IGCSE Biology: **w25 22**

Question 30 (Answer: **D**)

- Every cell has the same genes, so having more genes is not the reason.
- What differs is which genes are *expressed* – switched on.
- Only lymphocytes express the antibody genes, so only they make antibody protein.

Question 31 (Answer: **A**)

- The mRNA carries the copy of the gene from the nucleus.
- tRNA brings the amino acids to the ribosome.
- The ribosome is where those amino acids are joined into a chain in the order the mRNA specifies.

IGCSE Biology: **w25 41**

6(a)	nucleus ;
6(b)	*any one from*: enzymes ; membrane carriers ; receptors for neurotransmitters ; **AVP** ;
6(c)	*any three from*: (mRNA) is a copy of the gene / DNA / base sequence ; gene / DNA, remains in the nucleus ; (mRNA takes instructions) to cytoplasm / ribosome ; mRNA, passes through / attaches to / 'read by', ribosome ; base sequence determines sequence of amino acids (in the protein) ;

IGCSE Biology: **s25 23**

Question 4 (Answer: **C**)

- A–T pairs are held by two hydrogen bonds; C–G pairs by three.
- More bonds take more energy to break.
- So a DNA molecule richer in C–G needs a higher temperature to separate its strands.

IGCSE Biology: **s25 41**

5(a)(i)	**A** - hair / external ears ; **B** – wings / feathers ;
5(a)(ii)	apes and rodents ;
5(a)(iii)	*most similar* – birds ; *least similar* – sharks ;
5(b)	*any four from:* 1 *ref. to* <u>two</u> strands / chains ; 2 <u>double</u> helix ; 3 *ref. to* <u>four</u> bases / A, T, C, G ; 4 A pairs with T **and** C pairs with G ; 5 *ref. to* <u>bonds</u> between bases ;
5(c)	*any three from:* (base sequences of DNA / mRNA) determine sequence of amino acids ; amino acids form proteins / protein synthesis / production of proteins ; named example of protein ; *ref. to* sequence of amino acids determining protein shape ;

IGCSE Biology: **m25 22**

Question 29 (Answer: **C**)

- A gene is a length of DNA that codes for one protein.
- A chromosome is a whole DNA molecule carrying many genes.
- An amino acid is a building block of protein, and a mutation is a change in the DNA.