

# **14. Coordination and response**

## **14.3 Hormones**

### **Paper 3 and 4**

#### **Marking Scheme**

**Q1.**

(a)(i)	homeostasis ;				1																	
(a)(ii)	<table><tr><td>name of endocrine gland</td><td>letter from Fig. 5.1</td><td>hormone gland secretes</td><td>one function of hormone</td></tr><tr><td>testes</td><td>G ;</td><td>testosterone ;</td><td>development of secondary sexual characteristics during puberty</td></tr><tr><td>pancreas</td><td>H ;</td><td>insulin</td><td>decreases blood glucose concentration ;</td></tr><tr><td>adrenal (gland) ;</td><td>E</td><td>adrenaline</td><td>increases breathing rate / increases heart rate / increases pupil diameter ;</td></tr></table>				name of endocrine gland	letter from Fig. 5.1	hormone gland secretes	one function of hormone	testes	G ;	testosterone ;	development of secondary sexual characteristics during puberty	pancreas	H ;	insulin	decreases blood glucose concentration ;	adrenal (gland) ;	E	adrenaline	increases breathing rate / increases heart rate / increases pupil diameter ;	6	A (adrenaline) increases blood glucose concentration ;
	name of endocrine gland	letter from Fig. 5.1	hormone gland secretes	one function of hormone																		
	testes	G ;	testosterone ;	development of secondary sexual characteristics during puberty																		
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adrenal (gland) ;	E	adrenaline	increases breathing rate / increases heart rate / increases pupil diameter ;																			
(b)	in the blood ;				1	A in the plasma																
(c)(i)	<table><tr><td>type of control</td><td>speed of action</td><td>duration of effect</td></tr><tr><td>nervous</td><td>fast(er) / AW / instant</td><td>short(er)</td></tr><tr><td>hormonal</td><td>slow(er)</td><td>long(er)</td></tr></table>				type of control	speed of action	duration of effect	nervous	fast(er) / AW / instant	short(er)	hormonal	slow(er)	long(er)	2	one mark per column							
	type of control	speed of action	duration of effect																			
	nervous	fast(er) / AW / instant	short(er)																			
	hormonal	slow(er)	long(er)																			
;;																						
(c)(ii)	sensory / relay / motor, (neurone) ;				1																	

**Q2.**

(b)(i)	change in the genotype		<b>2</b>	<b>R</b> each additional tick
	decreased breathing rate			
	development of lung cancer			
	increased pulse rate	✓ ;		
	widened pupils	✓ ;		
(b)(ii)	adrenal (gland) ;		<b>1</b>	
(b)(iii)	(in,) blood / plasma ;		<b>1</b>	
(c)	testosterone ; oestrogen ;		<b>2</b>	either order
(d)	pancreas ;		<b>1</b>	
(e)	<i>smallest</i>	DNA molecule cell tissue organ	<b>2</b>	1 mark for DNA and organ system in correct place 1 mark for cell, tissue and organ in the correct order.
	<i>largest</i>	organ system		

**Q3.**

(a)	electrical ; neurones ;		<b>2</b>
(b)	hormone	gland	<b>4</b>
	adrenaline ;	adrenal	
	insulin	pancreas ;	
	oestrogen	ovary ;	
	testosterone ;	testes	
(c)	letter X drawn on one of the adrenal glands ;		<b>1</b>
(d)(i)	<i>any two from:</i> breasts grow ; hips widen ; menstruation ;		<b>2</b>
(d)(ii)	growth of hair under armpit / growth of pubic hair ;		<b>1</b>

**Q4.**

(b)(i)	chemical ; gland ; blood / plasma ;	<b>3</b>	
(b)(ii)	increased rate of breathing ; increased, pulse / heart, rate ; widening of pupils ; AVP ;; e.g. more glucose in the blood / more alert	<b>2</b>	
(b)(iii)	<u>adrenal</u> (gland) ;	<b>1</b>	

**Q5.**

(c)	<i>any two from:</i> more rapid ; short-lived effect ; localised / AW ; transmission of (electrical) impulses ; (transmission is through) neurones / nerve cells ;	<b>2</b>	<b>A</b> ora for hormonal control throughout, i.e.: slower (some may have) long-lasting effect widespread / AW hormones are chemicals transmission through the, blood / circulatory, system
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**Q6.**

(a)(i)	chemical substance produced by a (endocrine) gland ; carried by the blood ; alters the activity of specific target organs / AW ;	<b>3</b>	
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**Q7.**

(a)	chemical substance produced by a (endocrine) gland ; carried by the blood ; alters the activity of specific target organs / AW ;	<b>3</b>	
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