

Extension worksheet – Chapter 6

- 1 a** Copy and complete the table to show the functions of the different parts of the intestine. (6)

	Stomach	Small intestine	Large intestine
Function			

- b** Explain the importance of capillary networks in the absorption of food. (2)
- 2 a** The atrioventricular valves in the heart are attached to the ventricle walls by non-elastic tendons. Suggest why these tendons must be non-elastic. (2)
- b** What effect does atrial systole have on the pressure of blood in the atria? (1)
- c** The base of the veins which enter the atria contract during atrial systole. How does this affect blood flow? (1)
- d** The table below shows human blood pressure in different situations.

Part of the body	Blood pressure in kPa	
	Standing up	Lying down
head	9.1	13.3
heart	13.4	13.4
feet	27.1	13.2

- i** Why is the blood pressure in the head and feet of a person who is standing up different from a person who is lying down? (2)
- ii** Why are the blood pressures in the head and feet of a person who is lying down lower than that in the heart? (2)
- iii** Red blood cells (erythrocytes) contain enzymes and hemoglobin. Why is it more efficient to have these substances enclosed inside a cell membrane? (2)
- 3 a** The number of deaths from HIV/AIDS in developed countries has reduced as antiviral drugs have been developed. Why has a similar reduction in deaths not occurred in sub-Saharan Africa? (2)
- b** HIV infection causes the gradual but progressive loss of T-cells. Why does this lead to an increase in the number of other infections in AIDS patients? (2)
- c** Explain why a course of antibiotics should always be finished completely, even if the symptoms of the disease have disappeared. (4)

- 4 The table shows the percentage composition of inspired, expired and alveolar air.

Gas	Inspired air	Expired air	Alveolar air
oxygen	20.6	14.9	13.5
carbon dioxide	0.04	3.9	5.2
water vapour	1.4	6.4	6.4
nitrogen	78.0	74.8	74.9

- a Explain the differences between the percentages of oxygen in inspired, expired and alveolar air. (3)
- b Explain why the percentage of water vapour is different in inspired and expired air. (2)
- c Suggest one other difference between inspired and expired air and give a reason for your suggestion. (2)

- 5 a Draw a flow diagram to show the events that follow the arrival of a nerve impulse at a synapse. (5)

- b Consider the information in this table:

Neuron	Myelinated?	Diameter / μm	Speed of transmission of impulse / ms^{-1}
mammal axon	N	1.0	3.0
mammal axon	Y	10.0	50.0
frog axon	Y	10.0	30.0
squid axon	N	1000.0	30.0

- i What is the relationship between the speed of impulse and the properties of the different axons? (3)
- ii Give possible explanations for the differences between the axons. (3)
- 6 a Outline the hormonal changes that trigger ovulation. (2)
- b Arrange the following structures in the order in which an ovum would pass them on its journey through the female reproductive system, during a menstrual cycle. (2)
- cervix, oviduct, ovary, uterus, vagina
- c During IVF (*in vitro* fertilisation), FSH and/or LH may be used in a woman's treatment. Outline why these hormones are used. (3)