

# P4 Revision Questions

## Part 1

# Question 1 .... of 50

- What are the 3 different types of radiation?

# Answer 1 .... of 50

- Alpha, beta and gamma

# Question 2 .... of 50

- What can stop alpha, beta and gamma radiation?

# Answer 2 .... of 50

- Alpha= paper/skin
  - Beta= aluminium
- Gamma= Lead/ concrete

# Question 3 .... of 50

- What is ionising radiation?

# Answer 3 .... of 50

- Radiation that can make an atom charged by either adding or removing an electron

# Question 4 .... of 50

- What particles are atoms made from and what are their charges?



# Answer 4 .... of 50

- Proton= Positive
- Neutron= Neutral
- Electron= Negative

# Question 5 .... of 50

- What is background radiation?

# Answer 5 .... of 50

- Radiation naturally emitted by background sources (rocks, space, granite)

# Question 6 .... of 50

- Name a use of alpha radiation

# Answer 6 .... of 50

- Smoke alarms

# Question 7 .... of 50

- Name a use of beta radiation

# Answer 7 .... of 50

- Measuring paper thickness

# Question 8 .... of 50

- Name a use of gamma radiation



# Answer 8 .... of 50

- Sterilising equipment. Treating cancer. Tracers

# Question 9 .... of 50

- What is carbon dating?

# Answer 9 .... of 50

- Dating a material by comparing the ratio of Nitrogen-14 to Carbon-14

# Question 10 .... of 50

- How can radiation affect the body?

# Answer 10 .... of 50

- It can cause cancer- by damaging cell nuclei

# Question 11 .... of 50

- What condition does fusion need to happen?

# Answer 11 .... of 50

- High temperature and pressure

# Question 12 .... of 50

- What is nuclear fission?



# Answer 12 .... of 50

- Where atoms are split by absorbing neutrons.  
This gives out energy

# Question 13 .... of 50

- What is nuclear fusion?

# Answer 13 .... of 50

- Where hydrogen atoms are fused together to make helium and release energy

# Question 14 .... of 50

- What is cold fusion?

# Answer 14 .... of 50

- Fusion at cold temperatures

# Question 15 .... of 50

- Why do atoms decay?

# Answer 15 .... of 50

- They are unstable

# Question 16 .... of 50

- What are control rods made from and what are they for?



# Answer 16 .... of 50

- Made of Boron. They absorb neutrons to slow down fission

# Question 17 .... of 50

- What is alpha radiation? Give 2 properties

# Answer 17 .... of 50

- A helium nucleus. Highly ionising. 2 protons and 2 neutrons

# Question 18 .... of 50

- What is beta radiation? Give 2 properties

# Answer 18 .... of 50

- Fast moving electron. Not very ionising.  
Stopped by aluminium

# Question 19 .... of 50

- What is gamma radiation? Give 2 properties

# Answer 19 .... of 50

- An electromagnetic wave (high frequency, ionising, short wavelength)

# Question 20 .... of 50

- When neutrons are emitted, they decay an atom, which release more neutrons that decay more atoms



# Answer 20 .... of 50

- When neutrons are emitted, they decay an atom, which release more neutrons that decay more atoms

# Question 21 .... of 50

- What is half-life?

# Answer 21 .... of 50

- The time taken for the activity (or number of nuclei) to decay by half

# Question 22 .... of 50

- What is activity?

# Answer 22 .... of 50

- Number of decays per second

# Question 23 .... of 50

- What is activity measured in?

# Answer 23 .... of 50

- Becquerel (Bq)

# Question 24 .... of 50

- How do you work out half life from a graph?



# Answer 24 .... of 50

- Half the initial activity- then draw a line across and down to the corresponding time

# Question 25 .... of 50

- How do you check you have the correct half life value from a graph?

# Answer 25 .... of 50

- Repeat the process again and again (remember to draw on the graph)

# Question 26 .... of 50

- What is the overall charge of an atom? How does it have this charge?

