

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 1**

(a)	brain;	1
	nerves;	1
(b)	(i) eye;	1
	(ii) ear;	1
	(iii) skin;	1
(c)	tongue;	1
	nose;	1
		<b>TOTAL 7</b>

**QUESTIONSHEET 2**

(a)	(i) 0.7 cm/7 mm;	1
	(ii) 1.3 cm/13 mm;	1
(b)	(i) fingertip;	1
	(ii) leg;	1
(c)	foot;	1
	arm;	1
(d)	1 of: pressure; pain; temperature;	1
		<b>TOTAL 7</b>

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 3**

(a)	(i)	testes;	1
	(ii)	pancreas;	1
	(iii)	ovaries;	1
(b)		in the blood;	1
(c)	(i)	insulin;	1
	(ii)	contains glucose/sugar;	1
			<b>TOTAL 6</b>

**QUESTIONSHEET 4**

(a)		A - optic nerve;	1
		B - retina;	1
		C - iris;	1
		D - pupil;	1
		E - lens;	1
(b)	(i)	retina/B;	1
	(ii)	iris/C;	1
	(iii)	optic nerve/A;	1
	(iv)	suspensory ligament;	1
			<b>TOTAL 9</b>

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 5**

- (a) iris; 1  
 pupil; 1  
 sclerotic; 1
- (b) diagram 1; 1
- (c) decrease in light intensity; 1

**TOTAL 5**

**QUESTIONSHEET 6**

- (a) 6 correct plots;;; (-1 each incorrect plot) 3
- (b) (i) person B; 1  
 (ii) blood glucose level starts at high level/rises to very high level; 1
- (c) glucose level rose above 180 mg per 100cm<sup>3</sup> of blood therefore was excreted by kidney; 1

**TOTAL 6**

**QUESTIONSHEET 7**

Function	Letter of part of eye
Carries nerve impulses from the eye to the brain.	<b>A;</b>
Controls the amount of light entering the eye.	<b>D;</b>
Alters its shape to focus on near or distant objects.	<b>E;</b>
Forms a transparent layer at the front of the eye.	<b>G;</b>
Holds the lens in position.	<b>H;</b>
Contains muscles which contract to focus on near objects	<b>C;</b>
Forms a tough, outer layer to the eye.	<b>I;</b>
Contains light-sensitive cells.	<b>B;</b>
Becomes narrower in bright light.	<b>F;</b>

**TOTAL 9**

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 8**

(a)	(i)	blinking;	1
	(ii)	coughing;	1
	(iii)	narrowing of pupils;	1
	(iv)	production of saliva;	1
(b)		reflex actions;	1
(c)	(i)	shoot/stem;	1
	(ii)	bends/grows towards the light;	1
(d)	(i)	roots grow towards water;	1
	(ii)	roots grow towards gravity;	1
			<b>TOTAL 9</b>

**QUESTIONSHEET 9**

(a)		digestion/absorption;	1
(b)		respiration;	1
(c)	(i)	insulin;	1
	(ii)	pancreas	1
	(iii)	when blood glucose rises above normal;	1
(d)		liver;	1
			<b>TOTAL 6</b>

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 10**

1. Reflex actions are controlled by the brain.
2. The lens focuses light onto the retina.
3. Diabetes is caused by lack of the hormone adrenaline.
4. Hormones are carried in the blood.
5. Receptor cells in the ear help us to maintain balance.
6. Hormonal responses are faster than nervous responses.
7. The release of an egg from a woman's ovaries is controlled by hormones.
8. Light enters the eye through the cornea.
9. Insulin is produced by the ovaries.
10. A symptom of diabetes is the presence of protein in the urine.

