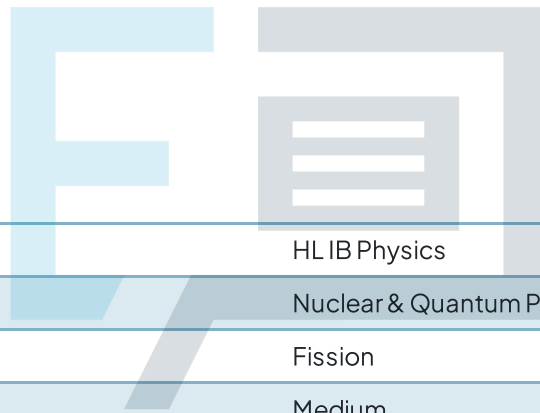




Exam Papers Practice

Fission

Question Paper



Course	HL IB Physics
Section	Nuclear & Quantum Physics
Topic	Fission
Difficulty	Medium

Exam Papers Practice

To be used by all students preparing for HL IB Physics
Students of other boards may also find this useful

Question 1

Which of the following isotopes releases the least amount of potential energy during nuclear fission?

- A. Uranium-235
- B. Thorium-231
- C. Radon-222
- D. Osmium-190

[1 mark]

Question 2

Which statement is correct regarding nuclear fission?

- A. The daughter nucleus has a greater nucleon number than the original nucleus
- B. Energy is absorbed during nuclear fission
- C. The combined mass of the daughter nuclei is less than the mass of the original nucleus
- D. Nuclear fission is the joining of two small nuclei to produce a larger nucleus

[1 mark]

Question 3

Nuclear reactors use different substances for moderation and for control depending on their ability to absorb neutrons. Some information about commonly used substances:

- Boron and cadmium are good absorbers of neutrons
- Graphite and water are poor absorbers of neutrons

Using this information, which row shows the ideal substances that could be used for controlling and moderating in a nuclear reactor?

	Ideal controlling substance	Ideal moderating substance
A	boron	water
B	boron	cadmium
C	carbon	cadmium
D	carbon	water

[1 mark]

Question 4

Which statement about nuclear power is incorrect?

- A. Concrete shielding is a preventative measure to ensure harmful radiation does not escape from a nuclear reactor
- B. An advantage of nuclear power is that it produces no polluting gases
- C. The decay constant of high-level radioactive waste is extremely large
- D. Generating energy from nuclear processes is generally more efficient than generating energy from fossil fuels

[1 mark]

Question 5

In a nuclear reactor, a self-sustained chain reaction is possible because:

- I. More neutrons are released in each fission reaction.
- II. Every neutron released in a fission reaction immediately initiates a further fission reaction.
- III. The fast neutrons are slowed down by the moderator.

Which statements are correct?

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]