

QUESTIONSHEET 1

- (a) 5 correct plots with bars labelled;;; (-1 each incorrect plot) **3**
- (b) 200 grams of beans contains $2 \times 3.6 = 7.2$ grams of fibre.
 $\frac{2}{3}$ s of 7.2 = 4.8 grams;;
 (correct answer scores 2. Allow 1 mark for correct working but wrong answer) **2**
- (c) helps movement of food through intestines; **1**
- (d) constipation;
 increased risk of bowel cancer; **2**

TOTAL 8**QUESTIONSHEET 2**

Part of digestive system	Function
Teeth	1
Gall bladder	4;
Stomach	5;
Liver	3;
Small intestine	6;
Large intestine	2;

TOTAL 5**QUESTIONSHEET 3**

- (a) (i) 40°C; **1**
- (ii) 60°C; **1**
- (b) 25°C;
 50°C; **2**
- (c) carbohydrases; **1**
- (d) sugar/maltose/glucose; **1**

TOTAL 6

QUESTIONSHEET 4

(a)	oesophagus;	1
(b)	by muscular action;	1
(c)	(i) carbohydrases;	1
	(ii) proteases;	1
(d)	Q;	1
(e)	(i) small intestine;	1
	(ii) absorb digested food;	1
		TOTAL 7

QUESTIONSHEET 5

(a)	(i) 78°C;	1
	(ii) 21°C;	1
(b)	Any 2 of: some heat lost to atmosphere; some heat absorbed by glass; not all food burns completely;	2
(c)	4.2 x 20 x 78 =; 6552 J; (allow 1 mark for correct working but incorrect answer)	2
(d)	higher temperature rise, the greater the energy value;	1
(e)	fat/oil;	1
(f)	ash/carbon;	1
		TOTAL 9

QUESTIONSHEET 6

(a)	(i)	making haemoglobin;	
	(ii)	vitamin D;	
	(iii)	rickets/soft bones and teeth;	
	(iv)	keeps skin and blood vessels healthy;	4
(b)		lack of red blood cells means less oxygen is carried to muscles; not enough respiration to release energy;	2
(c)	(i)	provide energy;	1
	(ii)	provide energy/make cell membranes;	1
	(iii)	growth/replacing cells/repair of tissues;	1
(d)		forms deposits in blood vessels/blocks blood vessels/may lead to obesity; increases risk of heart disease;	2
			TOTAL 12

QUESTIONSHEET 7

(a)		A = stomach; B = liver; C = duodenum/small intestine; D = colon/large intestine/rectum;	4
(b)	(i)	liver/B;	1
	(ii)	large intestine/colon/rectum/D;	1
	(iii)	stomach/A;	1
	(iv)	small intestine/ileum/C/pancreas;	1
			TOTAL 8

QUESTIONSHEET 8

(a)	hepatic portal vein;	1
(b)	(i) changed/built up/polymerised to glycogen; stored (as glycogen);	2
	(ii) insulin;	1
	(iii) pancreas/islets of langerhans;	1
(c)	(i) urea;	1
	(ii) hepatic vein; vena cava;	2
		TOTAL 8

QUESTIONSHEET 9

(a)	converts/breaks down large/insoluble molecules to small/soluble molecules; (small molecules) can pass into the blood stream/be absorbed;	2
(b)	(i) 1 proteins; 2 lipase; 3 fatty acids and glycerol;	3
	(ii) protease/trypsin/amylase (carbohydrate)/lipase;	1
(c)	suitable temperature/37°C; secretes hydrochloric acid to give correct pH for enzyme action;	2
		TOTAL 8

QUESTIONSHEET 10

- (a) allows small molecules to pass through it, but not large molecules; **1**
- (b) (i) food; **1**
- (ii) blood; **1**
- (c) (i)
- | Time of test | Liquid A | | Liquid B | |
|--------------|-------------|--------------|-------------|--------------|
| | Starch test | Glucose test | Starch test | Glucose test |
| At start | √ | √; | X; | √ |
| After 1 hour | √ | √; | X; | √ |
- 4**
- (ii) starch is a larger molecule than glucose/glucose is smaller molecule than starch; **1**
- (d) (i) add iodine solution/iodine in potassium iodide to sample;
purple/dark blue/blue-black colour indicates starch is present; **2**
- (ii) add Benedict's reagent to sample;
heat in water bath;
green/yellow/orange/dark red colour indicates glucose is present; **3**

TOTAL 13**QUESTIONSHEET 11**

Feature	Saliva	Gastric juice	Pancreatic juice
contains a protein-digesting enzyme.	X	√;	√;
contains lipase.	X	X	√;
helps to kill bacteria taken in with food	X	√;	X
contains amylase	√;	X	√;
passes down the oesophagus	√;	X	X
is produced by the stomach	X	√;	X

(1 mark per √ correct)

TOTAL 8

QUESTIONSHEET 12

(a)	(i)	small intestine/ileum;	1
	(ii)	large intestine/colon;	1
(b)	(i)	Any two of: large surface area/ thin surface/thin epithelium/epithelium one cell thick; good blood supply;;	2
	(ii)	diffusion/active transport;	1
(c)		water absorbed; forms faeces; passed out of anus;	3
			TOTAL 8

