

Mark Scheme

Q1.

Question number	Answer	Notes	Marks
(a) (i)	1 = humerus; 2 = radius; 3 = ulna; 4 = fingers/phalanges;		4
(ii)	circle at the elbow to include all three bones;	accept a circle around relevant bones in the fingers	1
(iii)	<ul style="list-style-type: none"> ball and socket; gliding/sliding; 	reject named examples	2
(b)	<ul style="list-style-type: none"> assists/allows uptake of calcium (salts from gut); (calcium) needed for bone growth; hard bone/compact bone; 		3
Total 10 marks			

Q2.

Question number	Answer	Notes	Marks
(a) (i)	aerobic respiration (1)		1
(ii)	<ul style="list-style-type: none"> shorter (1) fatter/wider/thicker (1) 		2
(iii)	<ul style="list-style-type: none"> shortening causes tension/pull (1) tendon inelastic (1) pulls on radius/bone (1) 		3
(b)	<ul style="list-style-type: none"> ball and socket indicated labelled bone (1) capsule/ligament labelled (1) cartilage labelled (1) synovial fluid labelled (1) synovial membrane labelled (1) overall appearance of diagram (1) 		6

Q3.

Question number	Answer	Additional guidance	Mark
(a)(i)	Process: $(30 \div 100) \times 1.7 \text{ million}$ (1) $= 510\,000$ (1)	allow 2 marks for correct final answer	2

Question number	Answer	Mark
(a)(ii)	Any two possible suggestions from the following: <ul style="list-style-type: none"> different causes/named example/not all because of osteoporosis (1) different diet in UK (1) effective preventative measures in UK (1) 	2


Question number	Answer	Mark
(b)	Any two linked explanations from the following: <ul style="list-style-type: none"> • increase intake of calcium/phosphate (1) as this forms part of compact bone (1) • vitamin D supplement (1) helps uptake of calcium salts (1) • increase exercise (1) prevents bones becoming weaker (1) 	4

Question number	Answer	Mark
(c)(i)	A description that makes reference to the following two points: <ul style="list-style-type: none"> • bone structure/mass becomes less (1) • bone strength reduced (1) 	2

Question number	Answer	Mark
(c)(ii)	A suggestion that makes reference to any two of the following points: <ul style="list-style-type: none"> • bones internal/cannot be seen (1) • therefore only become aware when bone breaks (1) • unlikely to be noticed/diagnosed until a fracture occurs (1) 	2

Q4.

Question number	Answer	A	Marks
(a) (i)	X cartilage; Y femur; Z knee cap;		1 1 1
(ii)	B ligaments hold the leg bones together A is incorrect as ligaments do not attach muscles to bones C is incorrect as ligaments do not move leg bones D is incorrect as ligaments do not stop the leg bones rubbing together		1
(iii)	hinge/synovial (joint)		1

(b)	In the following order only oxygen; carbon dioxide;		1 1
(c)	biceps contracted/fatter; triceps relaxed/thinner;		1 1
			
Total question = 9 marks			

Q5.

Question number	Answer	Notes	Marks
(a) (i)	line labelled X to mouth;		1mark
(ii)	line labelled Y to stomach;		1mark
(iii)	line labelled Z to pancreas;		1mark
(b)	any 4 of <ul style="list-style-type: none"> reduced surface area; so unable to absorb calcium; required for bones/compact bone; calcium passes from bone; causes them to weaken/soften/lose density; 		4marks
(c)	<ul style="list-style-type: none"> large intestine absorbs water; not enough absorbed; 		2marks
Total 9 marks			

Q6.

Question number	Answer	Notes	Marks
(a)	<ul style="list-style-type: none"> • where two bones; • come together/meet; 		2
(b) (i)	<ul style="list-style-type: none"> • humerus; • ulna; 		2
(ii)	<ul style="list-style-type: none"> • covers end (of ball) of humerus/L; • covers depression in ulna/M; 		2
(c)	<ul style="list-style-type: none"> • movement not smooth/bones grind/rub together/less shock absorption/increased friction; • painful; 		2
(d)	any four from <ul style="list-style-type: none"> • attached to end of muscle/attach muscle to bone; • inelastic/do not stretch; • muscle contracts; • pulls tendon; • causing M/ulna/bone to move; 		4 Total 12