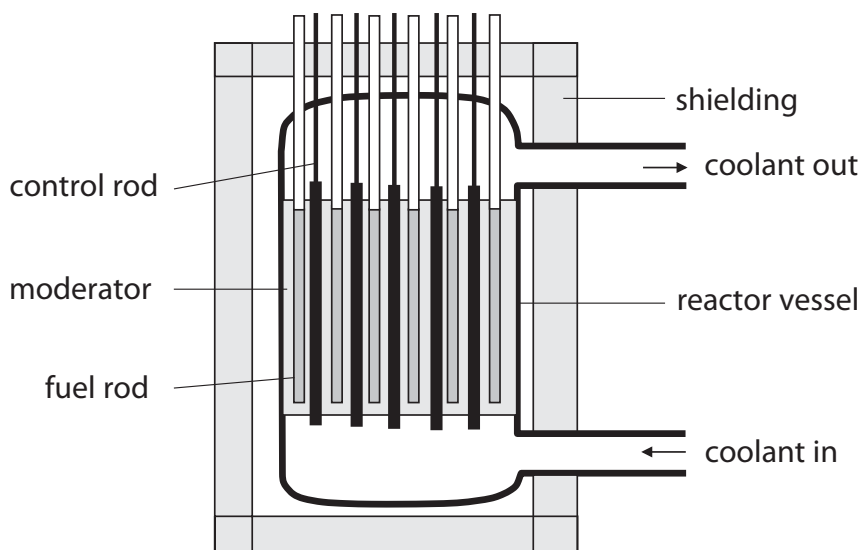


All questions are for both separate science and combined science students

1 The diagram shows the main parts of a nuclear reactor.



(a) Draw a line linking each part of the reactor with its main function.

The first one has been done for you.

(2)

part of reactor		main function
control rod	●—————●	controls the rate of fission
coolant	●	● absorbs dangerous radiation
fuel rod	●	● contains uranium for fission
shielding	●	● removes energy from the reactor

(b) State the type of energy released in a fission reaction.

(1)

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(c) Explain the role of the moderator in a fission reaction.

(2)

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(d) Explain, in terms of neutrons, what is meant by controlled nuclear fission.

(3)

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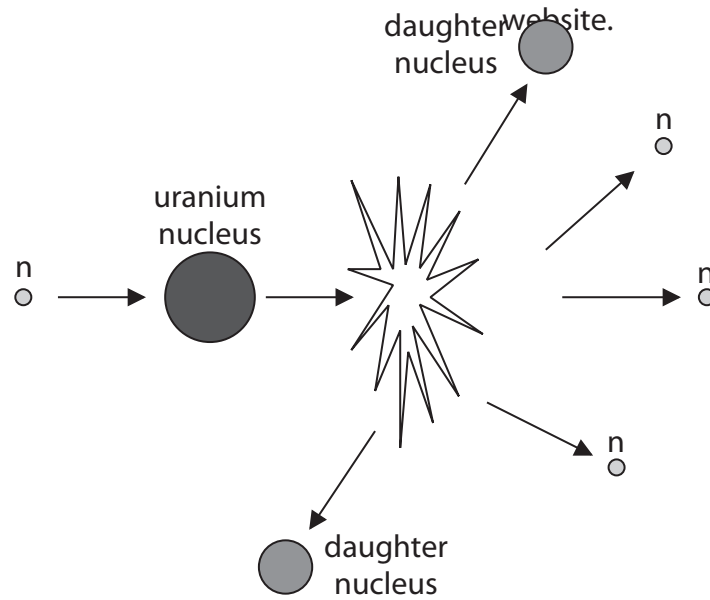
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**(Total for Question 1 = 8 marks)**

2 A student finds this representation of nuclear fission on a



(a) Describe what happens when nuclear fission of uranium occurs.

(3)

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(b) The daughter nuclei move off with high speed.

Name the type of energy that this gives them.

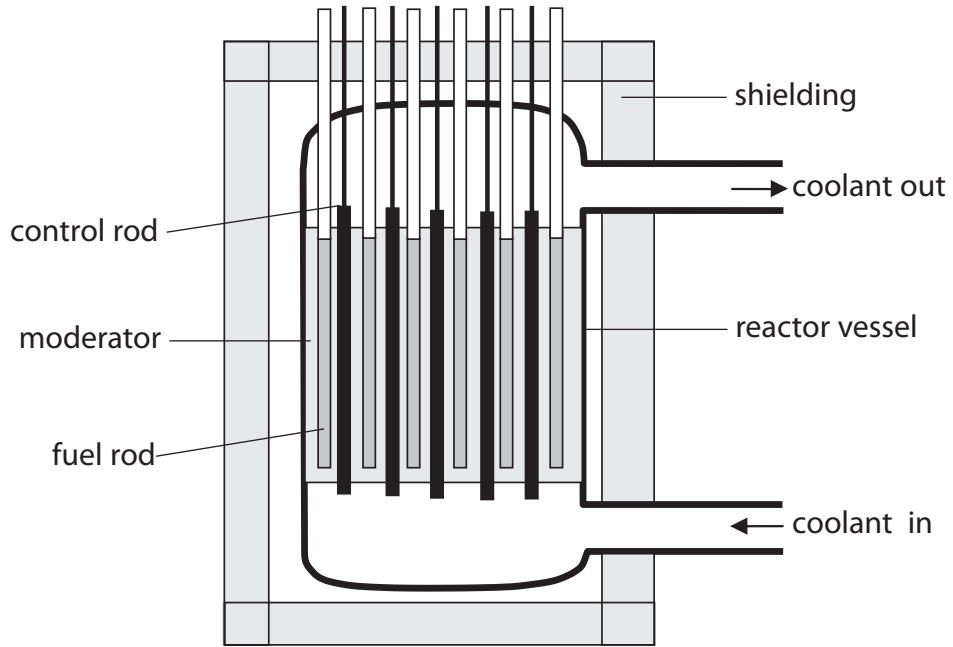
(1)

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**(Total for Question 2 = 4 Marks)**

3 The diagram shows the main parts of a nuclear reactor.

In the nuclear reactor uranium-235 nuclei undergo fission in a controlled chain reaction.



(a) Describe nuclear fission and how the chain reaction is controlled.

Use terms from the diagram to help you.

(5)

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(b) State the form of energy that is released during fission.

(1)

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(c) How does the shielding improve safety?

(1)

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**(Total for Question 3 = 7 marks)**