

# Topic Quiz on Nuclear Energy

## Quiz

Show questions one by one

1. Fission is induced by thermal neutrons. This means:

- A. ? The neutron has the kinetic energy equivalent to a photon of infra red light.
- B. ? Neutrons are warm to the touch.
- C. ? Neutrons glow red hot.
- D. ? The neutrons have gained a charge.

2. When a chain reaction occurs, this is because:

- A. ? A neutron smashes up three nuclei.
- B. ? Three neutrons are released on average, each of which goes on to be captured by other nuclei, causing them to split.
- C. ? A chemical reaction has occurred.
- D. ? Three neutrons that are released fuse together, releasing lots of energy.

3. Which one of the following is correct about the processes that go on in a power station?

- A. ? A chain reaction occurs in which three neutrons go on to cause fission in three further nuclei.
- B. ? Conditions are such that each fission releases only one neutron, which goes on to be captured by one nucleus.

- C. ? The fission of each nucleus releases on average three neutrons, but two of these are absorbed, so that one goes on to be captured by one nucleus.
- D. ? The fission of each nucleus releases on average three neutrons, but two of these are absorbed, so that one goes on to be captured by three nuclei in turn.

4. Which one of these statements is true about the moderator and the control rods in a nuclear power station?

- A. ? The moderator and control rods absorb the neutrons.
- B. ? The moderator and control rods slow the neutrons down.
- C. ? The moderator slows the neutrons down, while the control rods absorb the neutrons
- D. ? The control rods slow the neutrons down, while the moderator absorbs the neutrons

5. Which two of the following materials is NOT used as a moderator?

- A. ? Boron
- B. ? Carbon
- C. ? Water
- D. ? Iron

6. Which one of the following materials does NOT act as a coolant?

- A. ? Water
- B. ? Carbon dioxide
- C. ? Sodium

D. ? Hydrogen

7. Which one of the following is a disadvantage of nuclear power?

- A. ? 1 kg uranium fuel has the energy equivalent of 25 tonnes of coal.
- B. ? Dangerous waste can be produced.
- C. ? Greenhouse gases are not produced.
- D. ? The safety record of the nuclear industry is appalling.

8. The explosion in the nuclear accident at Chernobyl was caused by:

- A. ? A chemical reaction between elements released by the overheated reactor.
- B. ? Uncontrolled chain reaction in the fissile material
- C. ? Excess pressure of steam in the reactor.
- D. ? A massive electrical short-circuit.

9. The reason that alchemists could not produce gold is because:

- A. ? they did not have the technology to do so.
- B. ? the conditions needed to fuse nuclei together are very extreme, such as those found in a supernova explosion.
- C. ? they did not have strong enough chemicals.
- D. ? radioactive materials had not yet been discovered.

10. Which one of the following statements is true about transmutation?

- A. ? It is done by getting elements to absorb particles in a reactor
- B. ? It needs extreme conditions like those found at the centre of a star.
- C. ? It needs powerful chemicals.
- D. ? The most useful products of transmutation have very long half-lives.

