

Paper Reference(s) 9BN0/02
Pearson Edexcel Level 3 GCE

Biology A (Salters Nuffield)
Advanced
PAPER 2: Energy, Exercise and Coordination

Friday 14 June 2024 – Morning

Time: 2 hours

Diagram Booklet

THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER AT THE END OF THE EXAMINATION.

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

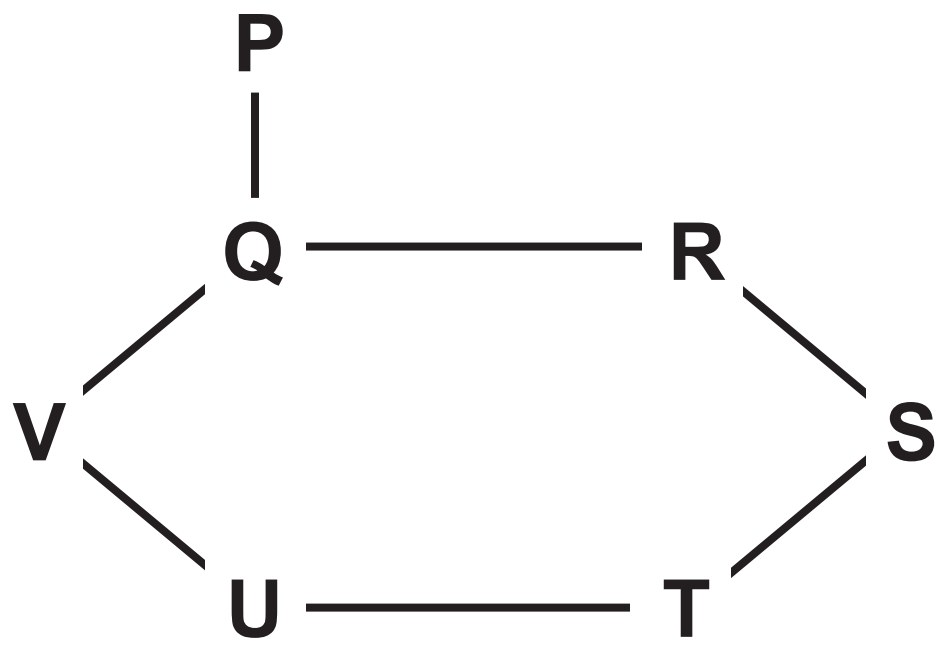
INSTRUCTIONS

There may be spare copies of some diagrams in case you need them.

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Question 1(a)

Question 1(b)(ii)

