

Write your name here

Surname

Other names

Edexcel
Principal Learning

Centre Number

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Candidate Number

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Engineering

Level 1

Unit 1: Introducing the Engineering World

Wednesday 15 May 2013 – Morning

Time: 1 hour

Paper Reference

EG101/01

You do not need any other materials.

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.

Information

- The total mark for this paper is 45.
- 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.

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Turn over ►

PEARSON

All 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 Which **one** of the following is **not** an engineering sector?

| | | |
|---|---------------------|--------------------------|
| A | Automotive | <input type="checkbox"/> |
| B | Marine | <input type="checkbox"/> |
| C | Passenger transport | <input type="checkbox"/> |
| D | Operative | <input type="checkbox"/> |

(Total for Question 1 = 1 mark)

2 An apprenticeship would **normally** involve:

| | | |
|---|--|--------------------------|
| A | no training | <input type="checkbox"/> |
| B | on the job training only | <input type="checkbox"/> |
| C | off the job training only | <input type="checkbox"/> |
| D | both on the job and off the job training | <input type="checkbox"/> |

(Total for Question 2 = 1 mark)

3 Which **one** of the following statements is **true**?

| | | |
|---|---|--------------------------|
| A | Bio-engineers are responsible for the design of computers | <input type="checkbox"/> |
| B | Chemical engineers are responsible for the design of beauty products | <input type="checkbox"/> |
| C | Marine engineers are responsible for the design of motorways | <input type="checkbox"/> |
| D | Telecommunication engineers are responsible for the design of televisions | <input type="checkbox"/> |

(Total for Question 3 = 1 mark)



4 The role of an automotive maintenance technician involves repairing and maintaining:

| | | |
|---|--------------------|--------------------------|
| A | motor vehicles | <input type="checkbox"/> |
| B | underground cables | <input type="checkbox"/> |
| C | computer systems | <input type="checkbox"/> |
| D | power lines | <input type="checkbox"/> |

(Total for Question 4 = 1 mark)

5 A control engineer would monitor:

| | | |
|---|----------------------|--------------------------|
| A | automated production | <input type="checkbox"/> |
| B | employee performance | <input type="checkbox"/> |
| C | financial records | <input type="checkbox"/> |
| D | software development | <input type="checkbox"/> |

(Total for Question 5 = 1 mark)

6 Which engineering sector would manufacture a mobile phone charger?

| | | |
|---|------------|--------------------------|
| A | Electrical | <input type="checkbox"/> |
| B | Mechanical | <input type="checkbox"/> |
| C | Civil | <input type="checkbox"/> |
| D | Chemical | <input type="checkbox"/> |

(Total for Question 6 = 1 mark)



7 Figure 1 shows a steel broadband cable cabinet.



Figure 1

What engineering process would be used to manufacture the cabinet?

| | | |
|----------|-------------|--------------------------|
| A | Casting | <input type="checkbox"/> |
| B | Fabrication | <input type="checkbox"/> |
| C | Extrusion | <input type="checkbox"/> |
| D | Forging | <input type="checkbox"/> |

(Total for Question 7 = 1 mark)

8 A microprocessor chip is used in a central heating:

| | | |
|----------|------------------|--------------------------|
| A | room thermostat | <input type="checkbox"/> |
| B | circulation pump | <input type="checkbox"/> |
| C | radiator valve | <input type="checkbox"/> |
| D | ignition system | <input type="checkbox"/> |

(Total for Question 8 = 1 mark)

9 Glass fibre is an example of a(n):

| | | |
|----------|--------------------|--------------------------|
| A | alloy material | <input type="checkbox"/> |
| B | composite material | <input type="checkbox"/> |
| C | singular material | <input type="checkbox"/> |
| D | smart material | <input type="checkbox"/> |

(Total for Question 9 = 1 mark)



10 What type of infrastructure is the London underground?

| | | |
|---|---------------|--------------------------|
| A | Transport | <input type="checkbox"/> |
| B | Communication | <input type="checkbox"/> |
| C | Marketing | <input type="checkbox"/> |
| D | Design | <input type="checkbox"/> |

(Total for Question 10 = 1 mark)

11 The symbol shown in Figure 2 indicates that a substance is:



Figure 2

| | | |
|---|------------|--------------------------|
| A | harmless | <input type="checkbox"/> |
| B | toxic | <input type="checkbox"/> |
| C | recyclable | <input type="checkbox"/> |
| D | disposable | <input type="checkbox"/> |

