Hip joints can sometimes wear away causing pain and discomfort when moving. The joint can be replaced using a metal structure which is shaped just like a healthy, working joint.

Diagram 1 shows what the replacement joint looks like in its correct location in the hip.

Here is some information about two metals that may be used to make an artificial hip joint.

Steel is stronger than titanium alloys. 1 g of steel has a mass of 7.85g, and pure titanium has a mass per cm$^3$ that is 56% that of steel.

The extraction of titanium from titanium ore involves many stages.

Titanium is a transition element.

1 (a) (i) Use the information given and your own knowledge to evaluate the use of titanium as a material for making replacement hip joints. [4 marks]

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1 (a) (ii) Copper is a transition metal that is often used to make electrical wiring and pipes for plumbing.

Explain why copper is a suitable metal for these uses. [3 marks]

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(Total 7 marks)