QUESTIONSHEET 13

(a)	(i)	as temperature rises the enzyme works faster; reaches optimum/maximum at 40 °C; above 40 °C it slows down; at or above 60 °C enzyme action stops;	4
	(ii)	40 °C;	1
(b)	(i)	the enzyme is from the stomach so it works better in acid/low pH/needs acid to work;	1
	(ii)	to allow the mixture/enzyme to get the temperature being tested/equilibrium;	1
(c)	(i)	protein in egg white is insoluble; digested to amino acids/polypeptides; polypeptides/amino acids dissolve in the mixture/are soluble;	3
	(ii)	because the enzyme was denatured/destroyed (by heat); (not 'killed')	1
			TOTAL 11

QUESTIONSHEET 14

- (a) (i) Any two of:
pasta, potatoes, brown rice; 1
- (ii) high fibre content; 1
- (b) (i) potatoes;
non-cereal food containing fibre and high carbohydrate content; 2
- (ii) loss of villi reduces surface area of small intestine;
unable to absorb enough food; 2
- (c) *mouth*: amylase/carbohydrase in saliva;
breaks down starch to sugars/maltose;
- stomach*: protease/pepsin from stomach wall;
breaks down protein to amino acids/polypeptides; 4
- TOTAL 10**

QUESTIONSHEET 15

- (a) $\frac{10 - 8}{10} \times 100$;
= -(minus);
20%; (allow 1 mark for correct working if answer incorrect) 3
- (b) menstruation/monthly cycle in females;
iron needed to replace lost red blood cells/haemoglobin; 2
- (c) (i) calcium requirement lower/200 mgs lower in 12 - 16 year olds/higher in 5 - 11 years olds; 1
- (ii) more calcium needed as permanent teeth develop in 5 - 11 year olds/more bone growth
in 5 - 11 year olds; 1
- (d) (i) rapid growth during adolescence, therefore more protein needed; 1
- (ii) (greater protein) needed in boys aged 12 - 16 due to greater muscle growth; 1
- (e) faster rate of growth at age 5 - 11/growth slower at age 16;
most energy is needed for growth rather than muscle activity; 2
- TOTAL 11**

QUESTIONSHEET 16

(a)	(i)	1;	1
	(ii)	2;	1
(b)	(i)	1;	1
	(ii)	stomach secretes hydrochloric acid;	1
(c)	(i)	3;	1
	(ii)	human digestive system does not provide such strongly alkaline conditions/ such strongly alkaline conditions would damage body;	1
(d)		activity increases as pH increases/activity low in mildly acid conditions; optimum pH is 8/maximum activity at pH 8/works best at pH 8; above pH 8 activity decreases no activity above pH 10;	4
			TOTAL 10

QUESTIONSHEET 17

(a)	(i)	5;	1
	(ii)	1;	1
(b)		to ensure a fair test/same conditions for enzyme action;	1
(c)		as control/to show that indicator does not change colour unless enzyme is present;	1
(d)	(i)	lipase;	1
	(ii)	digestion of fat produces fatty acids; fatty acids change mixture from alkaline to acid, causing change in colour of indicator;	2
	(iii)	bile salts emulsify fats/change fat physically into small droplets; this increases surface area of fat; enzyme reaction is speeded up, therefore indicator changes colour more quickly;	3
			TOTAL 11

QUESTIONSHEET 18

- (a) 74 x 1.2g =;
88.8 grams; (correct answer scores 2. Allow 1 mark for correct working but incorrect answer) 2
- (b) (i) $\frac{2}{3}$ of 9180 =;
6120 kJ; (correct answer scores 2. Allow 1 mark for correct working but incorrect answer) 2
- (ii) 1 gram of carbohydrate = 17 kJ. 6120/17 =;
360 grams of carbohydrate; 2
(correct answer scores 2. Allow 1 mark for correct working but incorrect answer)
- (c) extra energy needed to maintain body temperature in cold conditions; 1
- TOTAL 7**

QUESTIONSHEET 19

- (a) use waterbath/beaker of water heated by bunsen; 1
- (b) (i) starch present in sample B; 1
- (ii) no carbohydrase/amylase enzyme in mixture of enzymes; 1
- (c) blue colour when sample A tested with Biuret solution indicates no protein present;
protein must have been digested by protein-digesting enzyme; 2
- (d) change in pH from 7 to 5.5 was caused by production of fatty acids from the digestion of fat;
the digestion of fat was caused by presence of a lipase in the mixture of enzymes; 2
- TOTAL 7**

QUESTIONSHEET 20

- (a) (i) no starch present; 1
- (ii) starch in yellow areas is digested/broken down;
by action of amylase; 2
- (b) amylase most active at pH 8.0;
therefore most starch digested; 2
- (c) boiling denatures/destroys enzyme;
therefore starch not digested; 2
- (d) no activity at pH 6.0;
little activity at pH 6.5;
activity increases in alkaline conditions/pH 7.5 to 8.0; 3
- TOTAL 10**