DTBase©

Design & Technology
Edexcel A-Level

2026 Predicted Paper – 9DT0/01

2 hours 30 minutes

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

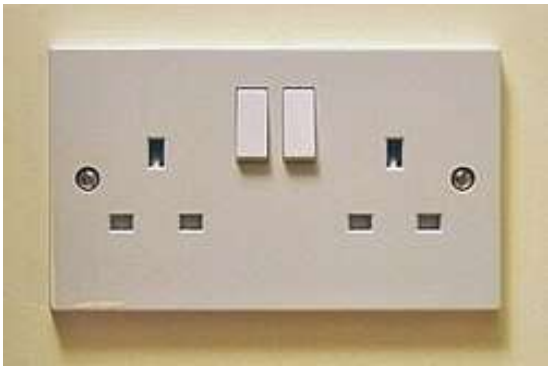
- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

Good luck!

120 marks

Q1a) Explain the meaning of the term plasticity. **(2 marks)**

Q1b) Urea formaldehyde (UF) has been used the electrical plug casing shown below. Explain two benefits of using urea formaldehyde (UF) for the plug casing. **(6 marks)**



Q2a) Explain one reason why PTFE is used for frying pan coatings. **(3 marks)**

Q2b) The frying pan has a circular base with a radius of 14 cm. The PTFE non-stick coating is applied to the base at a thickness of 0.02 cm. The coating requires 1.8g of PTFE per cm^3.

Calculate the mass of PTFE needed to coat the base of the frying pan.
Give your answer in grams. **(4 marks)**

Q3a) The packaging of commercial products often uses boards with graphics applied to the surface.

Explain one property of coated paper that makes it suitable for commercial printing. **(2 marks)**

Q3b) Describe, using annotated sketches, the process of printing using offset lithography**. (4 marks)**

Q3c) Explain **two** reasons why offset lithography is suitable for printing newspapers. **(6 marks)**

Q4a) An airline manufacturer has decided to use thermo-ceramics in the turbine blades for a new jet engine.

Explain three advantages of thermo-ceramics that make them appropriate in these situations. **(6 marks)**

Q4b) The company has decided to use total quality management whilst designing and manufacturing the new jet. Outline what is meant by total quality management (TQM). **(4 marks)**

Q4c) The jet engine must pass 3 quality control checks simultaneously.

The probability an engine fails check A is a = 0.01.
The probability it fails check B is b = 0.0015.
The probability it fails check C is c.

Given that the probability an engine passes all 3 checks is

$$0.96 = \frac{96}{100}$$

Find c. **(3 marks)**

Q4d) The jet engine has a cylindrical fuel tank with a radius of 0.6 m and a length of 4 m. Jet fuel costs £1.25 per litre. (1 m^3 = 1000 litres)

Calculate the cost to completely fill the fuel tank.
Give your answer to the nearest pound. **(4 marks)**

Q4e) During the manufacture of the jet engine the company must create a risk assessment. Outline the five steps involved in a risk assessment. **(5 marks)**

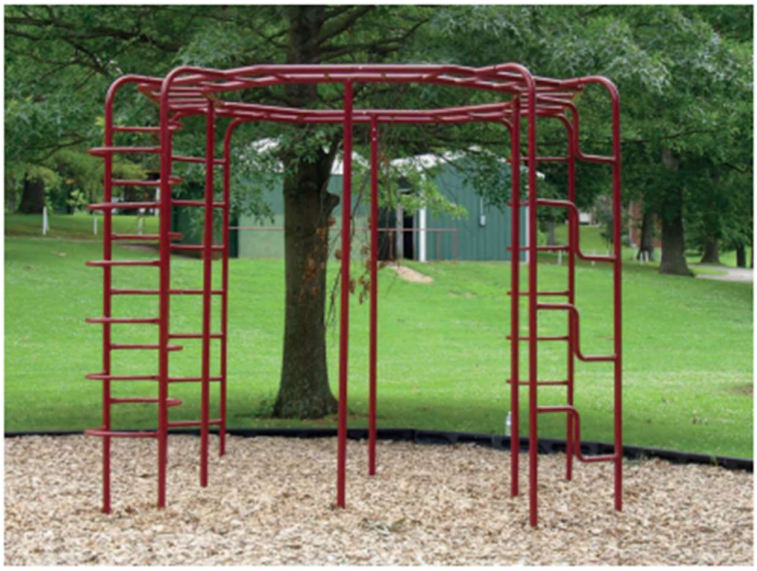
Q4f) The airline company are considering registering some of their designs under design rights. Explain the difference between registered design rights and unregistered design rights. **(4 marks)**

Q5a. Describe what is meant by the consumer society. **(3 marks)**

Q5b) A company launches a new product. The fixed cost of an advertising campaign is £18,000. Each unit costs £7.20 to produce. The product sells for £15.50 per unit. As a result of the campaign, demand increases by 12%, leading to total sales of 5,600 units. The company also offers a 10% discount on all units sold due to a promotion, but this reduces the selling price only (not the cost).

