Write your name here

Surname	Other names

Pearson BTEC Level 1/Level 2 First Certificate

Centre Number

Learner Registration Number

Engineering

Unit 9: Interpreting and Using Engineering Information

Friday 25 May 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 ▶

P53310A

1/1/1/1/1/1/1/1/1/1

P 5 3 3 1 0 A 0 1 1 6

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 methods, including signage and drawings, to provide information to others.

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

(2)

☒ **A** Slippery surface

☒ **B** Face protection

☒ **C** Emergency stop

☒ **D** Use of guard

☒ **E** High voltage electricity

(b) Match the most appropriate hazard symbol name to each hazard symbol.

Draw **one** line from each hazard symbol to **one** hazard symbol name.

(2)

Hazard symbol	**Hazard symbol name**
	Flammable
	Toxic
	Corrosive
	Oxidising
	Explosive

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(c) Name **two** types of line that are used on engineering drawings.

(2)

1 .....

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2 .....

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(Total for Question 1 = 6 marks)

2 Engineering companies use working instructions and other sources of information that are relevant to the task being carried out.

Figure 1 shows a type of working instruction.

BB3BD Engineering					
Part No. H035	Part name: Housing		Planner: NBG	Checked by: STC	Date: 26/11/17
Material AISI 1020 Steel	Stock size: Ø20 mm x 120 mm		Standard dimensional tolerance: ± 0.15 mm		
No	**Process**	**Dept**	**Machine**	**Tooling**	**Time**
10	Drill hole for M8 thread depth 80mm	Drill	DM13	DL-68	5.5 mins
20	Deburr hole	Drill	DB42	DB-33	4 mins
30	Chamfer	Lathe	CL03	LT-44	5.6 mins
40	Tap hole M8 full thread	Tap	DT05	D8-TL	4 mins

Figure 1

(a) Name the type of working instruction shown in Figure 1.

(1)

.....

(b) Identify **two** other types of working instruction.

(2)

- ☒ **A** Test schedule
- ☒ **B** Critical path analysis
- ☒ **C** Flow chart
- ☒ **D** Test report
- ☒ **E** Installation manual

(c) An engineering technician will refer to other relevant sources of information when carrying out the tasks shown in Figure 1.

State a suitable and reliable source of information when finding out:

(i) the properties of the steel

(1)

.....

(ii) the size of hole to drill for the M8 thread.

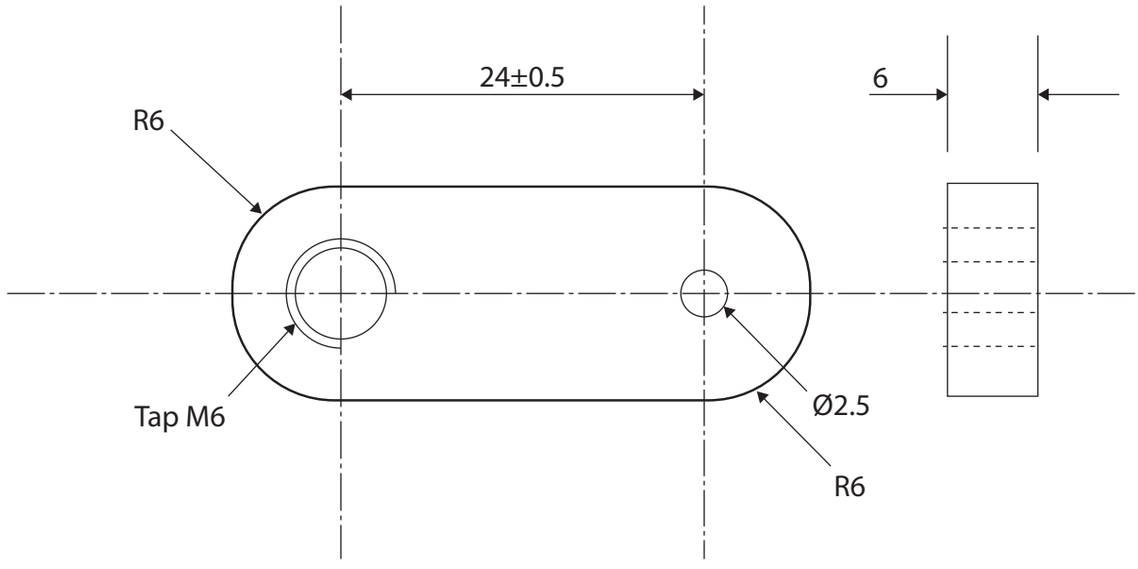
(1)

.....

(Total for Question 2 = 5 marks)

3 Engineering companies use drawings to communicate information about their components.

Figure 2 shows a drawing of a machined mounting plate.



All dimensions in mm.

Figure 2

(a) State the maximum overall length of the mounting plate in mm.

