01. 0610_m19_MS_42 Q: 1

	Answer	Mark	Partial Marks
(a)	removal from the, body / organism / cell ; toxic substances ; waste product(s), of metabolism / respiration ; (named) substances in excess (of requirements) ;	3	
(b)	**A** – medulla ; **B** – cortex ; **C** – renal vein ;	3	
(c)(i)	9900 (%) ;;	2	
(c)(ii)	concentration of salts is the same in the blood in the renal artery **and** the fluid in the kidney tubule ; concentration of salts, increases between the blood in the renal artery and the fluid in the kidney tubule and the urine / (approximately) doubles ;	2	
(c)(iii)	proteins are (too) big (to be filtered) / AW ;	1	
(c)(iv)	(all) glucose is reabsorbed ;	1	
(d)	*idea of convenience:* no need to visit hospital / time not taken up with dialysis ; no need for a restricted diet ; *idea of* improved quality of life / AW ; cost effective in the long term ; ref. to having a working kidney / long-lasting / ref. to cure / one-time treatment ;	3	

	Answer	Mark	Partial Marks
(a)	remove from the, body / organism / cell ; waste / poisons / toxins / harmful substances ; (waste products) of metabolism / respiration ; (named) substances in excess ;	2	
(b)	the outline shape of a kidney, with one tube attached, drawn ; tube labelled ureter, outer portion of kidney labelled as cortex, medulla labelled inside the kidney ;	2	
(c)(i)	ref. to capillaries ; (capillaries are) one cell thick / thin / AW ; *idea of* fenestrations / pores ; network (of capillaries) / tangled / knotted / tightly packed tubes ; description of shape e.g. round / ball-shaped ;	2	
(c)(ii)	provides blood at high pressure ; provides a large surface area ; (ultra)filtration ; *ref. to* small *or* soluble molecules / water / glucose / urea / salts, (are filtered) out ; *ref.* to (named) large OR insoluble (molecules) / blood cells, stay in the glomerulus ; AVP ;	2	
(d)(i)	(by) active transport ; from a low to a high concentration / AW ; (through cell) membrane ; ref. to proteins (pumps / channels / AW) ; uses energy ; from respiration ;	4	
(d)(ii)	*human* 575 □ 320 =1.797 or 1.8 ; *mouse* 0.551 □ 0.31 =1.778 or 1.8 ; g (salt) per day per g (kidney) ; similar or the same, results / rates / ratios, so hypothesis is supported ;	4	
(d)(iii)	osmosis ;	1	
(d)(iv)	glucose / AVP ;	1	

03. 0610_w17_MS_42 Q: 1

	Answer	Mark	Partial Marks
(a)(i)	carbon dioxide / CO_2 / water / H_2O (vapour) ; (respiring / all) cells / tissues / mitochondria / named tissue(s) / named organ(s) ;	2	**R** alveoli / lungs
(a)(ii)	urea ; toxic / poisonous / harmful / waste / AW ;	2	**A** ammonia / ammonium / creatin(ine) / uric acid / urine
(b)(i)	glomerulus ;	1	**A** ball / knot / AW, of capillaries **A** Bowman's capsule / basement membrane
(b)(ii)	red (blood) cells / erythrocytes ; phagocytes ; lymphocytes ; named plasma proteins ;; platelets ;	2	 e.g. albumen / fibrinogen / insulin / glucagon / thrombin / antibodies / clotting factors
(c)(i)	microvilli – **E** ; nucleus – **A** ; mitochondrion – **C** ;	3	
(c)(ii)	stores / contains, chromosomes / genes / alleles / genetic information / DNA ; controls the (activity / reactions of the) cell ; controls how cells, develop / divide / reproduce / grow ; *idea that it* stores instructions for, making proteins / protein synthesis / making RNA ; AVP ;	1	**I** 'controls movement of cell' **I** giving instructions unqualified **A** 'codes for protein' e.g. making ribosome(s)
(c)(iii)	small intestine / duodenum / ileum ;	1	**A** villi / jejunum / tongue / liver / egg cell / white blood cells / ear / nose
(c)(iv)	(microvilli give a) large surface area ; for diffusion / described as movement down a concentration gradient ; lots of, mitochondria / **C** ; **C** / mitochondria, are the site of (aerobic) respiration ; **C** / mitochondria, provide energy / make ATP ; energy / ATP, is needed for active transport ; (active transport needed for) movement against concentration gradient ; ref to carrier proteins (in cell membrane) ; AVP ;	4	mp2 is linked to mp1 **R** 'produces energy' e.g. substances pass to blood to maintain concentration gradient