IMAGE 1

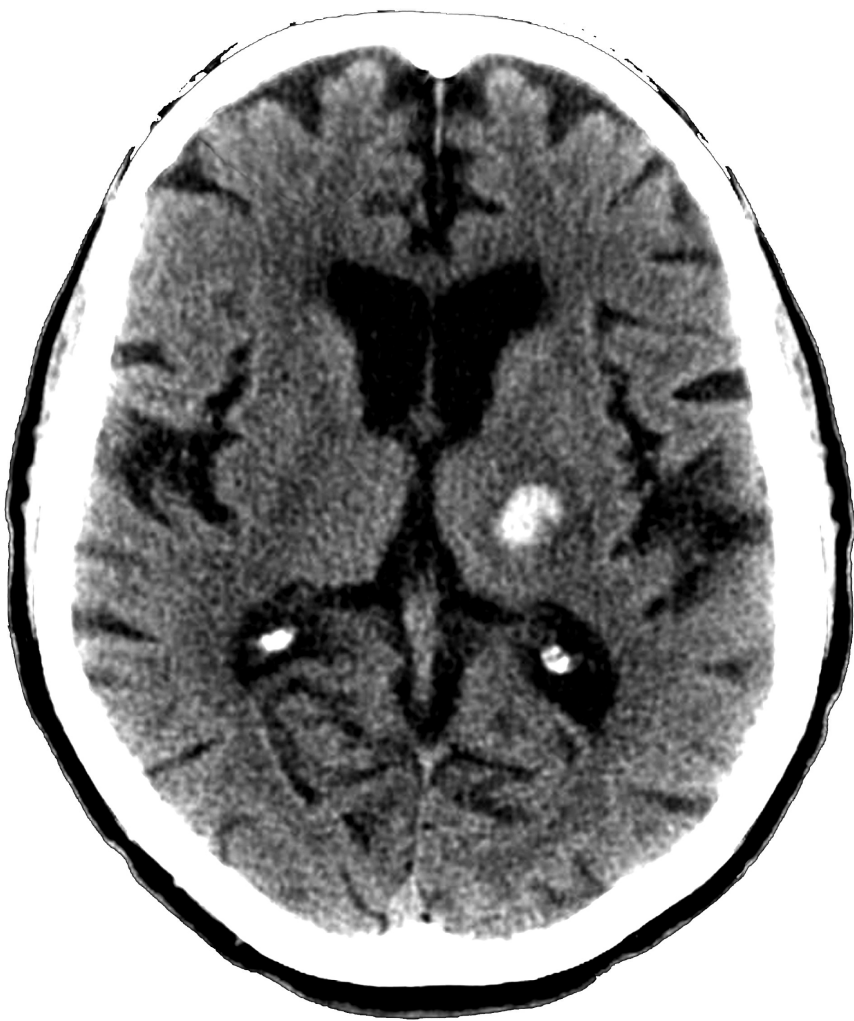
