

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.

6(a)	nucleus ;
6(b)	<i>any one from:</i> enzymes ; membrane carriers ; receptors for neurotransmitters ; AVP ;
6(c)	<i>any three from:</i> (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) ;

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.

5(a)(i)	A - hair / external ears ; B – wings / feathers ;
5(a)(ii)	apes and rodents ;
5(a)(iii)	<i>most similar</i> – birds ; <i>least similar</i> – sharks ;
5(b)	<i>any four from:</i> 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)	<i>any three from:</i> (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 ;

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.