OCR
Oxford Cambridge and RSA

AS Level Biology A

H020/02 Depth in biology

Question Set 9

1. **(a)** A cytoskeleton is present in all eukaryotic cells. One of its functions is to control the movement of organelles.

State how the cytoskeleton moves organelles around the cell. **[1]**

It uses motorproteins which bind to and move along microtubules using energy from ATP hydrolysis.

(b) Epithelial cells in the airways of mammals play an essential role in defences against pathogens.

Explain the function of epithelial cells in the airways of mammals in the defence against pathogens **and** suggest the importance of the cytoskeleton in carrying out this function. **[4]**

Goblet cells are a modified form of epithelial cell which secrete mucus that traps pathogens. Ciliated epithelial cells waft this mucus to the back of the throat where it can be swallowed. The cilia are made up of microtubules which enable their movement and 'wafting' action.

(c) **(i)** Phagocytes defend the body by engulfing and destroying pathogens in a process calledphagocytosis.

A student produced a summary of the stages of phagocytosis, which is shown in Fig. 1.1.

The student made two errors in their summary. Describe what **two** corrections the student should make.

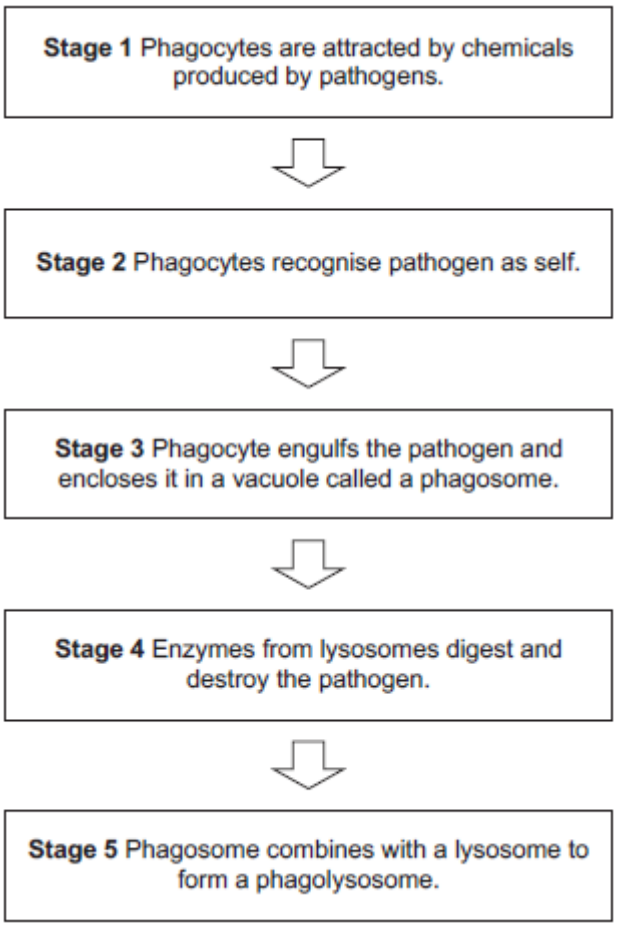

Fig. 1.1

Correction 1 . Phagocytes recognise the pathogen as 'non-self' rather than self.

Correction 2 ..Stage 5 should come before stage 4..... **[2]**

(ii) Antibodies are defensive proteins carried in the bloodstream. Fig. 1.2 shows the simplified, incomplete structure of an antibody.

Complete Fig. 1.2 by **drawing and labelling** the missing part(s) of the antibody.

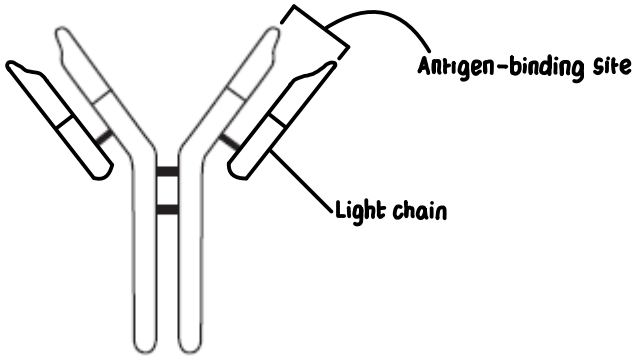

Fig. 1.2

[Answer on Fig. 1.2] **[1]**

Total Marks for Question Set 9: 8