**TOTAL 5**

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

***QUESTIONSHEET 11***

(a)	(i)	0.42 seconds;	1
	(ii)	0.1 seconds;	1
(b)		decreased;	1
		then levelled off;	1
		then increased;	1
(c)		light;	1
(d)		reactions would have been slower;	1
			<b>TOTAL 7</b>

***QUESTIONSHEET 12***

(a)	(i)	in the skin;	1
	(ii)	sensory neurone/nerve cell;	1
	(iii)	motor neurone/nerve cell;	1
	(iv)	in the spinal cord/central nervous system;	1
	(v)	rapid withdrawal of hand;	1
	(vi)	by contraction of muscles of hand and arm;	1
			<b>TOTAL 6</b>

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 13**

- (a) A - cornea; 1  
 B - pupil; 1  
 C - retina; 1  
 D - ciliary body/muscles; 1
- TOTAL 4**

**QUESTIONSHEET 14**

- (a) 7 correct plots;;; (-1 mark each incorrect plot) 3  
 (b) 94 mg per 100cm<sup>3</sup> blood; 1  
 (c) increased rate of respiration during exercise; 1  
 glucose used up to release energy; 1  
 (d) stored glycogen; 1  
 converted to glucose; 1  
 by action of glucagon; 1
- TOTAL 9**

**QUESTIONSHEET 15**

(a)

Gland	Name of gland	Hormone produced
A	Pituitary	FSH
B	<b>Pancreas;</b>	<b>Insulin;</b>
C	<b>Adrenal;</b>	adrenalin
D	Ovaries	<b>oestrogen;</b>

4

- (b) 3 of:  
 causes constriction of blood vessels in skin;  
 causes conversion of glycogen to glucose;  
 causes increase in pulse rate/heart rate  
 causes increased blood flow to muscles and heart;  
 reduces blood flow to gut;  
 increases breathing rate;  
 causes increase in blood pressure 3

**TOTAL 7**

**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

**QUESTIONSHEET 16**

(a)	both involve a stimulus;	1
	both involve an organ which responds;	1
	both bring about a response;	1
(b)	3 of: hormones carried in blood/impulses carried by neurones; nervous transmission faster than hormonal transmission; faster response in nervous co-ordination/slower response in hormonal transmission; effect usually longer-lasting in hormonal co-ordination/shorter-lasting in nervous co-ordination; form of transmission is electrical in nervous co-ordination/is chemical in hormonal transmission;	3
		<b>TOTAL 6</b>

**QUESTIONSHEET 17**

(a)	A - receptor;	1
	B - sensory neurone;	1
	C - relay/intermediate/connector/internuncial neurone;	1
	D - motor neurone;	1
(b)	arrow on neurone B towards spinal cord;	1
	arrow on neurone D away from spinal cord;	1
(c)	synapse;	1
(d)	by chemical transmission;	1
(e) (i)	loss of/reduced movement;	1
	(ii) impulses unable to pass to muscle;	1
		<b>TOTAL 10</b>

**QUESTIONSHEET 18**

(a) (i)	detected by pancreas/ islets of Langerhans;	1
	insulin;	1
	glucose;	1
	(ii) 80 – 100 mg;	1
	per 100cm <sup>3</sup> blood;	1
(b)	after a meal;	1
	when frightened/ excited	1
		<b>TOTAL 7</b>



**GCSE BIOLOGY      NERVOUS & HORMONAL CO-ORDINATION**  
**ANSWERS AND MARK SCHEMES**

***QUESTIONSHEET 19***

(a)	pituitary gland;	1
(b)	FSH/follicle-stimulating hormone;	1
(c)	(i) oestrogen/progesterone;	1
	(ii) causes lining of uterus to thicken; and become more vascular/develop increased blood supply	2
(d)	oestrogen;	1
(e)	oestrogen inhibits FSH production; if no oestrogen FSH will stimulate development/growth of eggs;	2
		<b>TOTAL 8</b>

***QUESTIONSHEET 20***

(a)	change in steady state brings about reactions that result in return to the steady state;	1
(b)	(i) rise of;	1
	(ii) osmoreceptors;	1
	(iii) hypothalamus;	1
	(iv) ADH;	1
	(v) water;	1
	(vi) kidney/ nephron;	1
	(vii) falls;	1
	(viii) rises;	1
	(ix) concentrated;	1
	(x) dilute	1
		<b>TOTAL 11</b>

***QUESTIONSHEET 21***

(a)	(i) focuses light onto the retina;	1
	(ii) carries nerve impulses to the brain;	1
	(iii) controls amount of light entering the eye;	1
(b)	(i) A;; (1 mark for B/1 mark for C)	1
	(ii) H;; (1 mark for G/1 mark for F)	1
		<b>TOTAL 5</b>