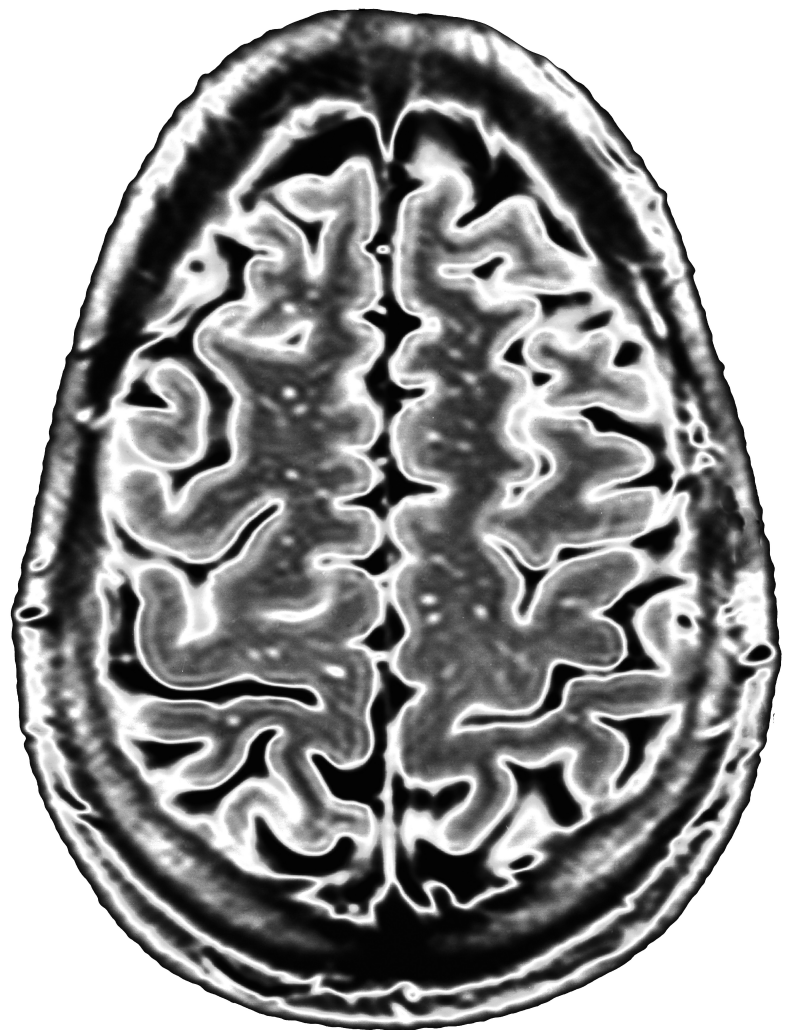
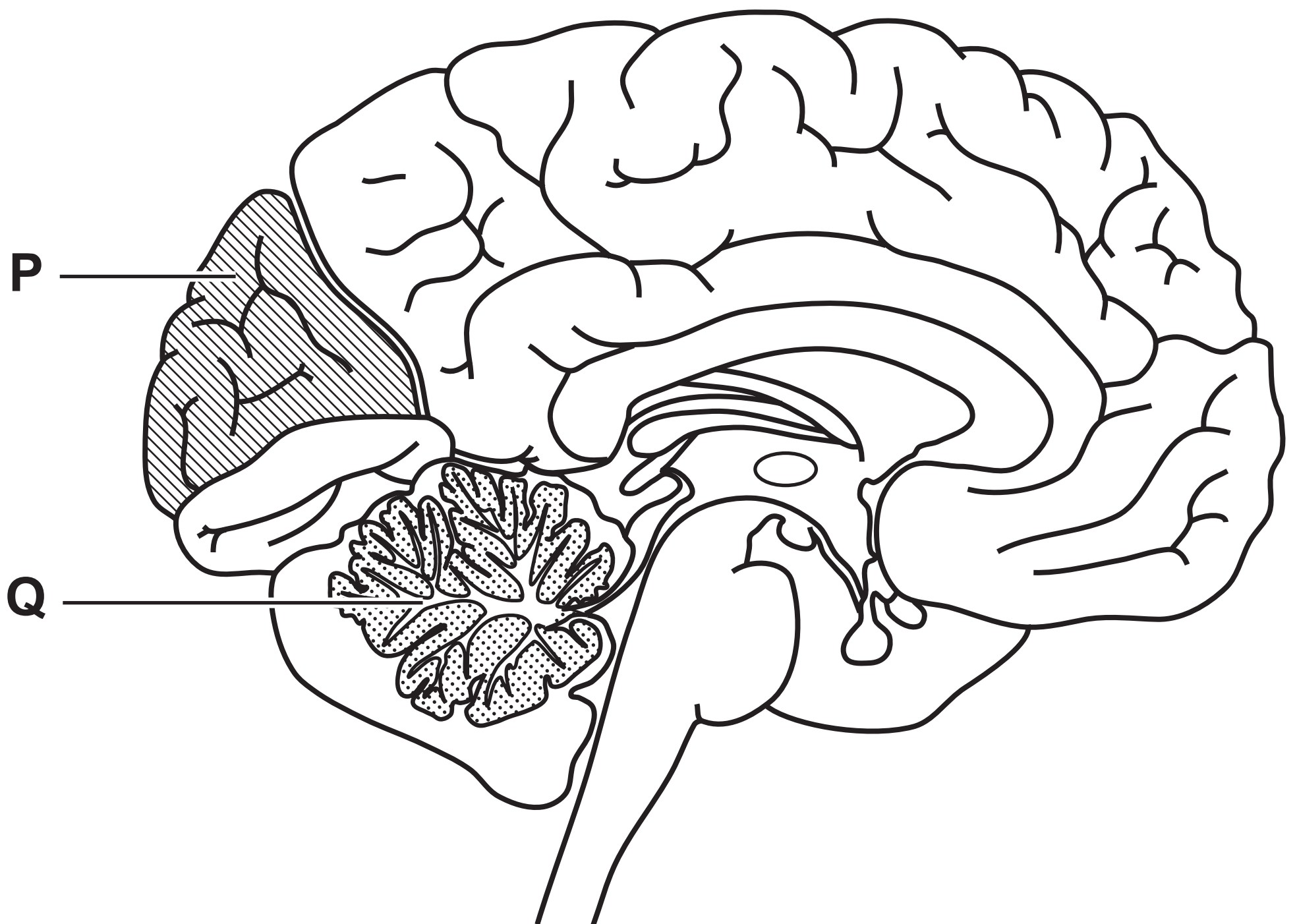


