

Multiple Choice Answers

Q34: D

Q35: C

Multiple Choice Answers

Q36: A

Q37: C

Multiple Choice Answers

Q35: A

6(a)(i)	gene ;
6(a)(ii)	transcribed / template, strand ;
6(a)(iii)	ribosome ; I 70S / 80S
6(a)(iv)	weakens / AW, bacterial <u>cell wall</u> ; cell cannot maintain turgor / AW ; leads to (osmotic) lysis / AW ;
6(b)(i)	flattened cells / AW ; short diffusion distance, (for gas exchange / described) ;
6(b)(ii)	stretch / expand, on inhalation, to prevent alveoli bursting / rupturing / overstretching ; recoil on exhalation to help expel air from the lungs ; <i>if no marks gained, allow one mark for stretch and recoil</i>

2(a)(i)	<i>any two from</i> each polypeptide is a (left-handed), helix / helical shape ; R alpha helix (three) polypeptides are tightly, coiled / wound (around each other) / AW ; (three polypeptides form a) <u>triple helix</u> ; I bonding
2(a)(ii)	<i>any three from</i> <i>collagen molecules arranged</i> 1 in parallel ; 2 staggered / ends are not aligned / AW ; <i>molecules held together by – max 2</i> 3 covalent, bonds / links ; I hydrogen bonds R if part of a list that includes other bonds in proteins 4 between R-groups of amino acids on different molecules ; A side chains 5 AVP ; e.g. covalent bonds between lysine / hydroxylysine (residues)
2(b)(i)	provides (high tensile) strength to, help keep trachea open / support trachea ; A provides strength to prevent trachea collapsing allows flexibility for, breathing / change of diameter of trachea / bending of trachea / AW ;
2(b)(ii)	<i>any one from:</i> (inhalation) allow, stretching / expansion, without, rupture / AW ; A prevent overstretching elastic fibres recoil to help, expel air / exhalation / expiration ; R to empty
2(c)(i)	(gly)-pro-met-gly-pro-arg-gly-pro-pro-gly ;

2(c)(ii)	any three from: allow gly for glycine 1 glycine is every third amino acid ; 2 glycine, allows tight folding for the polypeptides / makes it easy for polypeptides to fit closely together / AW ; A compactness A glycine allows the turning points (of the polypeptide) 3 glycine has <u>smallest</u> R-group ; A glycine is the <u>smallest</u> (amino acid) / glycine has H as R-group or side chain 4 NH in glycine can form hydrogen bonds (with carboxyl group on another amino acid residue) 5 (so) allows many hydrogen bonds between polypeptides ; 6 AVP ; ala / pro, also has a small R-group / AW
2(c)(iii)	P deletion of first nucleotide pair changes the, sequence / order, of amino acids (in primary structure) ; I shorter A (GTC CAA TGG GTC CCC GAG GTC CCC CAG GT_) val gln trp val pro glu val pro gln (val) Q substitution in first triplet (GGT to TGT in non-transcribed strand) cys (instead of gly) is first amino acid, <u>and</u> no change to the rest (of, sequence / order, of amino acids) ; A <u>only</u> first amino acid is different

4(a)	bronchus ;
4(b)(i)	alveolus ; A alveolar sac / alveolar duct
4(b)(ii)	<u>smooth muscle</u> (cell) ;
4(b)(iii)	any three from: no cartilage ; A no, cartilage rings / C-shaped cartilage A no, irregular cartilage / cartilage plates few / no, goblet cells ; ora trachea / bronchus, have (more) goblet cells thin layer / patches / areas, of smooth muscle ; ecf from (b)(ii) A idea of quantity of smooth muscle less (than in, trachea / bronchus) thin(ner) wall ; (more) convoluted / wavy, lumen lining ; AW e.g. folded / curvy A lumen lining not smooth less, elastic, tissue / fibres, (than, trachea / bronchus) ; AVP ; e.g. ciliated epithelium not, pseudostratified / layered appearance in context of the trachea / larger bronchi no mucous glands present
4(c)	any two from: allow O₂ for oxygen and CO₂ for carbon dioxide systemic circulation (needed) to bring, oxygen / glucose, <u>and</u> pulmonary circulation brings deoxygenated blood ; <i>idea that</i> lungs are location, of gas exchange (surface) / where absorption of oxygen occurs / where excretion of carbon dioxide occurs or pulmonary circulation for, oxygen uptake / carbon dioxide excretion ; cells need, oxygen / glucose, for (aerobic) respiration / for cell metabolism / AW ; R body cells