

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

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

(a) (90,39)

B1

(0,-1)

B1

$\bar{\nu}^e$

B1
3

(b) $d \rightarrow u$
or

Number of u quarks increases by 1 and number of d quarks decreases by 1

B1
1

(c) (i) Meson

Do not allow hadron

B1
1

(ii) Negative box ticked

B1
1

(iii) Characteristic of particles with strange quarks / they contain the strange quark / they have strangeness

B1
1

(iv) Gluon, W ($^+$ or $^-$) (boson) or Z⁰

B1
1

[8]

Q2.

(a) (i) $\bar{u}s$ / up and anti-strange ✓
In any order
Bar must be over s only

1

(ii) 0 / zero / nothing ✓

1

(iii) K^- / negative kaon / $\bar{u}s$ ✓

1

(b) (i)

classification	K^+	ν_μ	μ^+
lepton	×	✓	✓
charged particle	✓	×	✓
hadron	✓	×	×
meson	✓	×	×

1 mark for each correct row

3

(ii) conserved: baryon number OR lepton number ✓
 not conserved: strangeness / kinetic energy ✓
Mass in either loses mark

2

(c) (i) neutral pion ✓

Indicated clearly in table in any way e.g. circled or cross. If more than one box used then must be a tick with neutral pion only

1

(ii) must be neutral / no charge / 0 charge to obey charge conservation
 OR
 cannot be baryon to obey conservation of baryon number
 OR
 cannot be lepton to obey conservation of lepton number ✓

Can show by using equation and appropriate quantum numbers

1

[10]