IMAGE 2



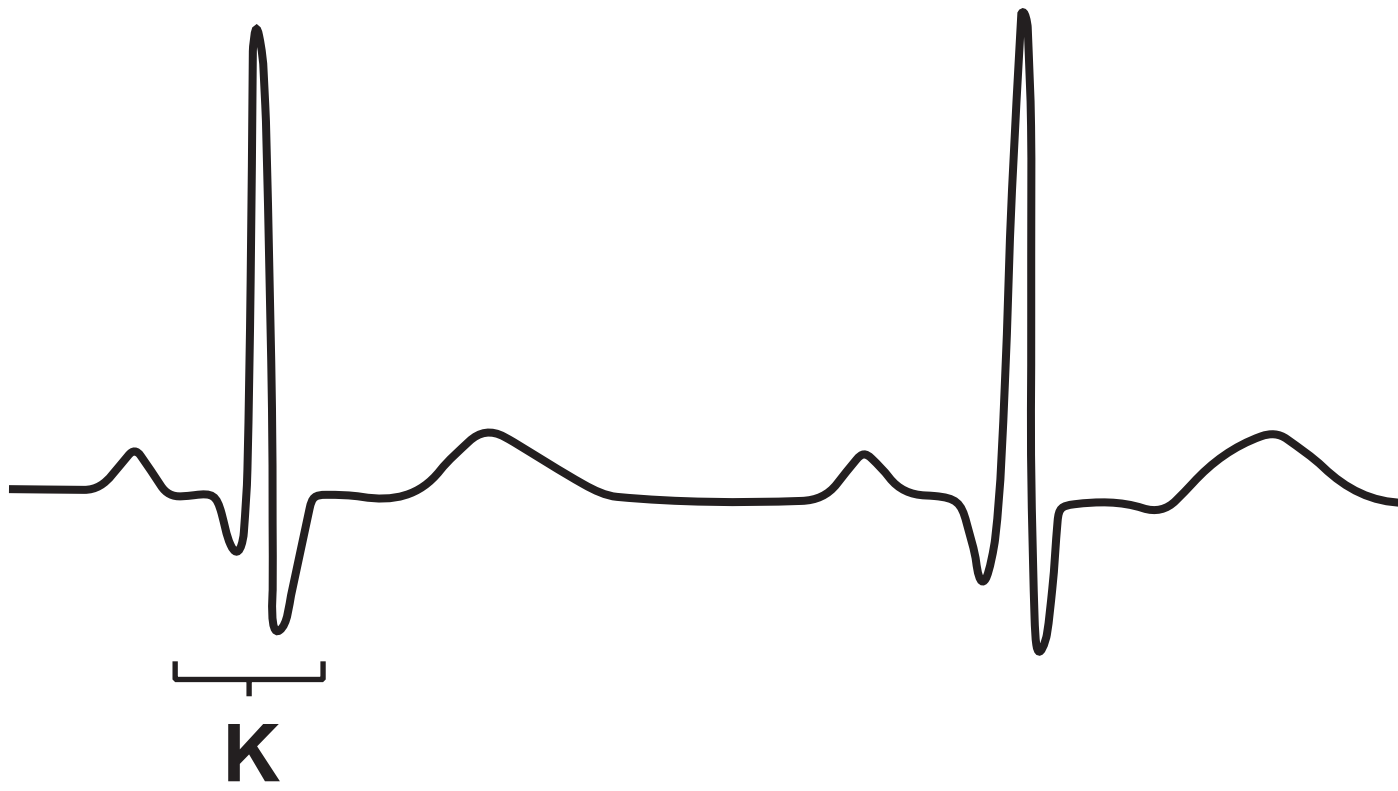
Question 1(c)



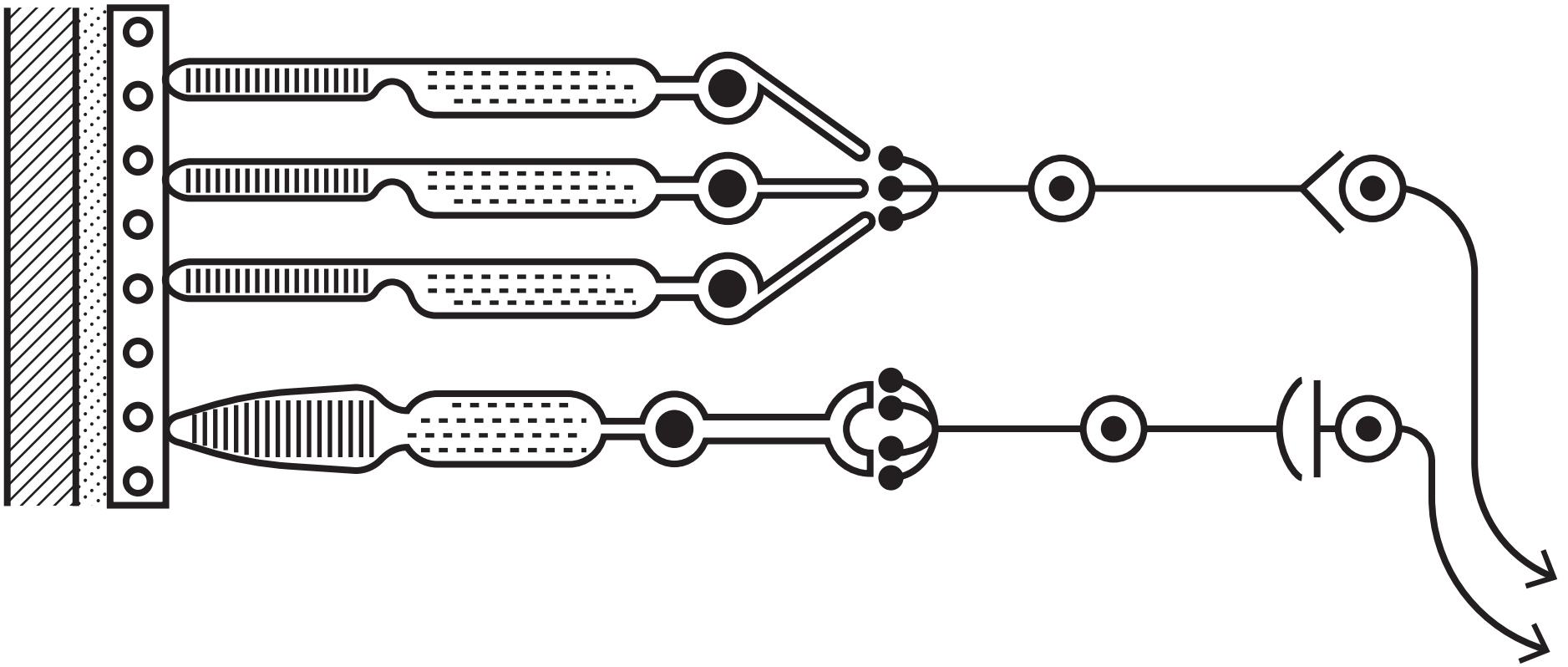
Question 2(a)