Calculate the total profit or loss made from the campaign. **(5 marks)**

Q6) The image below shows a children's climbing frame.



Q6a) The climbing frame will be made through various CNC machines. Explain two reasons why the use of Computer Numerically Controlled (CNC) machines is generally safer than the use of manually operated machines. **[4 marks]**

Q6b) The climbing frame will be finished with powder coating. Explain why powder coating is an appropriate finish for the climbing frame. **(6 marks)**

Q6c) Some parts of the climbing frame will be made from polymers and joined using solvent adhesives. Explain the safe work practices necessary to protect workers when using solvent adhesives. **(6 marks)**

Q6d) A climbing frame joint requires a layer of solvent adhesive between two flat plates. Each joint is a rectangular surface measuring 0.8 m by 0.5 m. The adhesive layer has a uniform thickness of 2 mm. The adhesive costs £4.80 per litre (1 m^3 = 1000 litres). The climbing frame uses 6 identical joints.

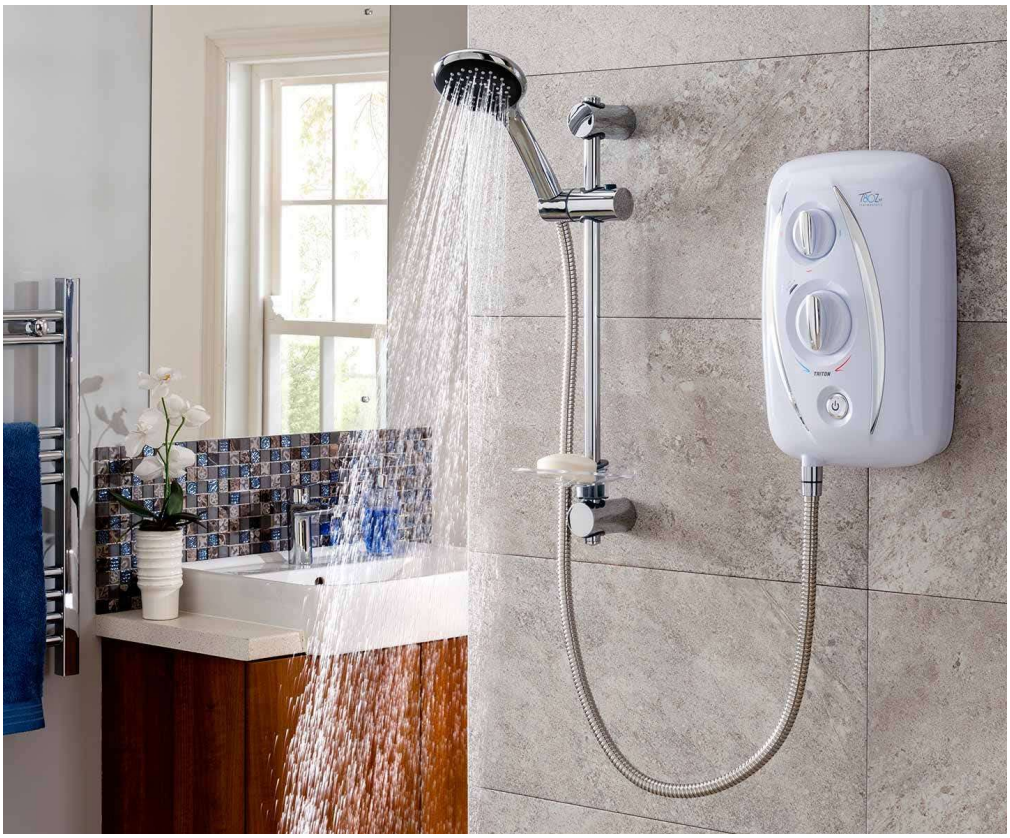
Calculate the total cost of the adhesive needed. **(6 marks)**

Q7) Explain how the work of Philippe Starck reflects the postmodern design movement. **(9 marks)**

Q8) Explain how the integration of Product Data Management (PDM) and Enterprise Resource Planning (ERP) systems supports efficient manufacturing and business operations in a commercial context. **(8 marks)**

Q9) Discuss the cost implications to both the consumer and the manufacturer of switching from petrol/diesel vehicles to electric vehicles (EVs). **(8 marks)**

Q10) The image below shows an Evaluate this design decision with reference to aesthetics and functionality. shower.



Evaluate the electric shower with reference to anthropometrics, ergonomics and functionality. **(12 marks)**

END OF PAPER