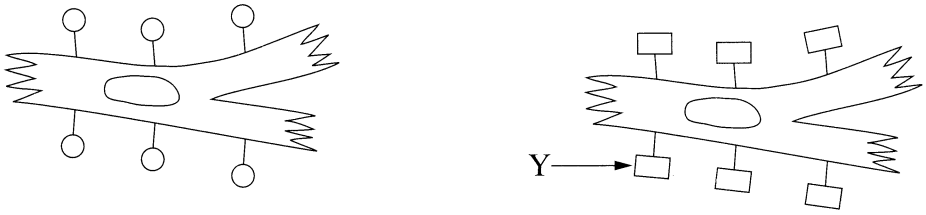
Question 28 (8 marks)

Organ transplants may trigger an immune response which can lead to organ rejection.

The diagram below represents a model of two heart cells, one from a transplant recipient and one from a donor.



Recipient heart cell Donor heart cell

(a) What does Y represent? **1**

antigen

(b) Assess the effectiveness of the model in explaining the cause of organ rejection in a transplant recipient. **3**

As seen in the model, the recipient and donor heart cell have differing antigens. Therefore during an organ transplant, the recipient's body would recognise the donor heart cell as foreign and would trigger its own immune response using B and T cells to "attack" the foreign object. This is why transplant patients are given immune suppressors to decrease the chance of an transplant rejection

(c) Name and outline the role of TWO types of T lymphocytes in organ rejection. **4**

T Helper Cells: stimulate B cells which produce antibodies and that will

Cytotoxic T Cells: produce cytotoxin to attack foreign objects within the body, in this case the organ.

T Memory Cells: remember foreign material and to become more effective and more efficient if the foreign material is seen again.

These two processes help lead to organ rejection. Cytotoxic T cells would actively reject the organ as it is a foreign object whilst T Memory cells would remember the foreign object and would increase the risk of another organ rejection if the same donor was used again.