Name_____ /17

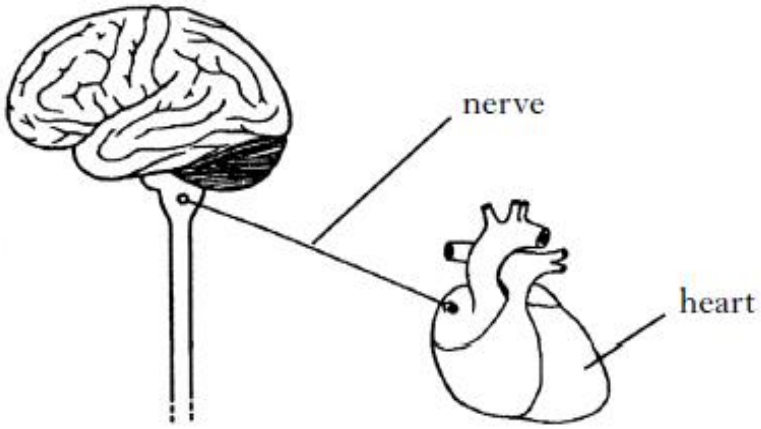
Key are 3- Control and communication homework

1. a) Different parts of the brain have different functions. Draw one line to link each part of the brain with its correct function. (One example has been completed for you).

Part of the brain		*Function*
Cerebrum		control of breathing rate
Medulla	Cerebellum	conscious responses
Cerebellum	cerebellum	co-ordination of movement

1

b) The diagram below shows parts of the central nervous system (CNS) and a neuron to the heart.



Name the two parts, shown in the diagram, which make up the central nervous system (CNS).

_____ and _____

1

2. a) What is the function of a reflex action?

_____

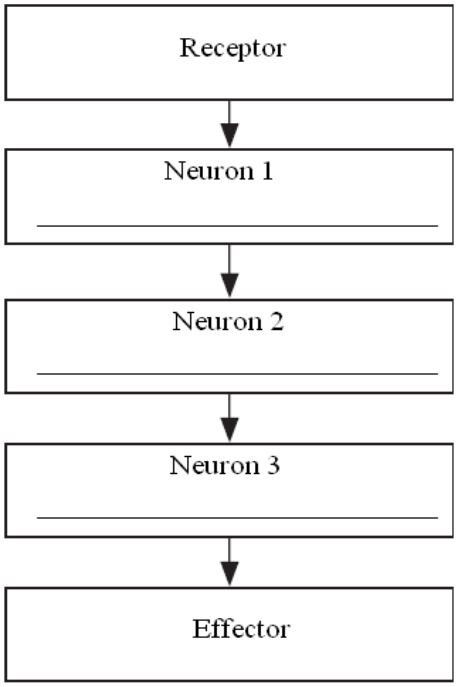
1

b) Complete the table below by placing an R next to the statement if it is a reflex action.

Response	
Swallowing when food touches the back of the throat	
Seeking shade in hot weather	
Jumping at a loud noise	
Running cold water over a burnt hand	

2

c) The diagram below shows the flow of information from a receptor to an effector in a reflex action. Complete the diagram by inserting the names of the missing neurons in the correct order.



2

d) Synapses occur between neurons, what is the function of synapses?

_____

1

3. Reaction time measures the length of time it takes your nervous system to respond to a stimulus. Reaction time can be measured using a computer game. The results of a reaction time test are shown in the table below.

	Reaction time (s)		
Student	*First attempt*	*Second attempt*	*Third attempt*
1	0.35	0.24	0.19
2	0.27	0.20	0.14
3	0.15	0.10	0.08
4	0.27	0.19	0.15

a) What conclusion can be drawn about the effect of practice on reaction time?

_____

1

b) Calculate student 1's average reaction time across the three trials.

_____ seconds

1

4. a) What is a hormone?

1

b) What type of glands produce hormones?

1

c) How do hormones travel from the glands where they are produced to the place where they have an effect?

1

5. A person with Type I diabetes lacks a key hormone involved in controlling blood sugar level.

a) Name this hormone.

