

Q1.

Figure 1 is a diagram of a nuclear reactor, used in the generation of electricity.

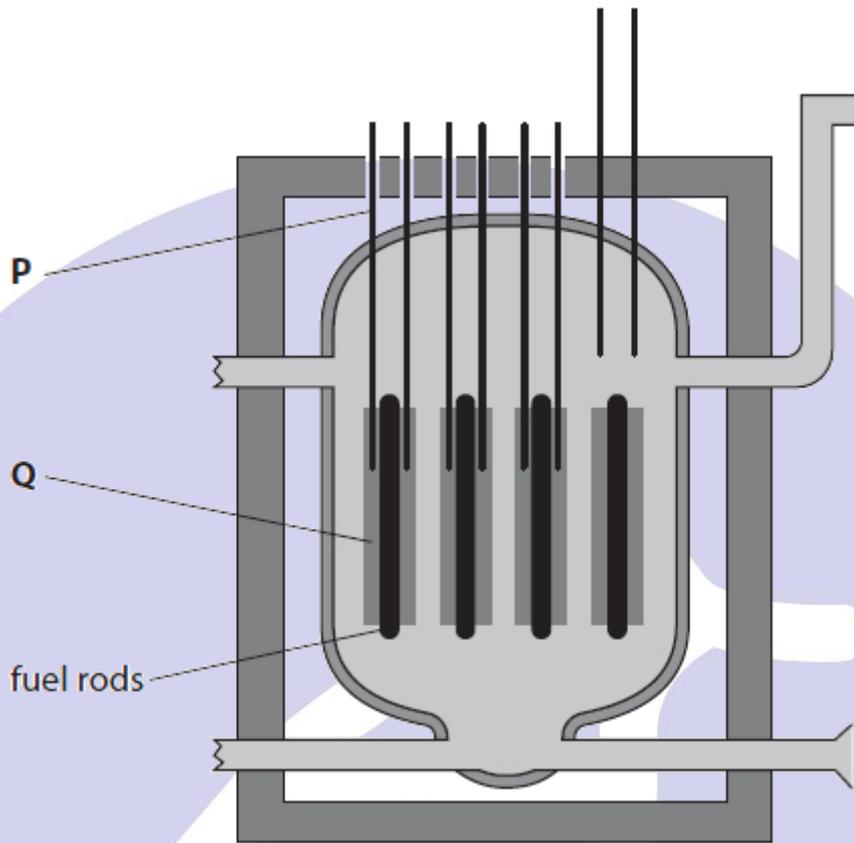


Figure 1

P may be used to shut down the reactor when necessary.

Q slows down neutrons to enable a chain reaction to take place.

State the name of the two parts labelled **P** and **Q**.

(2)

P

Q

(Total for question = 2 marks)

Q2.

Figure 6 is a diagram of a nuclear reactor.

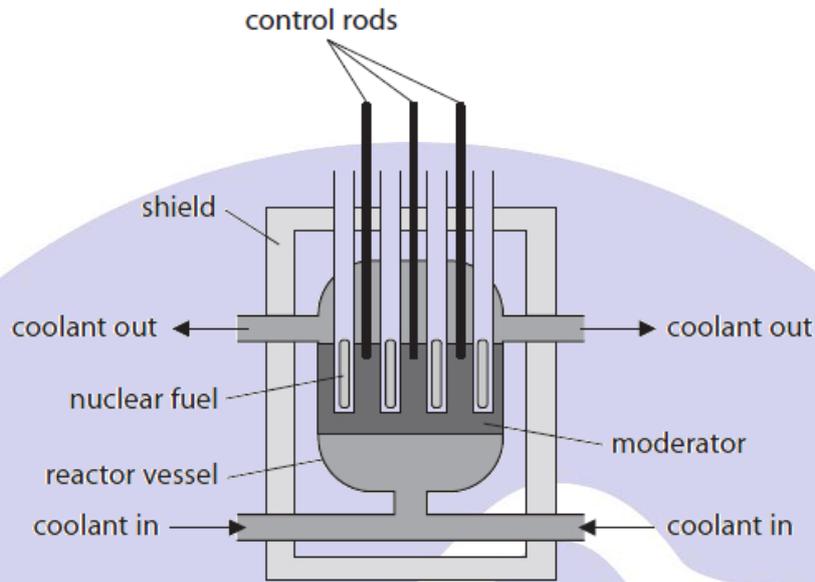


Figure 6

(i) Explain how pushing the control rods further into the reactor slows down the nuclear chain reaction.

(2)

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(Total for question = 2 marks)

Q3.

Many countries generate electricity using nuclear fission.

There are both fuel rods and control rods inside each fission reactor.

Explain how pushing control rods between the fuel rods changes the rate of nuclear fission in the reactor.

(2)

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(Total for question = 2 marks)

Q4.

Explain the use of a moderator in a nuclear reactor.

(3)

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(Total for question = 3 marks)

Q5.

In a nuclear reactor, a chain reaction is produced and controlled.

Explain what happens inside a nuclear reactor if neutron speeds are not controlled.

(3)

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(Total for question = 3 marks)

Q6.

Fusion and fission are nuclear reactions in which large amounts of energy are released.

* Nuclear fission is used in nuclear reactors in some power stations.

In the reactor, a fission chain reaction is maintained and controlled to produce a supply of energy to generate electricity.

Figure 14 is a diagram of a nuclear reactor.

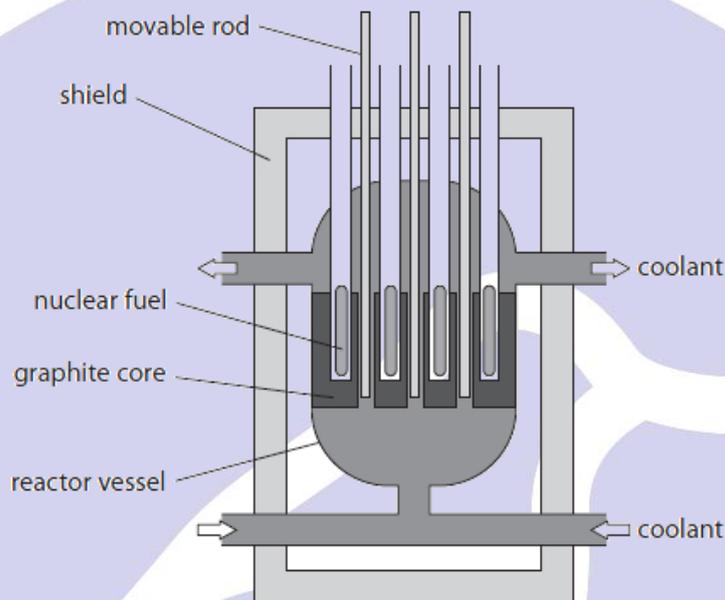


Figure 14

Explain how the graphite core and the movable rods are used to maintain and control the chain reaction.

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(Total for question = 6 marks)