

Write your name here

Surname

Other names

**Pearson Edexcel
Principal Learning**

Centre Number

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Candidate Number

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Engineering

Level 3

**Unit 1: Investigating Engineering Business and
the Environment**

Monday 18 May – Afternoon

Time: 1 hour 30 minutes

Paper Reference

EG301/01

You may use:

Pen, pencil, eraser, 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 candidate 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 60.
- 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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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SECTION A

Answer ALL questions.

In Section A, all questions must be answered with a cross . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

1 Which **one** of the following engineering sectors is an example of a tertiary business?

A	Agriculture	<input type="checkbox"/>
B	Health	<input type="checkbox"/>
C	Manufacturing	<input type="checkbox"/>
D	Marine	<input type="checkbox"/>

(Total for Question 1 = 1 mark)

2 The energy distribution sector is concerned with the distribution of:

A	electricity	<input type="checkbox"/>
B	gas	<input type="checkbox"/>
C	oil	<input type="checkbox"/>
D	petrol	<input type="checkbox"/>

(Total for Question 2 = 1 mark)

3 Concepts for improvements to an existing product would be produced by which function within an engineering business?

A	Project planning and management	<input type="checkbox"/>
B	Manufacturing	<input type="checkbox"/>
C	Research and development	<input type="checkbox"/>
D	Design	<input type="checkbox"/>

(Total for Question 3 = 1 mark)



4 One example of a fixed cost is:

A	energy use	<input type="checkbox"/>
B	insurance premiums	<input type="checkbox"/>
C	materials	<input type="checkbox"/>
D	wages	<input type="checkbox"/>

(Total for Question 4 = 1 mark)

5 The Fire Precautions Act 1971 requires a written fire risk assessment if a business employs at least how many staff?

A	5	<input type="checkbox"/>
B	10	<input type="checkbox"/>
C	50	<input type="checkbox"/>
D	100	<input type="checkbox"/>

(Total for Question 5 = 1 mark)

6 A technician from which sector would monitor the mineral levels in a drinking water supply?

A	Building services	<input type="checkbox"/>
B	Chemical	<input type="checkbox"/>
C	Health	<input type="checkbox"/>
D	Water services	<input type="checkbox"/>

(Total for Question 6 = 1 mark)

7 When selecting tooling for the production of precision components, the main consideration should be:

A	the manufacturer of the tooling	<input type="checkbox"/>
B	the accuracy of the tooling	<input type="checkbox"/>
C	the cost of the tooling	<input type="checkbox"/>
D	the materials used for the tooling.	<input type="checkbox"/>

(Total for Question 7 = 1 mark)



8 The business structure with only one layer of management is:

A	divisional	<input type="checkbox"/>
B	hierarchical	<input type="checkbox"/>
C	matrix	<input type="checkbox"/>
D	flat	<input type="checkbox"/>

(Total for Question 8 = 1 mark)

9 The role of a commissioning engineer includes:

A	writing quotations for clients when tendering for a job	<input type="checkbox"/>
B	routine repairs to previously installed equipment	<input type="checkbox"/>
C	ensuring newly installed equipment functions as designed	<input type="checkbox"/>
D	producing block diagrams to explain how to operate equipment	<input type="checkbox"/>

(Total for Question 9 = 1 mark)

10 The process of allocating equipment to production processes is called:

A	machinery management	<input type="checkbox"/>
B	resource requisition	<input type="checkbox"/>
C	machinery supply	<input type="checkbox"/>
D	resource control	<input type="checkbox"/>

(Total for Question 10 = 1 mark)



11 The Workplace (Health, Safety and Welfare) Regulations 1992 require that, where activities involve physical effort, the temperature should be at least:

A	4°C	<input type="checkbox"/>
B	13°C	<input type="checkbox"/>
C	16°C	<input type="checkbox"/>
D	20°C	<input type="checkbox"/>

(Total for Question 11 = 1 mark)

12 Figure 1 shows a flow chart.

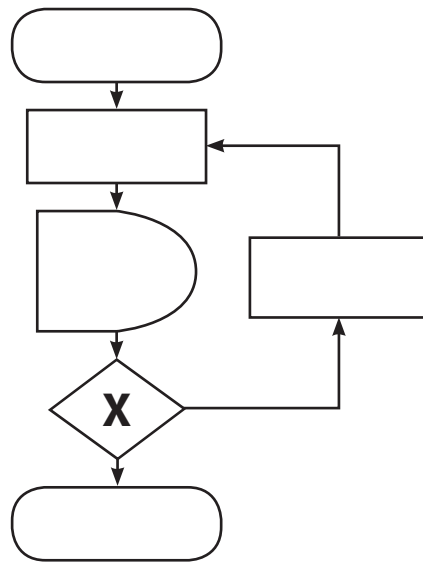


Figure 1

The symbol marked X represents a(n):

A	activity	<input type="checkbox"/>
B	decision	<input type="checkbox"/>
C	delay	<input type="checkbox"/>
D	input	<input type="checkbox"/>

(Total for Question 12 = 1 mark)



13 An engineering company purchases a piece of CNC equipment for £40 000.

If the equipment depreciates by 9% each year, which is the first year its value will be less than £30 000?

