



TONBRIDGE SCHOOL

Sample Paper for Entrance into Year 12

Design, Technology and Engineering

Time allowed:

45 minutes

Name

School

Total marks:

30

Question	Mark	Max Mark
1		12
2		9
4		9
TOTAL		30

Instructions:

- Answer all questions on the paper provided
- Use black or blue ink
- Sketches and diagrams can be completed in either pencil or pen
- You are reminded of the need for good English and clear presentation in your answers

Answer ALL questions

- 1) Both ergonomics and anthropometrics make an important contribution to the successful design of products such as the car steering wheel shown below:



- a) Explain an ergonomic feature of the steering wheel. [2]
- b) Explain how anthropometric data has been used in the design of this steering wheel. [2]

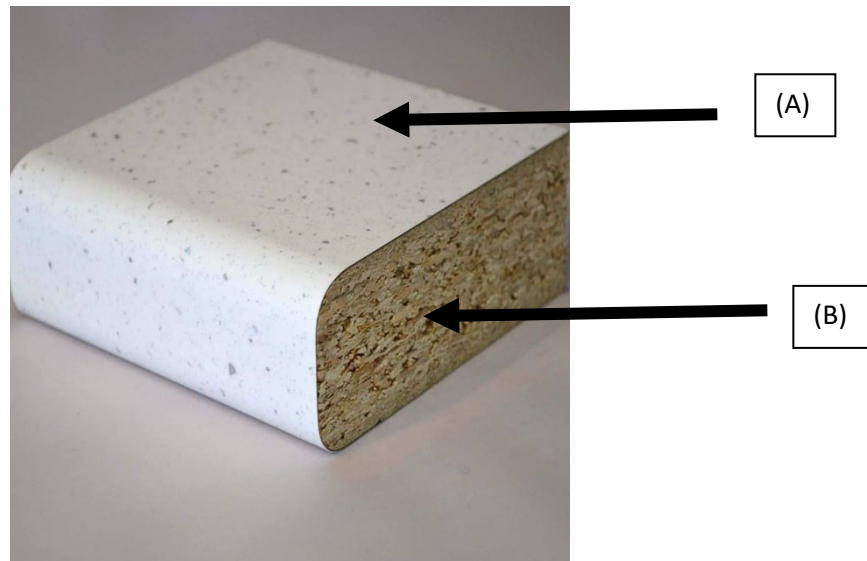
The grilles on the dashboard and some of the buttons on the steering wheel have been made from ABS plastic.

- c) Suggest two properties that make ABS a suitable material for the buttons or grilles. [2]
- d) These components have been manufactured using injection moulding. With the use of diagrams, explain the process of injection moulding. [6]

2) Manufactured boards are often used in the manufacture of kitchen units and worktops.

- a) Explain the advantages and disadvantages of using manufactured boards in kitchen construction. [5]

Below is a cross-section of a kitchen worktop:



- b) Identify a suitable material for (A) and (B). [2]
c) Suggest how the different pieces that make up the worktop have been joined together. [2]

3) Below are two examples of a mobile phone (one old and one modern):



OLD



MODERN

Mobile phones are an example of products that are being constantly re-designed.

Compare and contrast the two different types of mobile phone. Evaluating how the design has evolved. Ensure you consider both the performance requirements and the user requirements in your answer.

(Perhaps consider some of the following in your response: Function, Form, Materials, Health & Safety, Maintenance, Reliability, Sustainability, Processes.) [9]