

Name of the Student: _____

Max. Marks : 20 Marks

Time : 20 Minutes

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
	an explanation including any three from: the leaf (becomes) charged (1) opposite to charge on droplets / spray (1) charges on leaf are induced (1) opposite charges attract (1) as a result of movement of electrons (between earth and leaf) (1) idea of spray reaching parts of the back of the leaf (1) charged droplets repel each other (having the same charge) (1)	accept marks scored on diagram ignore polarity for this marking point states charge opposite to what they have on the leaf ignore positive electrons / charges / particles allow all over	(3) A01.1

Q2.

Question number	Answer	Additional guidance	Mark
	An explanation linking: electrons move_(1) with one from: (leaf and/or rod) have been discharged (1) (gold leaf) is no longer repelled (1)	negative charges move reject positive electrons for this mark to the earth	(2) AO1

Q3.

Question number	Answer	Additional guidance	Mark
	An explanation that combines identification – understanding (1 mark) and reasoning/justification – understanding (1 mark): • friction between aircraft and air (1) • causes electron transfer between aircraft and air (1)	accept idea of air rubbing against wings ignore 'charge' and 'static' do not allow (for second mark) idea of protons moving	(2)

Q4.

Question number	Answer	Additional guidance	Mark
	an explanation linking any two from charged by friction (1) electrons / negative charges rubbed off ruler (1) woolly jumper becomes negative (1)	electrons / negative charges transfer to jumper ignore positive electrons / charges / particles	(2) A02.1

Q5.

Question number	Answer	Additional guidance	Mark
	An explanation linking two from electrons transferred (from the cloth) to the metal (1) metal is a conductor (1) electrons travel through person / to earth (1)	accept <u>negative charge</u> for electrons accept star for metal electrons move through metal (metal is) earthed / grounded	(2) AO1

Question number	Answer	Additional guidance	Mark
(i)	B A and D are incorrect because a negative charge cannot induce a negative charge C is incorrect because the disc is insulated so negative charge cannot be removed		(1)

Question number	Answer	Additional guidance	Mark
(ii)	an explanation linking: <u>electrons</u> / <u>negative</u> charges move/ flow/transfer (1) from the metal disc / to the student / to earth/ground (1)	reject positive charge moving for first mark accept lose electrons	(2)

Question number	Answer	Additional guidance	Mark
(iii)	at least three straight lines joining disc and plastic (1) arrow(s) from disc towards plastic (1)	judge by eye ignore curved lines at edge do not award mark if there are arrows in both directions	(2)

Question Number:	Answer	Additional guidance	Mark
(i)	an explanation linking: sphere A has an electric field (1) sphere B is in it (1)	both spheres have electric fields the electric fields interact/overlap ignore nature of force; e.g. repulsion	(2) AO 2 2

Question Number:	Answer	Additional Guidance	Mark
(ii)	a description to include: as the distance increases the force (on the sphere B) decreases (1) the greatest change is at smallest distances (1)	negative correlation non-linear gradient changes allow named non-linear functions such as exponential / inversely proportional in this context reference to inverse square law scores 2 marks	(2) AO 3 1a AO 3 1b