

Name of the Student: _____

Max. Marks : 20 Marks

Time : 20 Minutes

Mark Schemes

Q1.

Question Number	Acceptable answers	Additional guidance	Mark
	B		1

Q2.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is A <i>B is not correct because an electron has a much smaller mass</i> <i>C is not correct because a neutron has no charge</i> <i>D is not correct because a positron has a much smaller mass and is positive</i>		1

Q3.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is C A is not the correct answer, as a baryon has three quarks. B is not the correct answer, as leptons are fundamental particles D is not the correct answer, as a nucleon is a proton or neutron		1

Q4.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is B A is not the correct answer, as it is charged so could be accelerated. C is not the correct answer, as it is charged so could be accelerated. D is not the correct answer, as it is charged so could be accelerated.		1

Q5.

Question Number	Answer	Mark
	B	1

Q6.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is A <i>B is not correct because the charge on an Au nucleus is $79 \times 1.6 \times 10^{-19} C$</i> <i>C is not correct because the charge on an alpha particle is $2 \times 1.6 \times 10^{-19} C$</i> <i>D is not correct because the charges have not been converted to C</i>		1

Q7.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is B <i>A is not correct because it is a correct conclusion</i> <i>C is not correct because it is a correct conclusion</i> <i>D is not correct because it is a correct conclusion</i>		1

Q8.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is D</p> <p>A is not the correct answer, as electrons will not deflect particle.</p> <p>B is not the correct answer, as neutral atom will not deflect particle.</p> <p>C is not the correct answer, as this cannot be concluded from observing just one particle.</p>		1

Q9.

Question Number	Acceptable answers	Additional guidance	Mark
	C		1

Q10.

Question Number	Answer	Mark
	C	1

Q11.

Question Number	Answer	Mark
	A	1

Q12.

Question Number	Answer	Mark
	A	1

Q13.

Question Number	Answer	Mark
	D	1

Q14.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is D</p> <p><i>A is not correct because the process described is the thermionic effect</i></p> <p><i>B is not correct because the process described is the thermionic effect</i></p> <p><i>C is not correct because the process described is the thermionic effect</i></p>		1

Q15.

Question Number	Answer	Mark
	C	1

Q16.

Question Number	Answer	Mark
	A	1

Q17.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is C</p> $\frac{1.67 \times 10^{-27} \times (3.00 \times 10^8)^2}{1.60 \times 10^{-10}}$	A,B and D all contain numerical errors	1

Q18.

Question Number	Answer	Mark
	C	1

Q19.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is C</p> <p><i>A is not correct because lepton number is not conserved</i></p> <p><i>B is not correct because charge conservation is not obeyed</i></p> <p><i>D is not correct because charge conservation is not obeyed</i></p>	$p \rightarrow n + \beta^+ + \nu$	1

Q20.

Question Number	Answer	Mark
	C	1