Electrostatic explanations: electrons and polarisation

Teacher / technician

YEAR 10 / LESSON 34 / PHYSICS ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Physics only: 2.24P–2.26P. Electron transfer and electrostatic effects.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Polythene rods and cloths	1 each per pair	15 of each
Paper trays	1 per pair	15
Electroscope	Staff demonstration	1
Booklets	1 per learner	30

Immediate safety

Use smooth rods away from faces and electronics. Do not open or touch the fragile electroscope leaf. Staff handle and discharge the apparatus according to its instructions. No balloons, high-voltage supplies or water streams are used.

Preparation and delivery

Read alongside the student method

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1. Check the electroscope casing and leaf, and pilot near-without-contact response. Provide 15 dry rod/cloth sets.

2. Discharge using the apparatus manufacturer’s approved procedure; do not improvise connections to electrical sockets. Keep charge-sign assumptions explicit.

Close of lesson

- Collect paper pieces and store the discharged electroscope safely.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- It gains electrons.
- It loses electrons.
- No; ordinary charging transfers electrons.
- Charge separation makes the nearer interaction dominate.
- Not by itself; a known reference charge is needed.
- Induction redistributes charge; contact can transfer net charge.

References and provenance

Pearson Physics specification

IOP: electrostatic charges

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.