Unit 2 – Particles & Waves
Section 1 – The Standard Model

2012 Revised 15. Which of the following lists the particles in order of size from smallest to largest?

A helium nucleus; electron; proton

B helium nucleus; proton; electron

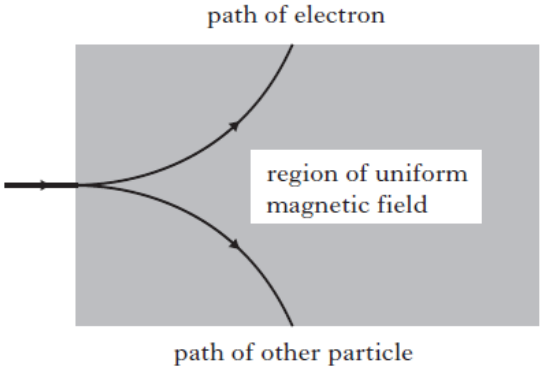
C proton; helium nucleus, electron

D electron; helium nucleus, proton

E electron; proton; helium nucleus

2012 Revised 16. An electron and another particle of identical mass pass through a uniform magnetic field.

Their paths are shown in the diagram.



This observation provides evidence for the existence of

A neutrinos

B antimatter

C quarks

D protons

E force mediating particles.

2013 Revised 10. Three students each make a statement about antiparticles.

I An antiparticle has the same mass as its equivalent particle.

II An antiparticle has the same charge as its equivalent particle.

III Every elementary particle has a corresponding antiparticle.

Which of the statements is/are correct?

A I only

B II only

C I and III only

D II and III only

E I, II and III

2015 Revised 8. A student makes the following statements about a proton.

I A proton is a fermion.

II A proton is a baryon.

III A proton is a meson.

Which of these statements is/are correct?

A I only

B II only

C III only

D I and II only

E I and III only

2015 9. The emission of beta particles in radioactive decay is evidence for the existence of

A quarks

B electrons

C gluons

D neutrinos

E bosons.

2016 8. One type of hadron consists of two down quarks and one up quark.

The charge on a down quark is $-\frac{1}{3}$.

The charge on an up quark is $+\frac{2}{3}$.

Which row in the table shows the charge and type for this hadron?

	charge	*type of hadron*
A	0	baryon
B	+1	baryon
C	−1	meson
D	0	meson
E	+1	meson

2016 9. A student makes the following statements about sub-nuclear particles.

I The force mediating particles are bosons.

II Gluons are the mediating particles of the strong force.

III Photons are the mediating particles of the electromagnetic force.

Which of these statements is/are correct?

A I only

B II only

C I and II only

D II and III only

E I, II and III

2018 8. How many types of quark are there?

A 8

B 6

C 4

D 3

E 2

2018 9. An electron is a

A boson

B hadron

C baryon

D meson

E lepton.

2019 13. A student makes the following statements about the Standard Model.

I Every particle has an antiparticle.

II Alpha decay is evidence for the existence of the neutrino.

III The W-boson is associated with the strong nuclear force.

Which of these statements is/are correct?

A I only

B II only

C III only

D I and II only

E I and III only