Particles Revision

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Jan 2001 Q3

3 (a) (i) How many quarks are there in a baryon?

(ii) Hadrons fall into two groups, baryons being one of them. What name is given to the other group of hadrons?

(iii) What distinguishes hadrons from other particles? [3]

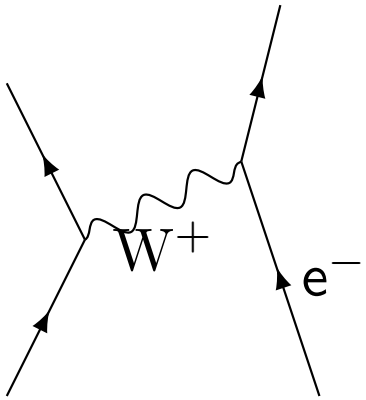
(b) (i) Give the name of one antiparticle that is also a lepton.

(ii) What distinguishes leptons from other particles? [2]

(c) A neutron decays via the weak interaction. Complete the equation. [2]

$$n \rightarrow p + \ldots + \ldots$$

4 The Feynman digram representing electron capture is given below. Complete the labelling of the diagram. [3]



Revision

1. Do some exam questions
2. Talk about how to revise and exam techniques
3. Have some opportunity for questions

How to revise: preparation

- Start early (you should have already)
- By the end of term, you should be prepared and organized
- Give yourself plenty of time (night before NOT good enough)
- Make a revision timetable covering all areas and stick to it
- Organize your notes, get all the **relevant** stuff in one place
- Get any equipment (a new highlighter?)

Key Words


baryons
neutrinos
photon
electron
planck
beta-plus
boson
force
alpha
exchange
table
strange
lepton
funda
kaon
number
anti-electron
collisions
neutrino
atom
annihilation
weak
leptons
laws
beta-phus
mass
nucleus
antiparticle
gravity
pi-mesons
anti-quarks
anti-particle
quarks
radiation
pair
eV
k-mesons
capture
baryon
anti-particles
hadron
power
E
mc
meson
production
hadrons
gluon
positron
energy
neutron
periodic
gauge
decay
particle
charge
electromagnetic
productions
W+
quark
gamma
bosons
ionization
pi-zero
nucleon
mesons
virtual
electrostatic
coulomb
excitation
hardons
conservation
strangeness
strong
beta-minus
range
interaction
mental
constant
particles
photons
beta
proton

How to revise: actually revising

- 2–3 hours per day
- Bursts of 40 mins (know thyself!)
- Be systematic, use the syllabus, create a checklist
- Prioritize what you do (focus on weak areas)
- Use ‘active learning’
- Revise in a suitable orderly place

How to revise: actually revising

- Be honest with yourself
- Ignore peer pressure
- Teachers are here to help (`mtaylor`, `anorman`, `mlewis`)!
- Know the format of the exam
- Making note cards, lists, spider diagrams

How to revise: tips for physics particularly

- Learn everything in your notes. There are fewer **facts** in physics, but it is difficult to get started unless you know them.
- Continually ask yourself 'does this make sense?' 'do I really understand this clearly?'
- Key words, diagrams and tables are often helpful
- You must give yourself enough time to be really confident about each topic.
- Writing brief summaries of key topics is often an efficient way of organising and memorising material. Doing essay questions or 'bookwork' parts of problems from old exam papers is another effective way of focussing your revision in relevant areas.
- The main part of your revision should be actually *doing* questions. . .

Jan 2001 Q6

6 (a) Electrons and electromagnetic waves exhibit properties of both waves and particles. Suggest evidence which indicates that

(i) electons have wave properties,
(ii) electromagnetic radiation has particle properties,
(iii) electromagnetic radiation has wave properties. [3]

(b) Calculate the de Broglie wavelength of an electron travelling at $5.0 \times 10^6\,\mathrm{m\,s^{-1}}$. You should ignore relativistic effects. [3]

Doing problems for revision

- Use real exam questions in your revision
- Print a copy of the datasheet, and use it when you are answering questions. Getting to know your way around it now will save time in the exam!
- Practice doing questions against the clock. You might start by looking at a question, then revising that area of the course, and then doing the question in the required time. Nearer to the exams (now), try doing questions without notes/books. This will help you to decide what things you need to memorize, and how much you can rely on deriving in the exams.
- Mark your efforts using real exam mark schemes, read the examiners' reports too. This will allow you to get an idea of what the examiners want from your script.

ANY QUESTIONS?