Question 3(b)

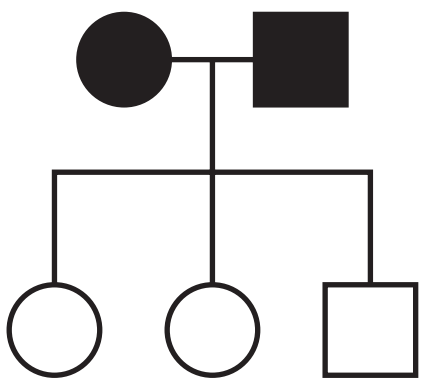
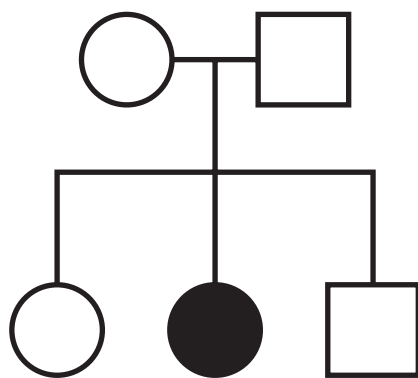
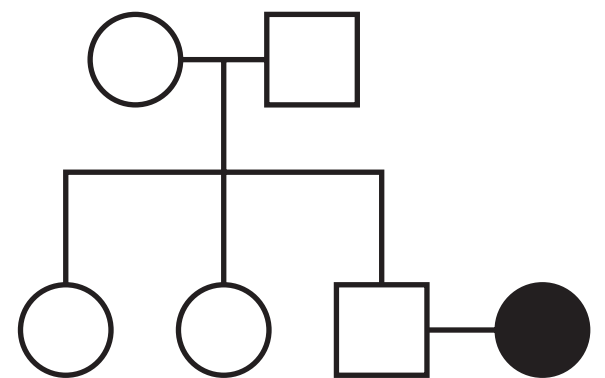


Question 7(a)



Question 7(b)(ii)**KEY**

a shaded shape shows the person has the condition

Pedigree 1**Pedigree 2****Pedigree 3**

Question 7(c)(ii)

Type of colour blindness	Number of females	Number of males
Blue	1	2
Green	10	91
Red	2	25

Question 9(a)(i)

Tissue	Mean concentration of TTX / mass per gram of tissue
Liver	0.046 mg
Muscle	2.000 µg
Gonad (ovary / testis)	0.365 mg
Skin	25.000 µg

Question 9(a)(ii)

Level of toxicity per gram of pufferfish tissue / arbitrary units				
Sex of fish	Liver	Muscle	Gonad	Skin
Female	126	4	398	18
Female	239	6	485	17
Female	112	4	350	16
Male	4	3	3	15
Male	4	3	4	17

