



1145-532 MARCH 2022

Level 3 Advanced Technical Diploma in Engineering (540) Level 3 Advanced Technical Extended Diploma in Engineering (720)

Level 3 Engineering – Theory Exam (2)

If provided, stick your candi barcode label here.	date	Tuesday 1 13:30 – 15	5 March 2022 :30	
Candidate name (first, last)				
First				
Last				
Candidate enrolment number	Date of birth (I	DDMMYYYY)	Gender (M/F	
Assessment date (DDMMYYYY)	Centre numbe	er	Candidate signa	ature and declaration*

- If additional answer sheets are used, enter the additional number of pages in this box.
- **O**
- Before taking the examination, **all candidates** must check that their barcode label is in the appropriate box. Incorrectly placed barcodes may cause delays in the marking process.
- Please ensure that you staple additional answer sheets to the **back** of this answer booklet, clearly labelling these with your full name, enrolment number, centre number and qualification number in BLOCK CAPITALS.
- All candidates need to use a **black/blue** pen. **Do not** use a pencil or gel pen, unless otherwise instructed.
- If provided with source documents, these documents **will not** be returned to City & Guilds, and will be shredded. Do not write on the source documents.
- *I declare that I had no prior knowledge of the questions in this examination and that I will not divulge to any person any information about the questions.

General instructions

- Use black or blue ballpoint pen. Use pencil for drawing only.
- Any pencil drawing **must** be bold and clear for scanning purposes.
- The marks for questions are shown in brackets.
- Answer all questions.
- Write all of your working out and answers in this booklet.
- Answer the questions in the spaces provided.
- Answers written in margins or on blank pages **cannot** be marked.
- Cross through any work you do **not** want to be marked.

1

2

Explain three responsibilities for health and safety that regulations place on employers.	(6 marks)
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Describe the process of cutting steel plate using oxy-fuel cutting.	(6 marks)
Describe the process of cutting steer plate using oxy-fuer cutting.	(O IIIdi K3)
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Complete Table 1 below, identifying a tool or a piece of equipment that would typically be used to carry out **each** of the named activities.

An example has been completed for you.

(4 marks)

Activity	Tool or equipment typically used
Shear cutting a sheet	Guillotine
Cutting a thread on the outside of a metal rod	
Measuring the diameter of a metal rod to \pm 0.01 mm	
Sequential tightening of bolts around a pipe fitting	
Testing the accuracy of a plane surface	

Table 1

Explain why market research can be an enabler for the process of innovation.	(4 marks)
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5	a)	Describe the process of gasification.	(6 marks)
	b)	Explain the differences between pyrolysis and gasification.	(6 marks)

c)

(8 marks)

Explain how increased use of low carbon technologies (such as gasification) may benefit the environment.			

6

7

Describe what is meant by 'hybrid cloud computing'.	(2 marks)
Describe what is meant by Hybria cloud compating.	(2 marks)

Explain how the development of virtual and augmented reality may influence product design activities in the future.

Discuss the aims of research and development activities when developing the new nanufacturing process.	(12 mar
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