NAME: .....

ELECTROSTATICS ANSWERS

1. (a) (i) An explanation to include:
1. **friction** between duster and comb;
2. charge transferred in the process/ moved off / pull; 2

[Ignore reference to sign of charge]

(ii) A suggestion to include:
1. paper contains charges / paper charged;
2. opposite charges;
3. **attract**(ed) to comb; 2

(iii) comb earthed / metals conduct / metals cannot be charged / metal is not charged / charge goes to hand; 1

(b) (i) An explanation to include:
1. diaphragm becomes charged / having positive and negative charges passing through it,
2. attracted (repelled) from conductive plates / pushed (pulled) to plates; 2

(ii) compresses / expands the **air** producing a sound wave
vibrates the **air** / causes a movement of the **air**; 1

[8]

2. (a) An explanation to include two from:
1. movement of fuel through pipes;
2. friction with surface of pipe causing charges to be produced;
3. electrons transferred between the fuel and the pipe; 2

(b) spark could ignite the fuel/cause explosion; 1

(c) An explanation to include:
1. copper wire acts as an earth;
2. which neutralises any charged object placed in contact with it; 2

[5]

3. Ans

(a)		rub it (with a cloth)	1	**1**
(b)	**(i)**	repel	1	
	(ji)	attract	1	
	(iii)	attract	1	
	(iv)	attract	1	**4**
				Total 5

4. (a) (i) negative at LH end and positive at RH end B1
(ii) (+ve) charge on A attracts electrons/-ve charges/-ve ions
OR unlike charges attract (ignore reference to + charges) B1
electrons move to end X/towards A B1

(unbalanced) +ve charges (left) at end Y NOT repelled to Y B1
(iii) idea that each electron leaves behind an equal unbalanced proton in nucleus/B has no net charge/B is neutral/idea that B has not gained or lost any charges B1
(b) (i) nothing OR nothing implied B1
(ii) +ve charge cancelled/neutralised B1
by electrons/negative charges flowing up from earth B1

[Total: 8]

5. (a) An explanation to include:
electrons / negative charge / negative particles;
transferred / moved from the ruler (to the cloth); 2
[reject for both marks positives move]

(b) An explanation to include three of:
(movement of petrol / lorry / tyres) can build up / transfer a charge / static electricity builds up;
tyres are (good electrical) insulators ;
they do not allow / stop charge / (static) electricity escaping / transferring to earth;
spark;
could cause an explosion / fire; 3
electricity / charge escapes / transferred from / through strip / lorry is earthed / charge goes to earth;

[5]

6. (a) (i) electron/negatively charged particle; 1

(ii) An explanation to include:

1. causing explosion/fire/ignition;
2. sparking; 2
[Ignore references to electrical shock/current]

(iii) pipe could be earthed/charge conducted away safely;
[Accept 'rubber' conductivity strip] 1

(b) An explanation to include:

1. granules have like charges;
2. like charges repel; 2

[6]