# Answer 26 .... of 50

- 0 or neutral. Equal number of electrons and protons

## Question 27 .... of 50

- What is an advantage of using a radioactive tracer?

# Answer 27 .... of 50

- Non-invasive- don't have to dig up ground or cut open person

# Question 28 .... of 50

- What is the atomic mass?



# Answer 28 .... of 50

- The number of protons in an atom

# Question 29 .... of 50

- What part of an atom is radiation emitted from?

# Answer 29 .... of 50

- Nucleus

# Question 30 .... of 50

- What can you use to measure radiation?

# Answer 30 .... of 50

- Geiger Counter

# Question 31 .... of 50

- How do you produce x-rays?

# Answer 31 .... of 50

- By firing fast moving electrons at a screen, which slows them down quickly. (The electrons lose energy quickly)

# Question 32 .... of 50

- How is an x-ray image formed?



# Answer 32 .... of 50

- X-rays are absorbed by different tissues of different densities. The ones that get through develop the film

# Question 33 .... of 50

- What are the electromagnetic waves in order from high to low frequency

# Answer 33 .... of 50

- Gamma, X-ray, UV, Visible, Infrared, Microwave, Radio

# Question 34 .... of 50

- How does carbon-14 get into our bodies?

# Answer 34 .... of 50

- Eating plants (it enters plants by photosynthesis)

# Question 35 .... of 50

- What is an advantage of x-rays over gamma rays

# Answer 35 .... of 50

- Can produce X-rays when you want, x-rays can be controlled and you can change the energy of x-rays

# Question 36 .... of 50

- Why are ultrasound waves better than x-rays?



# Answer 36 .... of 50

- They are not ionising, do not damage living cells and can produce better images of soft tissue

# Question 37 .... of 50

- What is the job of the graphite moderator?

# Answer 37 .... of 50

- To slow down neutrons so they can be absorbed

# Question 38 .... of 50

- What type of radiation should a radioactive tracer make?

# Answer 38 .... of 50

- Gamma- so it can get through tissue and rock easily

# Question 39 .... of 50

- What is a fuel rod?

# Answer 39 .... of 50

- Uranium rods that emit radiation for generating energy

# Question 40 .... of 50

- What is an isotope?



# Answer 40 .... of 50

- Atoms with the same number of protons and electrons but with different number of neutrons

# Question 41 .... of 50

- What is the amplitude of a wave and what do we measure it in?

# Answer 41 .... of 50

- The displacement of the wave it has no unit

# Question 42 .... of 50

- What is the wavelength of a wave and what do we measure it in?

# Answer 42 .... of 50

- The distance between two wave peaks,  
measured in metres

# Question 43 .... of 50

- What is the frequency of a wave and what do we measure it in?

# Answer 43 .... of 50

- The amount of complete waves that pass a point in 1 second measured in Hertz

# Question 44 .... of 50

- What is compression and what is rarefaction?



# Answer 44 .... of 50

- Particles pushed together (increased pressure)  
Particles spaced apart (pressure lower)

# Question 45 .... of 50

- How do ultrasound scans work?

# Answer 45 .... of 50

- Ultrasound waves reflect of different tissue boundaries as they have different densities

# Question 46 .... of 50

- How do you pick a correct fuse?

# Answer 46 .... of 50

- Has to be just above normal current

# Question 47 .... of 50

- What is an alternating current?

# Answer 47 .... of 50

- A current that moves back and forth across a point

# Question 48 .... of 50

- What is an ultrasound wave?



# Answer 48 .... of 50

- A wave with a frequency above 20000Hz

# Question 49 .... of 50

- What type of wave is an ultrasound wave?

# Answer 49 .... of 50

- Longitudinal

# Question 50 .... of 50

- Give 3 uses of an ultrasound wave

# Answer 50 .... of 50

- Destroying kidney stones, cataracts and scanning