**Design & Technology**

**AQA GCSE** Logo

Description automatically generated with low confidence

**Surface treatments and finishes**

**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.** Why is UV varnishing preferred for magazine covers?

**A** Lowest cost option

**B** Instant curing and high gloss

**C** Recyclable finish

**Q2.** Dip coating is ideal for which application?

**A** Medical catheters

**B** Electronic chips

**C** Structural steel beams

**Q3.** Which metal finish is most eco-friendly?

**A** Electroplating

**B** Powder coating

**C** Chrome plating

**Q4.** In powder coating, why is the metal heated before dipping?

**A** To improve electrical conductivity

**B** To remove surface impurities

**C** To melt the polymer powder for adhesion

**Q5.** Select one of the following materials/systems from the table below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Papers and boards | Timbers | Metals | Polymers | Textiles | Electronic and mechanical systems |

For your chosen material, describe one surface finish/treatment and how it is applied to your chosen material **(3 marks)**

**Answers**

**Q1**. B

**Q2**. A

**Q3**. B

**Q4**. C

**Q5**.

**1. Papers and Boards**

**Example Answer:**

* *Material:* Papers and boards
* *Finish:* UV varnishing
* *Application:*
  1. "UV varnish applied with roller/curtain coater"
  2. "Cured instantly under UV lamps"

**Other Acceptable Finishes:**

* Lamination, foil stamping, screen printing

**2. Timbers**

**Example Answer:**

* *Material:* Timbers
* *Finish:* Tanalising
* *Application:*
  1. "Timber vacuum-sealed in preservative tank"
  2. "High pressure forces Tanalith E into wood grain"

**Other Acceptable Finishes:**

* Oil waxing, varnishing, heat treatment

**3. Metals**

**Example Answer:**

* *Material:* Metals
* *Finish:* Powder coating
* *Application:*
  1. "Metal pre-heated to 230°C"
  2. "Dipped in polymer powder that melts on contact"

**Other Acceptable Finishes:**

* Anodizing, electroplating, galvanizing

**4. Polymers**

**Example Answer:**

* *Material:* Polymers
* *Finish:* Dip coating
* *Application:*
  1. "Polymer part submerged in coating solution"
  2. "Withdrawn at controlled speed for even layer"

**Other Acceptable Finishes:**

* Laser etching, plasma treatment, textured molding

**5. Textiles**

**Example Answer:**

* *Material:* Textiles
* *Finish:* Fluoropolymer stain protection
* *Application:*
  1. "Sprayed/immersed in liquid repellent"
  2. "Heat-cured to bond to fibers"

**Other Acceptable Finishes:**

* Digital printing, mercerization, anti-microbial coating

**6. Electronic/Mechanical Systems**

**Example Answer:**

* *Material:* Electronic systems
* *Finish:* Conformal coating
* *Application:*
  1. "PCB cleaned and masked"
  2. "Acrylic coating sprayed then UV-cured"

**Other Acceptable Finishes:**

* Potting, solder masking, lubricant impregnation