Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson BTEC Level 1/Level 2 First Certificate

Centre Number | Learner Registration Number

Thursday 10 January 2019

Morning (Time: 1 hour) | Paper Reference **21174E**

Engineering

Unit 9: Interpreting and Using Engineering Information

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 ▶

P61495A

1/1/1/1

P 6 1 4 9 5 A 0 1 1 2

Pearson

Answer ALL questions. Write your answers in the spaces provided.

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 drawing to show information effectively.

(a) Identify **two** types of working drawing.

(2)

- ☒ **A** component drawing
- ☒ **B** illustrations
- ☒ **C** manuals
- ☒ **D** isometric
- ☒ **E** production plan

(b) Match the most appropriate linetype name to each of these drawing linetypes.

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

(2)

Drawing linetype	**Linetype name**
	Centre lines
- -	Dimension lines
	Extension lines
———————————————	Hidden detail
	Visible outline

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** reasons why engineers use abbreviations on drawings.

(2)

1 .....

.....

2 .....

.....

(d) Figure 1 shows a symbol used by engineers to represent a type of weld.

Figure 1

Identify the type of weld represented by the symbol shown in Figure 1.

(1)

☒ **A** backing run

☒ **B** double vee groove

☒ **C** single bevel butt

☒ **D** square butt

(Total for Question 1 = 7 marks)

2 Engineers refer to a range of different types of information when carrying out manufacturing activities.

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

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

(2)

Warning sign	**Warning sign name**
	Biohazard
	Caution
	Danger of death
	Poison
	Risk of explosion

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) Engineers use sources relevant to the task when preparing to produce parts. The diagram shows an extract from a manufacturer's data sheet for the use of welding rods.

Flux-cored and metal cored arc welding				
A	**Size**	**Condition**	**Shielding gas**	**Specification**
Mild steel	1.8 - 2.5 mm	Clean	CO_2	ML-R-5632
Aluminium	0.6 - 6.4 mm	Clean	CO_2	AWS ER5183

(i) Name the heading in box **A**.

(1)

.....

(ii) Give **one** reason why an engineer would refer to material specifications.

(1)

.....

.....

(c) Figure 2 shows a chart used for planning manufacturing activities.

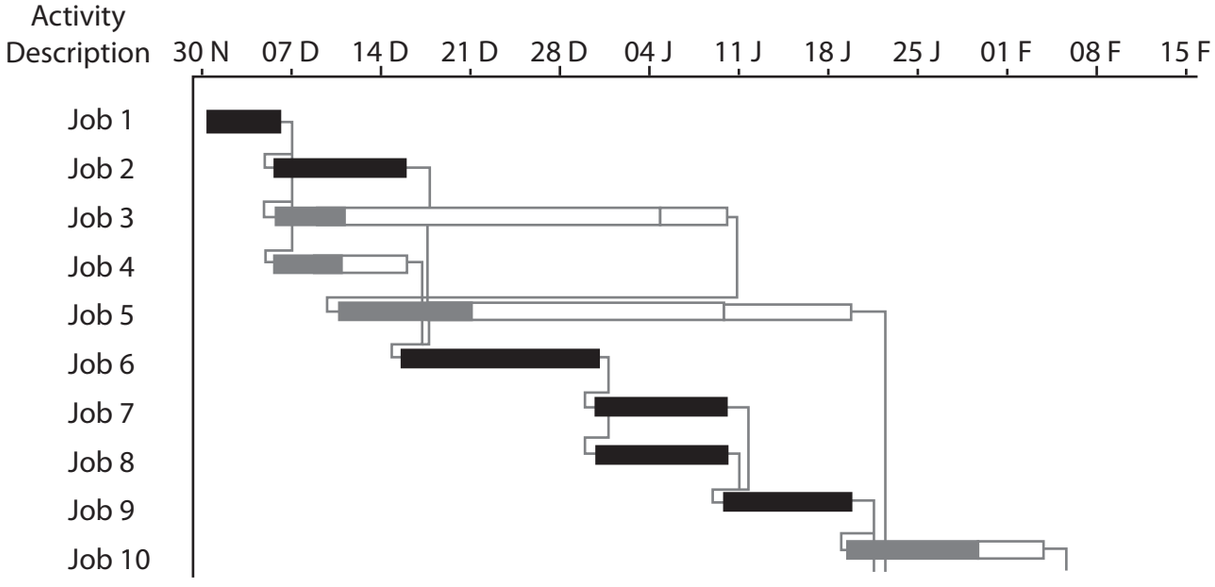

Figure 2

Name the type of chart shown in Figure 2.