(1)

.....

(b) Engineers use a range of abbreviations on drawings.

(i) State the meaning of the abbreviation DIA.

(1)

.....

(ii) State the meaning of the abbreviation CSK.

(1)

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(c) The engineering drawing in Figure 2 is an example of an orthographic projection.

Explain **one** advantage of using orthographic projections for component drawings.

(2)

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(Total for Question 3 = 5 marks)

4 5UF Engineering makes electromechanical components.

(a) 5UF Engineering uses a standardised layout for drawings.

Identify **two** pieces of information that are found on a standardised layout for drawings.

(2)

- ☒ **A** Bend allowance
- ☒ **B** Milestone
- ☒ **C** Title block
- ☒ **D** Capacity
- ☒ **E** Company logo

(b) 5UF Engineering includes dimensional details on its drawings.

Identify **two** examples of dimensional details.

(2)

1 .....

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2 .....

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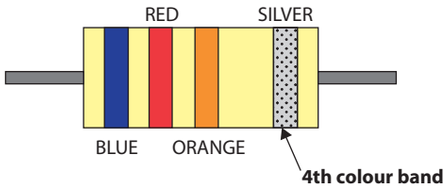
(c) 5UF Engineering uses resistors in electromechanical components. The value of a resistor can be identified by a colour code system.



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

Figure 3

(i) State the value of the resistor in Figure 3 using the first three colour bands.

(1)

.....

(ii) State the reason for the fourth colour band on the resistor in Figure 3.

(1)

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(d) 5UF Engineering only keeps paper copies of its drawings.

Explain **one** disadvantage for 5UF Engineering of storing its engineering drawings in filing cabinets.

(2)

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(Total for Question 4 = 8 marks)

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5 M1FX Engineering produces a range of fabricated frameworks.

M1FX creates Weld Procedure Specifications (WPS) for each of the different welds that need to be made when fabricating the frameworks.

Weld Procedure Specification (WPS)	
Location	Fabrication Shop
Manufacturer's WPS Number	M-F-Tk33
Manufacturer	M1FX Engineering
A	133 (MIG)
Weld Type	Single Bevel Butt
Parent Material Designation	BS 970 1991 070M20
B	PF (Vertical up)

(a) Name rows **A** and **B** in the Weld Procedure Specification.

(i) **A**

(1)

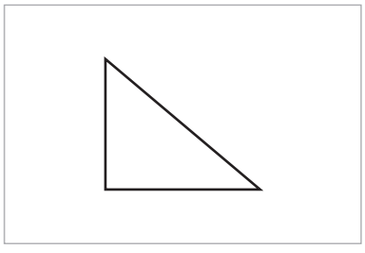
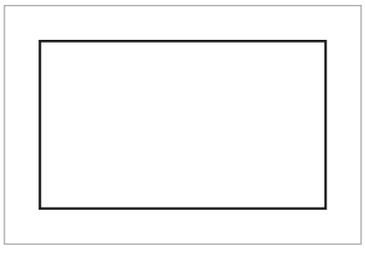
(ii) **B**

(1)

(b) M1FX Engineering also uses drawings to show the different types of weld that are used in the fabrication of the frameworks.

Draw **one** line from each weld type symbol to the correct weld type name.

(2)

Weld type symbol	**Weld type name**
	Plug
	Fillet
	Square butt
	Backing run
	Spot

(c) M1FX Engineering considers a range of factors when scheduling the manufacturing of the frameworks.

One of these factors is production capacity.

Explain **two** advantages of considering production capacity when scheduling the manufacture of the frameworks.

(4)

1 .....

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2 .....

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(d) Explain **one** feature of manufacturers' data sheets that is useful to M1FX Engineering when specifying weld filler rods.

(2)

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(Total for Question 5 = 10 marks)

6 34FX Engineering manufactures kits of components for a range of trailers that are self-assembled by customers.

(a) Some of the components are machined. Technicians at 34FX Engineering use production plans that contain information about the feeds and speeds to be used.

Explain **one** advantage to the company of including information about feeds and speeds on production plans.

(2)

(b) Trailers are self-assembled by customers using the manufacturer's manual that is supplied with each trailer.

Explain **one** advantage of providing a manufacturer's manual in this situation.

(2)

(c) Explain **two** advantages for customers of 34FX Engineering using critical path analysis to schedule the manufacture of kits of components.

(4)

1

2

(Total for Question 6 = 8 marks)

7 BB34 Engineering mass produces digital multimeters.

Digital multimeters are hand held devices for measuring voltage, current and other characteristics in electronic circuits.

The company has produced quality control documentation and quality control information that is used during the manufacturing and assembly of the multimeters.

Discuss the use of quality control documentation and quality control information in this situation.

(Total for Question 7 = 8 marks)

TOTAL FOR PAPER = 50 MARKS

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