

Design & Technology

Edexcel GCSE

People

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- For the multiple choice questions, circle your answer

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

Good luck!

Q1. Which of the following is the best example of automation?

- A** A worker painting a car by hand
- B** A robot arm welding car bodies on a production line
- C** A designer sketching ideas on paper

Q2. Which job role has been created by new and emerging technologies?

- A** Drone pilot
- B** Blacksmith
- C** Hand loom weaver

Q3. What is meant by "upskilling"?

- A** Reducing the number of workers in a factory
- B** Paying workers a higher wage
- C** Training workers in new skills so they can use new technology

Q4. What is meant by the "digital divide"?

- A** The gap between people who can and cannot afford or access new technology
- B** Splitting a laptop screen into two windows
- C** The difference in price between two smartphones

Q5. Which feature of a modern laptop most helps people attend meetings while working from home?

- A** A larger keyboard
- B** A built-in camera and speakers
- C** A metal case

Q6. Which of the following is a disadvantage of remote working for employees?

- A** They spend more time commuting
- B** They cannot use cloud-based software
- C** They can feel isolated from colleagues

Q7. A company manufactures solar powered garden lights. The manufacturer employs different groups of people including apprentices.

Explain two ways that the use of new and emerging technologies could affect the apprentices. **(4 marks)**

1

2

Q8. Many companies are using emerging technologies such as Bluetooth and apps to improve consumer products such as the electric toothbrush.

Q8a. Describe one other example of an emerging technology that is used to improve the functionality of a specific consumer product. **(2 marks)**

Q8b. Give two reasons why it is important that designers and manufacturers make use of emerging technologies in products. **(2 marks)**

1

2

Q9. Many people now work away from the office using a laptop.

Discuss how the features of modern laptops have contributed to remote working.

(6 marks)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Answers

Q1. B

Q2. A

Q3. C

Q4. A

Q5. B

Q6. C

Q7.

Any two ways that reference the effects of new and emerging technologies for the apprentices (1 mark) and a linked justification of that way (1 mark), up to 4 marks. Possible points include:

- The apprentices will be exposed to the latest technology/manufacturing methods (1) therefore they will be trained/experienced in the latest/most current methods (1)
- They will be very employable/in demand (1) as the technologies develop and spread to other companies/parts of the country/world (1)
- They may be highly specialised/highly skilled/ready to move into advanced roles (1) therefore they can command higher salaries (1)
- Once they have completed their training they may find themselves out of a job (1) because the new technology has replaced manual workers/more efficient technology (1)
- Improved/safer working environments (1) because of the use of electronic control systems (1)
- Lower skilled technician roles (1) result in lower paid positions (1)

Q8a.

One mark for a specific consumer emerging technology and one mark for an explanation of how it helps the functionality (2 marks). Do not accept Bluetooth or "old technologies" such as thermochromic/photochromic materials, CAD/CAM, laser cutters, memory foam, polymorph or Wi-Fi. Possible points include:

- AI is used in products such as Alexa/Hive/Siri in smart phones (1) to recognise patterns and habits to enhance user experience by making suggestions (1)

- AI controlled smart vacuum (1) that scans room size, identifies obstacles and remembers the most efficient routes for cleaning (1)
- Biometric technology/fingerprint/face recognition (1) used in smart phones and devices to improve security and make access faster (1)
- Other applications could include self-driving autonomous vehicles, RFID cashless payments, route planners, AI controlled lawnmowers, drone cameras, smart doorbells, smart speakers, air tags and GPS trackers

Award credit for any other appropriate response.

Q8b.

Two from (2 marks). Do not allow answers relating to "increase functionality":

- Respond to technology push/to keep up with competition from other companies (1)
- Market pull/people want new products/increase demand (1)
- To sell more/increase sales/popularity (1)

Q9.

Candidates might refer to some/all of the following in their response, but should be rewarded for other pertinent contextualised answers:

- Improved battery capability means it is possible to work for longer without being plugged into mains power, making it much easier to work on the move rather than needing to be based in an office/home
- Laptops have become smaller/lighter and much more portable due to advances in materials technology/miniaturisation, so users can take them home/travel with them and work anywhere
- Many laptops now have built-in cameras/speakers, so the workforce can attend virtual meetings (video conference/Zoom/Teams) with little additional equipment/from anywhere that has a Wi-Fi connection
- The processing power/increase in RAM/speed of modern laptops makes them much more capable of handling demanding software such as graphics/CAD packages
- With Wi-Fi/internet enabled laptops, more computing can be carried out in "cloud" based environments, reducing the need for more powerful computers/meaning more people can work without being connected to office/workplace networks
- The ability to connect devices such as printers/stylus pens/keyboards/mice/tablets via Bluetooth/wireless has reduced the need for USB ports, meaning laptops can be made thinner
- The ability to connect additional screens/use docking stations allows greater working capability/office simulation

Level	Marks	Descriptor
0	0	No rewardable content.
1	1-2	Attempts to interrogate and deconstruct information but connections and logical chains of reasoning are flawed. An unbalanced appraisal of the information/issues, containing judgements that show a limited awareness of the interrelationships between factors or competing arguments.

2	3-4	Interrogates and deconstructs information and provides some connections and logical chains of reasoning. A balanced appraisal of the information/issues, containing judgements that show an awareness of the interrelationships between factors or competing arguments.
3	5-6	Interrogates and deconstructs information and provides sustained connections and logical chains of reasoning. A well-balanced appraisal of the information/issues, containing judgements that show a thorough awareness of the interrelationships between factors or competing arguments.