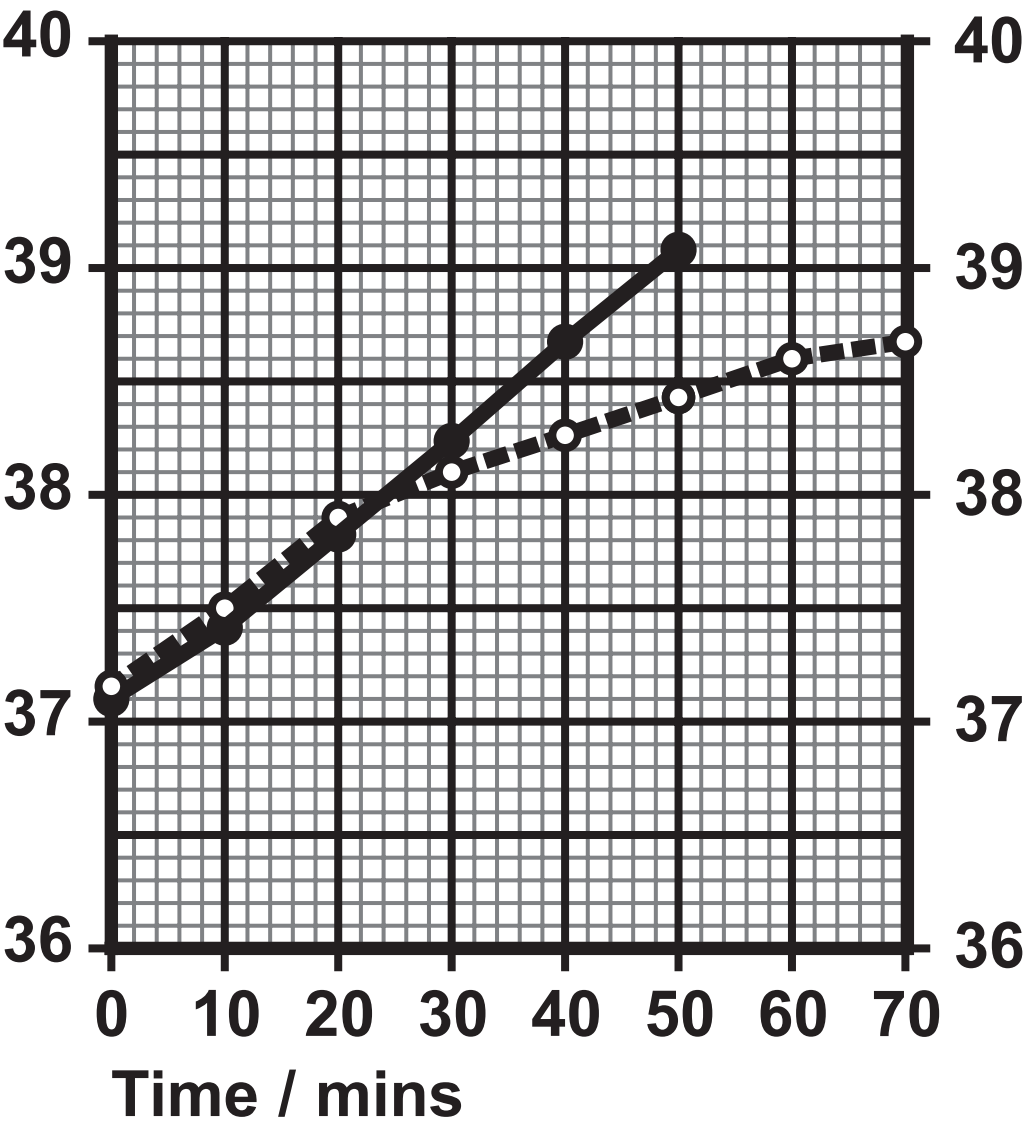
Question 10

Group based on type of sport	Total number of athletes	Number of male athletes	Mean age / years
Endurance (e.g. cycling)	27	12	25
Mix-trained (e.g. hockey)	31	22	27

Question 10(b)(ii)

KEY
—●— exercise and warm-up at **32°C**
- -○- - exercise and warm-up at **16°C**

Mean core body
temperature / °C



	Mean length of exercise / min		Mean maximum power output / a.u.		Mean rate of sweating / kg hour ⁻¹	
	at 16 °C	at 32 °C	at 16 °C	at 32 °C	at 16 °C	at 32 °C
Type of sport						
Endurance	64	47	4·4	3·7	0·9	1·6
Mix-trained	57	40	3·0	2·5	0·9	1·7

Source information

Question 1(b)(ii)

(Source: Zephyr/Science Photo Library)

(Source: Alfred Pasieka/Science Photo Library)

Question 3(b)

(Source: Kateryna Kon/Science Photo Library)