

**GCSE Biology**  
**Double Award Higher Level**  
**Module B4: Topic 5**  
**Response and Regulation**  
**Mark Scheme**

1. B1 S2014 (F) (Q7)

- |                           |      |   |            |
|---------------------------|------|---|------------|
| (a)                       | (i)  | Midday meal;<br>smallest/ lowest {dose/ amount} of insulin (injected);<br>NOT lowest level of glucose/ sugar/ carbohydrate in the meal  | 2          |
|                           | (ii) | She <u>underestimated</u> the amount of glucose/sugar/carbohydrate<br>in the meal/more glucose than she {thought/estimated/<br>calculated} there would be;<br>{Injected/dose/gave} <u>too</u> little insulin; | 2          |
| (b)                       |      | {Converts/ changes} glucose to glycogen (correct spelling);<br>Stored/in the liver;<br>NOT insulin stores glucose as glycogen<br>2 <sup>nd</sup> mark only credited if reference to glycogen                  | 2          |
| <b>Question 7/2 Total</b> |      |   | <b>[6]</b> |

2. B3 S2014 (F) (Q3)

(a) **Either order** 2  
 Brain;  
 Spinal cord; NOT spine

(b) (i) Automatic/ involuntary/ without thought; 1  
 NOT choose to do it/ protective

(ii) 2

Name	Purpose
Blink;	protection of eye;
Pupil diameter change;	Regulating/admitting (appropriate level) of light to the eye;
Withdrawal/ pulling away (in context);	prevents damage/ harm to body part;
Sneezing;	Expel/ remove substances from nose

NOT cough/ choke

**Question 3 Total** **[5]**

3. (Q3) B1 W2012 (H)

(a) (i) increased (allow slower) reaction time/impaired judgement/ 1  
 lose concentration/ adverse effect on nervous system  
 NOT car crash/ reduces reaction time/ slows nerve impulses

(ii) effect starts even at low alcohol level 1  
 NOT stops any chance of alcohol affecting the driver/ some  
 People are more affected than others

(b) dependency idea/ craves/ hard to give up/ can't live without 2  
 it/ keep wanting more NOT hooked  
 withdrawal symptoms idea/ cold turkey

**Total for the Question** **4**

4. B1 S2013 (H) (Q9)

- (a) Negative feedback; NOT homeostasis 1
- (b) (i) Insulin; 1
- (ii) Glucagon; correct spelling 1
- (c) Liver; 1
- (d) (i) Use Benedicts; 2
- Boil/ heat at 80°C or above/ heat strongly;  
 NOT heat unqualified/ warm/ hot  
 OR  
 Use clinistix/ urinalysis strips/ uristix/ multistix ;  
 Dip (clinistix) into sample;

(ii) 2

Reagent	Present	Absent
Benedicts	brown/ orange/ reddish brown/ brick red/ brownish red/ green; NOT red unqualified/ yellow	blue/ light blue/ clear blue; NOT dark blue/ purple
Clinistix/ multistix	Dark blue/ purple/ dark purple;	pink/ red;
Uristix	Brown;	Green;

**Question 9 total [8]**

5. B1W2013 (F/H) (Q10)

- (a) Heat being transported around the body via the blood; [1]
- (b) Fan increasing the rate of evaporation of sweat; [2]
- Therefore increased rate of cooling/ more heat removed from  
 the {blood/ body};

**Question Total [3]**

6. B1 S2012 (F) (Q4)

(a)	(i)	26, 48;	1
	(ii)	Plots 4 plots all correct (-1 per error) (+/- ½ small square);; Line quality;	2 1
(b)	(i)	30 min (from graph) (units must be present);	1
	(ii)	Rise <u>and</u> then fall;	1
(c)	(i)	Insulin;	1
	(ii)	Diabetes/ diabetic;	1
<b>Question total</b>			<b>[8]</b>

7. B1 S2012 (F/H) (Q3)

(a) Erector muscle; 1

(b) Indicative content:

Sweat gland

Removes {sweat / water and salts} from blood/ produces

sweat

Sweat travels up sweat duct

Through sweat pore onto surface of skin

{ Water in sweat evaporates / accept sweat evaporates  
Removing heat

The order of these two statements can be reversed as shown

below:

{ Heat is removed from the body to  
Evaporate the water in sweat / accept to evaporate the  
sweat