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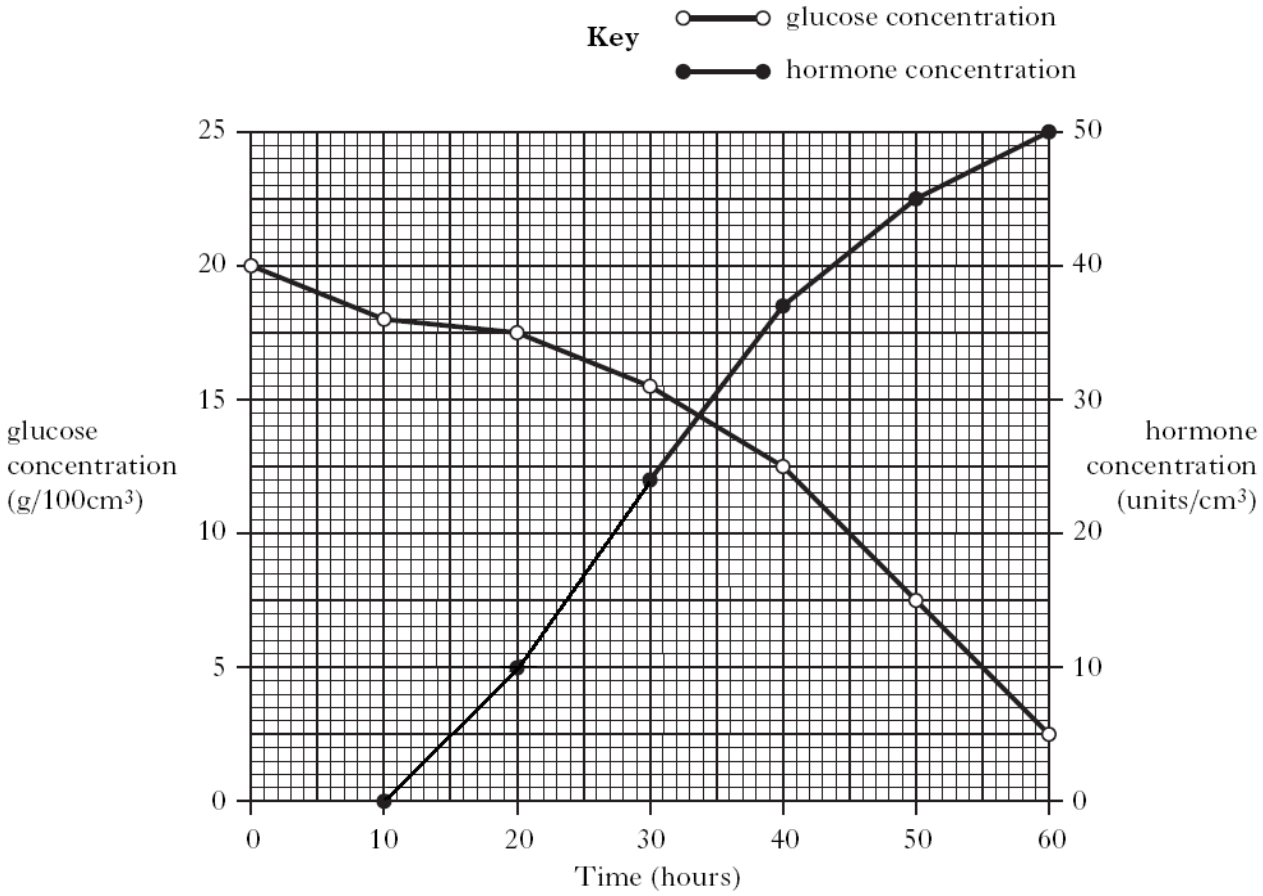
6. A certain species of bacteria have been genetically engineered to produce a hormone when provided with glucose in a liquid culture medium. The graph below shows the change in glucose and hormone concentration in the surrounding liquid over a 60 hour period.



a) How long did it take the bacteria to use up 50% of the glucose?

_____hours

1

b) Calculate the simple whole number ratio of the glucose concentration at 0 hours and 60 hours.

0 hours_____ : _____ 60 hours

1

c) Calculate the percentage increase in hormone concentration between 20 and 50 hours.

_____%

1

d) The bacteria were grown in a flask containing 100 cm^3 of liquid culture. How many units of the hormone were present in the flask after 30 hours?

_____ units

1