(Total for Question 11 = 1 mark)

12 One example of environmental legislation in the UK is:

| | | |
|---|---|--------------------------|
| A | The Collection and Disposal of Water Regulations | <input type="checkbox"/> |
| B | The Collection and Disposal of Soil Regulations | <input type="checkbox"/> |
| C | The Collection and Disposal of Concrete Regulations | <input type="checkbox"/> |
| D | The Collection and Disposal of Waste Regulations | <input type="checkbox"/> |

(Total for Question 12 = 1 mark)



13 Figure 3 shows a bottle bank collection point.



Figure 3

The **main** environmental impact of a bottle bank collection point is to:

| | | |
|---|----------------|--------------------------|
| A | increase waste | <input type="checkbox"/> |
| B | maintain waste | <input type="checkbox"/> |
| C | reduce waste | <input type="checkbox"/> |
| D | control waste | <input type="checkbox"/> |

(Total for Question 13 = 1 mark)

14 An example of a renewable energy source is:

| | | |
|---|--------------|--------------------------|
| A | coal power | <input type="checkbox"/> |
| B | nuclear fuel | <input type="checkbox"/> |
| C | wind power | <input type="checkbox"/> |
| D | natural gas | <input type="checkbox"/> |

(Total for Question 14 = 1 mark)

15 The environmental impact of using bicycles is that carbon dioxide emissions will be:

| | | |
|---|-----------|--------------------------|
| A | increased | <input type="checkbox"/> |
| B | decreased | <input type="checkbox"/> |
| C | stopped | <input type="checkbox"/> |
| D | constant | <input type="checkbox"/> |

(Total for Question 15 = 1 mark)



16 One effect of global warming is:

| | | |
|----------|--------------------|--------------------------|
| A | rising sea levels | <input type="checkbox"/> |
| B | falling sea levels | <input type="checkbox"/> |
| C | higher emissions | <input type="checkbox"/> |
| D | lower emissions | <input type="checkbox"/> |

(Total for Question 16 = 1 mark)

17 Which engineering sector produces petrol?

| | | |
|----------|----------------|--------------------------|
| A | Communications | <input type="checkbox"/> |
| B | Nuclear | <input type="checkbox"/> |
| C | Automotive | <input type="checkbox"/> |
| D | Oil | <input type="checkbox"/> |

(Total for Question 17 = 1 mark)

18 A material that is radioactive would be dealt with by:

| | | |
|----------|-----------------------------|--------------------------|
| A | removing to a landfill site | <input type="checkbox"/> |
| B | placing in a recycling bin | <input type="checkbox"/> |
| C | encasing in concrete | <input type="checkbox"/> |
| D | packing in foam | <input type="checkbox"/> |

(Total for Question 18 = 1 mark)

19 Which gas is measured for excess emissions when checking vehicle safety?

| | | |
|----------|-----------------|--------------------------|
| A | SO ₂ | <input type="checkbox"/> |
| B | CO ₂ | <input type="checkbox"/> |
| C | HO ₂ | <input type="checkbox"/> |
| D | VO ₂ | <input type="checkbox"/> |

(Total for Question 19 = 1 mark)



20 Which **one** of the following represents environmental energy efficiency awareness?

| | | |
|----------|-------------------------------|--------------------------|
| A | Signs on engine assemblies | <input type="checkbox"/> |
| B | Labels on white goods | <input type="checkbox"/> |
| C | Labels on high protein drinks | <input type="checkbox"/> |
| D | Signs on low voltage systems | <input type="checkbox"/> |

(Total for Question 20 = 1 mark)

21 Figure 4 shows an American Space Shuttle.



Figure 4

(a) Which engineering sector would have manufactured the Space Shuttle?

(1)

| | | |
|----------|------------|--------------------------|
| A | Aerospace | <input type="checkbox"/> |
| B | Automotive | <input type="checkbox"/> |
| C | Electronic | <input type="checkbox"/> |
| D | Mechanical | <input type="checkbox"/> |

(b) The shuttle astronauts need to stay in constant contact with mission control.

What type of engineer would ensure constant contact with the shuttle astronauts was maintained?

(1)

| | | |
|----------|----------------|--------------------------|
| A | Control | <input type="checkbox"/> |
| B | Communications | <input type="checkbox"/> |
| C | Computer | <input type="checkbox"/> |
| D | Mechanical | <input type="checkbox"/> |



(c) The American Space Shuttle programme was cancelled in 2011.

