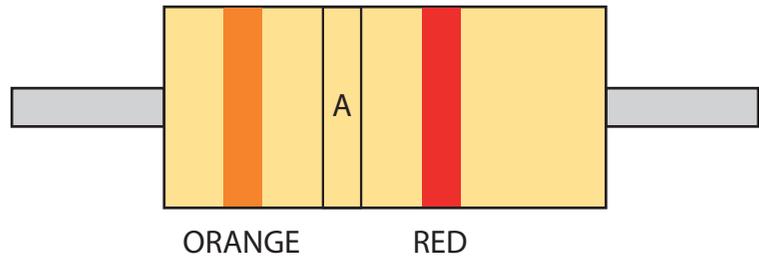


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(b) Engineers use resistors in electronic circuits.

BLACK		0
BROWN		1
RED		2
ORANGE		3
YELLOW		4
GREEN		5
BLUE		6
VIOLET		7
GREY		8
WHITE		9



(i) The resistor shown has a value of 3500 ohms.

Use the chart to identify the missing colour (A).

(1)

(ii) Give **two** reasons why engineers use a colour code system when working with resistors.

(2)

1

2

(Total for Question 2 = 6 marks)



3 Engineers use dimensional detail on working drawings when manufacturing engineered products.

(a) Identify **two** types of dimensional detail on a working drawing.

(2)

- A Assembly sequence
- B Scale
- C Access points
- D Fixed reference points
- E Timings

(b) Explain **one** reason why tolerances are used on working drawings when manufacturing engineered products.

(2)

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(Total for Question 3 = 4 marks)

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QUESTION 4 BEGINS ON THE NEXT PAGE.



4 NP11 Fabricators is an engineering company that specialises in welding.

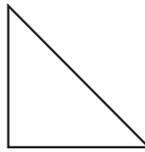
(a) (i) Identify **one** type of weld symbol.

(1)

- A Voltage
- B Square butt
- C Oblique
- D Third angle

(ii) Name the weld shown by the symbol.

(1)



NP11 Fabricators use welding drawings to produce customised one-off bicycle frames for a range of customers.

(iii) Explain **one** advantage of using welding drawings in this situation.

(2)

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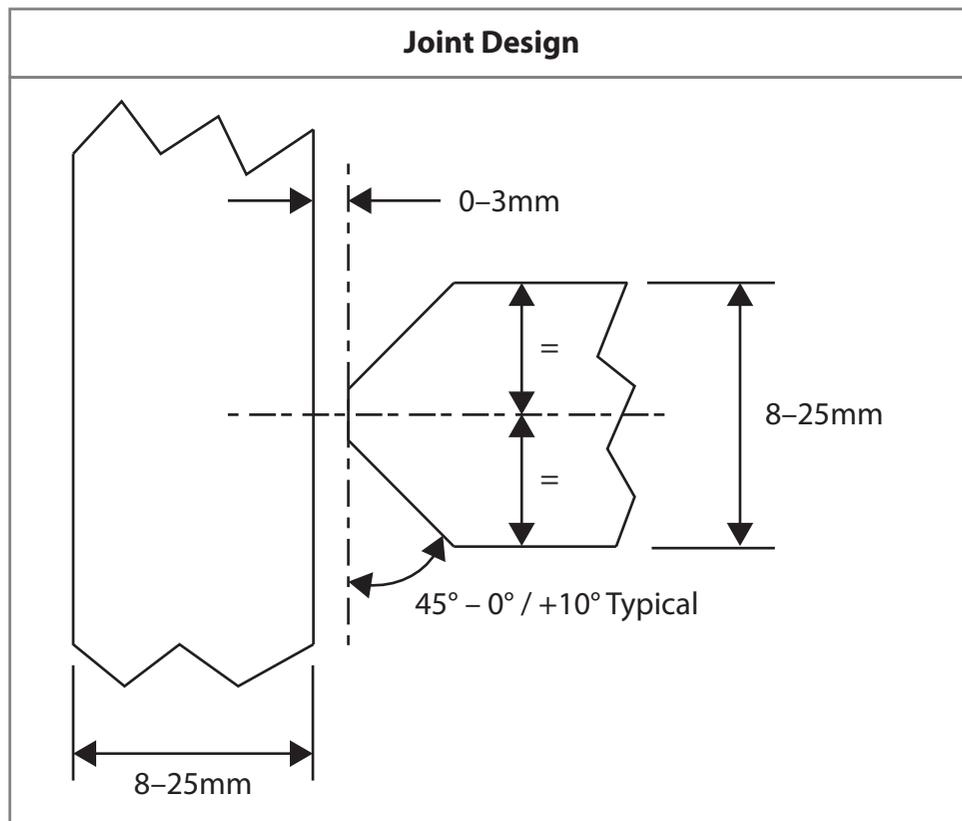
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The table shows part of a welding procedure specification used by NP11 Fabricators.

Weld Procedure Specification (WPS)	
Location	Workshop
Manufacturer's WPS No.	12-PA(a)
Manufacturer	NP11 Fabricators
Welding Process	135 (MAG)
A	Double Bevel Tee Butt
Parent Material Designation	BS EN 10025-2: S275 & S355
Welding Position	PA (Flat)



(b) (i) Name row A from the Weld Procedure Specification.

(1)

(ii) State a correct material thickness for the Joint Design.

(1)



NP11 Fabricators use a mobile workshop to repair customised one-off bicycle frames for professional cycling teams within a day.

(iii) Explain **two** advantages of using weld procedure specifications in this situation.

(4)

1

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2

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(Total for Question 4 = 10 marks)

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5 BX23 Engineering is a company that has a large number of employees that use machines. These employees need to be aware of what safety signs mean.

(a) Identify the correct name for each of these safety signs.

Draw **one** line from **each** sign to **one** sign name.

(2)

Safety sign

Sign name



This sign is yellow with a black border

Emergency exit

Slippery surface

Highly flammable

Skin irritant

High voltage



This sign is yellow with a black border

(b) Explain **one** implication for BX23 Engineering of not displaying mandatory signs on machines.

(2)

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(Total for Question 5 = 4 marks)



P 4 7 0 8 2 A 0 1 1 1 6

6 NW34 Engineering manufactures specialist containers for the chemical industry. It uses a range of production documentation to support its manufacturing operations.

(a) (i) Identify **one** example of related documentation used when scheduling. (1)

- A Capacity
- B Job cards
- C Pareto
- D Test reports

(ii) Give **one** characteristic of a critical path analysis. (1)

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(iii) NW34 Engineering has to manufacture a large complex container to be delivered by 31 January 2017 or it will receive a large fine. It will use several suppliers to produce sub-assemblies for the container.

Other than avoiding a large fine, explain **two** advantages to NW34 Engineering of using a Gantt chart with specific milestones in this situation. (4)

1

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2

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(b) NW34 Engineering has a document control policy that requires all documentation to have an issue and amendment date.

Give **two** implications for NW34 Engineering of documentation not having an issue or amendment date.

(2)

1

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2

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(Total for Question 6 = 8 marks)

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