(1)

.....

(Total for Question 2 = 5 marks)

3 (a) Identify **two** types of working instruction.

(2)

- ☒ **A** circuit characteristic
- ☒ **B** job card
- ☒ **C** access point
- ☒ **D** reference point
- ☒ **E** test schedule

(b) Identify **two** pieces of information that are contained in weld procedure specifications.

(2)

- ☒ **A** position
- ☒ **B** perspective
- ☒ **C** mechanism
- ☒ **D** thickness
- ☒ **E** workability

(c) Engineers present working drawings on company standardised layouts.

Name **two** features of a company standardised layout.

(2)

1 .....

2 .....

(Total for Question 3 = 6 marks)

4 DG08 Engineering manufactures security systems that include printed circuit boards designed by its engineers.

(a) Figure 3 shows a symbol used by engineers to represent an electronic component.

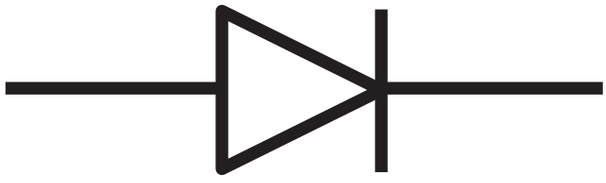

Figure 3

Identify the component shown in Figure 3.

(1)

- ☒ **A** capacitor
- ☒ **B** diode
- ☒ **C** relay
- ☒ **D** transistor

(b) DG08 Engineering provides flow charts for the users of the security systems.

State **two** advantages of providing flow charts in this situation.

(2)

1 .....

.....

2 .....

.....

(c) Technicians at DG08 Engineering identify resistors using a colour coding system.

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

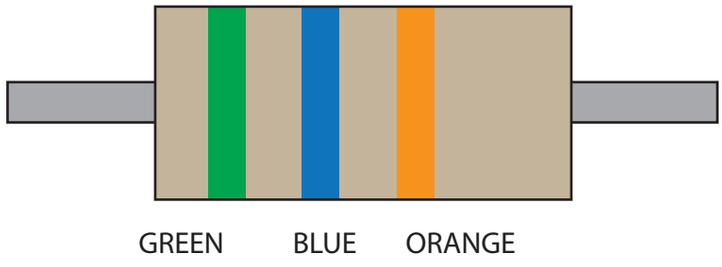

Figure 4

Calculate the value of the resistor shown in Figure 4.

(1)

.....

(d) Explain **two** reasons why it is important for DG08 Engineering to refer to electronic component pin configuration specifications when designing and building printed circuit boards.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(Total for Question 4 = 8 marks)

5 3TE Engineering manufactures car engines for the automotive engineering sector.

(a) State **two** types of information that would be included in a production plan for the car engines.

(2)

1 .....

.....

2 .....

.....

(b) Explain **two** advantages of using critical path analysis when planning production for the car engines.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(c) The engineers at 3TE want to use a high performance material for a component in the car engines.

Explain **two** advantages of using a test report to determine whether the material is suitable.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(Total for Question 5 = 10 marks)

6 3BZ Engineering manufactures motors for use in washing machines.

(a) Explain **one** advantage for a washing machine manufacturer of being provided with installation manuals by 3BZ Engineering.

(2)

(b) Explain **one** advantage for a washing machine manufacturer when 3BZ Engineering uses milestones as part of its scheduling.

(2)

(c) 3BZ Engineering uses data from Pareto charts to analyse motor faults caused during their production.

Explain **one** advantage of using Pareto charts in this situation.

(2)

(Total for Question 6 = 6 marks)

7 8F5 Engineering manufactures portable electrical products and produces its own working drawings.

Discuss the implications of using and storing paper copies of the working drawings for 8F5 Engineering.

(Total for Question 7 = 8 marks)

TOTAL FOR PAPER = 50 MARKS