

2.3 Electrostatics (P)

Name: _____ Class: _____ Date: _____

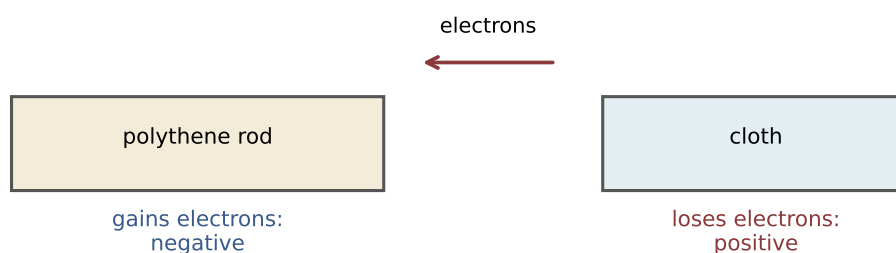
Total: 17 marks

Objective

Cover the electrostatics (P) extension (2.22P–2.28P): conductors and insulators, charging by friction, electron transfer, attraction and repulsion, dangers and uses. Original Physics-only practice.

1 Key knowledge and worked examples

■ Charge is electrons moving



only electrons move; the charges are equal and opposite

Only **electrons** transfer. Rub a polythene rod with a dry cloth: electrons move cloth → rod, so the rod becomes **negative** and the cloth **positive** (equal amounts). Unlike charges attract; like charges repel.

■ Danger and use

Danger: fuelling aircraft and tankers – flowing fuel gathers charge, a spark can ignite vapour; earthed bonding cables keep everything at the same potential. **Uses:** photocopiers charge a drum so toner sticks where the image is; inkjet printers steer charged droplets.

2 Practice

2.1 (P) Name the particle transferred when insulators are charged by friction. [1]

2.2 (P) A balloon rubbed on hair sticks to a wall. Explain why. [3]

2.3 (P) State the force rule for like and unlike charges. [2]

2.4 (P) Give one danger of electrostatic charging during refuelling and the precaution used. [2]

3 Exam-style questions

3.1 (P) An acetate rod rubbed with a cloth becomes positive. Explain, in terms of particles, what happened to each object. [3]

3.2 (P) Describe how a photocopier uses electrostatic charge. [3]

3.3 (P) Explain why a charged plastic comb picks up small pieces of dry paper. [3]