This was due to:

(1)

| | | |
|----------|-----------------------|--------------------------|
| A | economic factors | <input type="checkbox"/> |
| B | social factors | <input type="checkbox"/> |
| C | environmental factors | <input type="checkbox"/> |
| D | sustainable factors | <input type="checkbox"/> |

(Total for Question 21 = 3 marks)

22 Figure 5 shows a fibre optic cable.



Figure 5

(a) What type of engineer would install and repair these cables?

(1)

| | | |
|----------|----------------|--------------------------|
| A | Chemical | <input type="checkbox"/> |
| B | Mechanical | <input type="checkbox"/> |
| C | Communications | <input type="checkbox"/> |
| D | Marine | <input type="checkbox"/> |

(b) **One** of the **positive** impacts on society of using fibre optic technology is that broadband speeds have:

(1)

| | | |
|----------|-------------------|--------------------------|
| A | increased | <input type="checkbox"/> |
| B | decreased | <input type="checkbox"/> |
| C | remained constant | <input type="checkbox"/> |
| D | become unreliable | <input type="checkbox"/> |

(Total for Question 22 = 2 marks)



23 Figure 6 shows an ROV.



Figure 6

(a) What does ROV stand for?

(1)

| | | |
|----------|-----------------------------|--------------------------|
| A | Remotely Operated Vehicle | <input type="checkbox"/> |
| B | Randomly Operated Vehicle | <input type="checkbox"/> |
| C | Routinely Operated Vehicle | <input type="checkbox"/> |
| D | Regionally Operated Vehicle | <input type="checkbox"/> |

(b) Which engineering sector would manufacture the ROV?

(1)

| | | |
|----------|------------|--------------------------|
| A | Railway | <input type="checkbox"/> |
| B | Mechanical | <input type="checkbox"/> |
| C | Civil | <input type="checkbox"/> |
| D | Chemical | <input type="checkbox"/> |

(c) What type of job role in the sector would be responsible for the repair of the ROV?

(1)

| | | |
|----------|----------------|--------------------------|
| A | Professional | <input type="checkbox"/> |
| B | Technical | <input type="checkbox"/> |
| C | Operative | <input type="checkbox"/> |
| D | Apprenticeship | <input type="checkbox"/> |

(Total for Question 23 = 3 marks)



24 (a) Which **one** of the following job roles would be classified as professional?

(1)

| | | |
|----------|--------------------|--------------------------|
| A | Assembly operative | <input type="checkbox"/> |
| B | Repair technician | <input type="checkbox"/> |
| C | Design engineer | <input type="checkbox"/> |
| D | Craft apprentice | <input type="checkbox"/> |

(b) A production engineer ensures that manufactured items are:

(1)

| | | |
|----------|---------------------------|--------------------------|
| A | made to specification | <input type="checkbox"/> |
| B | designed to specification | <input type="checkbox"/> |
| C | marketed on time | <input type="checkbox"/> |
| D | sold on time | <input type="checkbox"/> |

(Total for Question 24 = 2 marks)

25 (a) What type of software is PowerPoint?

(1)

| | | |
|----------|----------------|--------------------------|
| A | Database | <input type="checkbox"/> |
| B | Presentation | <input type="checkbox"/> |
| C | Spreadsheet | <input type="checkbox"/> |
| D | Wordprocessing | <input type="checkbox"/> |

(b) A flipchart is sometimes used by design engineers to:

(1)

| | | |
|----------|--------------------------|--------------------------|
| A | brainstorm team ideas | <input type="checkbox"/> |
| B | store technical drawings | <input type="checkbox"/> |
| C | write reports | <input type="checkbox"/> |
| D | complete questionnaires | <input type="checkbox"/> |

(Total for Question 25 = 2 marks)



26 (a) **One** of the **main** benefits to an employer of engineers working in a team is:

(1)

| | | |
|----------|----------------------------------|--------------------------|
| A | wages can be reduced | <input type="checkbox"/> |
| B | personal transport can be shared | <input type="checkbox"/> |
| C | design ideas can be shared | <input type="checkbox"/> |
| D | communications can be difficult | <input type="checkbox"/> |

(b) Which **one** of the following is the **main** reason why engineering teams sometimes develop prototypes?

