Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Particle And Radiation

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) (i) neutron ✓

accept symbols
symbols e.g. n

1

(ii) electron ✓

accept symbols

1

(iii) neutron ✓

accept symbols

1

(b) (i) antineutrino ✓

$\bar{V}_{(e)}$

1

(ii) A=99 ✓
Z= 44 ✓

2

(iii) specific charge = $43 \times 1.6 \times 10^{-19}$ ✓ / $99 \times 1.66 \times 10^{-27}$ ✓
specific charge = 4.2×10^{7} ✓C kg^{-1} ✓

Correct answer no working −1
If include mass of electrons lose 2 and 3 mark

4

[10]

Q2.

(a) pair production ✓

1

(b) (energy = 2 × rest mass energy)
energy = 2 × 0.510999 = 1.021998 (MeV) ✓
energy = $1.021998 \times 1.60 \times 10^{-13} = 1.64 \times 10^{-13}$ J ✓
(3 sig figs ✓)

If miss out 2 factor can get CE
Can use $E=2mc^2$
First mark for full substitution and second mark for answer

3

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(c) kinetic energy (of electron and positron)
KE of photon gets zero

1

(d) (meet an electron and) annihilate ✓
(converting into two or more) photons ✓ OR gamma rays

2

[7]

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