A	2 nd	<input type="checkbox"/>
B	4 th	<input type="checkbox"/>
C	6 th	<input type="checkbox"/>
D	8 th	<input type="checkbox"/>

(Total for Question 13 = 1 mark)

14 The Gross National Product (GNP) of a country is calculated as the total value of all products and services produced within a country:

A	plus the income earned by its citizens based abroad	<input type="checkbox"/>
B	minus any income earned by foreign citizens based in the country	<input type="checkbox"/>
C	plus income earned by its citizens based abroad, minus any income earned by foreign citizens based in the country	<input type="checkbox"/>
D	minus any income earned by its citizens based abroad, plus any income earned by foreign citizens based in the country	<input type="checkbox"/>

(Total for Question 14 = 1 mark)



15 An engineering company intends to use energy from sources that have minimal impact on the environment.

Which **one** of the following is an example of a positive environmental impact?

A	Reduced land use for agriculture due to reservoirs needed to generate hydroelectric power	<input type="checkbox"/>
B	Reduced carbon emissions as a result of wind turbines generating electricity	<input type="checkbox"/>
C	Increased use of geothermal energy releasing sulphur into the atmosphere	<input type="checkbox"/>
D	Increased use of tidal power changing coastal wildlife habitats	<input type="checkbox"/>

(Total for Question 15 = 1 mark)

16 Balance of payments is a comparison between:

A	the income and expenditure of a business during the financial year	<input type="checkbox"/>
B	the exchange rates between the currency of a country and that of other nations	<input type="checkbox"/>
C	the amount of money coming into a country and the amount of money going out	<input type="checkbox"/>
D	the interest rates charged for loans against those earned on investments	<input type="checkbox"/>

(Total for Question 16 = 1 mark)



17 A plan that can be used repeatedly, and is often adapted to reflect changes in circumstances is a:

A	strategic plan	<input type="checkbox"/>
B	resource plan	<input type="checkbox"/>
C	standard plan	<input type="checkbox"/>
D	standing plan	<input type="checkbox"/>

(Total for Question 17 = 1 mark)

18 One example of designing out hazards is:

A	providing warning notices	<input type="checkbox"/>
B	enclosing moving parts	<input type="checkbox"/>
C	fitting an emergency stop	<input type="checkbox"/>
D	issuing appropriate PPE	<input type="checkbox"/>

(Total for Question 18 = 1 mark)

19 In order to comply with the requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998, new work equipment must:

A	<ul style="list-style-type: none"> • Have a declaration of conformity • Be made in the UK • Be free from obvious defects 	<input type="checkbox"/>
B	<ul style="list-style-type: none"> • Have a declaration of conformity • Have instructions provided in English • Be fitted with an emergency stop button. 	<input type="checkbox"/>
C	<ul style="list-style-type: none"> • Have a declaration of conformity • Have instructions provided in English • Be free from obvious defects 	<input type="checkbox"/>
D	<ul style="list-style-type: none"> • Be fitted with an emergency stop button • Be made in the UK • Have instructions provided in English 	<input type="checkbox"/>

(Total for Question 19 = 1 mark)



20 The Health and Safety Executive (HSE) provides guidance notes on a range of specific subjects.

Which **one** of the following is **not** one of these subjects?

A	First aid assessment	<input type="checkbox"/>
B	Chemical safety	<input type="checkbox"/>
C	Environmental hygiene	<input type="checkbox"/>
D	Medical advice	<input type="checkbox"/>

(Total for Question 20 = 1 mark)

TOTAL FOR SECTION A = 20 MARKS



SECTION B

21 (a) Define the following terms used in costing techniques:

(2)

(i) Contribution

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(2)

(ii) Indirect Costs

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(b) Outline **two** differences between job costing and process costing.

(4)

1

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2

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(Total for Question 21 = 8 marks)



22 (a) State **two** pieces of information that would be found on an operations sheet.

(2)

1

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2

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(b) Explain why it is important that employees follow the correct working procedures when carrying out an engineering activity.

(4)

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(Total for Question 22 = 6 marks)

23 Outline how consumer expectations can influence an engineering business.

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(Total for Question 23 = 2 marks)



P 4 4 9 9 3 A 0 1 1 1 6

24 Explain how engineering businesses can use monitoring as part of their planning activities.

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(Total for Question 24 = 4 marks)

TOTAL FOR SECTION B = 20 MARKS



SECTION C

25 Outline **two** differences between a pollutant and a waste product.

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(Total for Question 25 = 4 marks)



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