(1)

| | | |
|----------|--|--------------------------|
| A | Customers will be able to source spare parts | <input type="checkbox"/> |
| B | Customers can see what the final cost will be | <input type="checkbox"/> |
| C | Customers will be able to order more products | <input type="checkbox"/> |
| D | Customers can see what the finished product will look like | <input type="checkbox"/> |

(Total for Question 26 = 2 marks)



27 Figure 7 shows a tablet personal computer.



Figure 7

(a) Music content for a tablet personal computer is often obtained by using:

(1)

| | | |
|---|-------------------------|--------------------------|
| A | upload technology | <input type="checkbox"/> |
| B | download technology | <input type="checkbox"/> |
| C | side load technology | <input type="checkbox"/> |
| D | forward load technology | <input type="checkbox"/> |

(b) **One** of the economic impacts of an increasing demand for tablet personal computers is that:

(1)

| | | |
|---|--------------------------------------|--------------------------|
| A | fewer laptops are likely to be sold | <input type="checkbox"/> |
| B | more laptops are likely to be sold | <input type="checkbox"/> |
| C | older laptops are likely to be sold | <input type="checkbox"/> |
| D | bigger laptops are likely to be sold | <input type="checkbox"/> |

(Total for Question 27 = 2 marks)



28 Figure 8 shows a renewable energy collection system.



Figure 8

(a) What type of energy is collected by this system?

(1)

| | | |
|----------|---------|--------------------------|
| A | Solar | <input type="checkbox"/> |
| B | Wave | <input type="checkbox"/> |
| C | Wind | <input type="checkbox"/> |
| D | Nuclear | <input type="checkbox"/> |

(b) Which engineering sector would manufacture this collection system?

(1)

| | | |
|----------|------------|--------------------------|
| A | Mechanical | <input type="checkbox"/> |
| B | Aerospace | <input type="checkbox"/> |
| C | Electronic | <input type="checkbox"/> |
| D | Automotive | <input type="checkbox"/> |

(c) What type of engineering job role would typically install and maintain this collection system?

(1)

| | | |
|----------|--------------|--------------------------|
| A | Unskilled | <input type="checkbox"/> |
| B | Semi-skilled | <input type="checkbox"/> |
| C | Skilled | <input type="checkbox"/> |
| D | Chartered | <input type="checkbox"/> |



(d) The impact on the environment of using this collection system would be:

(1)

| | | |
|----------|---------------------|--------------------------|
| A | increased pollution | <input type="checkbox"/> |
| B | decreased pollution | <input type="checkbox"/> |
| C | unchanged pollution | <input type="checkbox"/> |
| D | constant pollution | <input type="checkbox"/> |

(Total for Question 28 = 4 marks)

29 (a) Which type of pollution is **not** caused by new roads?

(1)

| | | |
|----------|-----------|--------------------------|
| A | Noise | <input type="checkbox"/> |
| B | Air | <input type="checkbox"/> |
| C | Visual | <input type="checkbox"/> |
| D | Radiation | <input type="checkbox"/> |

(b) Pollution caused by buses and lorries can be reduced by developing:

(1)

| | | |
|----------|-----------------|--------------------------|
| A | cooking oils | <input type="checkbox"/> |
| B | bio-fuels | <input type="checkbox"/> |
| C | uranium cells | <input type="checkbox"/> |
| D | water additives | <input type="checkbox"/> |

(c) Which **one** of the following would reduce noise pollution?

(1)

| | | |
|----------|---|--------------------------|
| A | Decreasing the amount of storage space | <input type="checkbox"/> |
| B | Decreasing insulation around machinery | <input type="checkbox"/> |
| C | Increasing insulation on industrial buildings | <input type="checkbox"/> |
| D | Increasing the amount of electricity used | <input type="checkbox"/> |

(Total for Question 29 = 3 marks)

Question 30 is on the next page.



30 (a) A product used to power internal combustion engines is:

(1)

| | | |
|----------|----------------|--------------------------|
| A | compressed air | <input type="checkbox"/> |
| B | refined oil | <input type="checkbox"/> |
| C | water pump | <input type="checkbox"/> |
| D | solar panels | <input type="checkbox"/> |

(b) Emissions from diesel engines are **most likely** to cause:

(1)

| | | |
|----------|----------------------|--------------------------|
| A | hearing issues | <input type="checkbox"/> |
| B | eyesight problems | <input type="checkbox"/> |
| C | breathing complaints | <input type="checkbox"/> |
| D | skin defects | <input type="checkbox"/> |

(Total for Question 30 = 2 marks)

TOTAL FOR PAPER = 45 MARKS

