DNA: MUTATIONS

1. a) This would have no effect at all on the protein produced. Both TCA and TCC code for serine.

   b) The replacement gives TGA - a stop codon. The rest of the protein following this mutation won't be produced. Unless this happens very close to the real end of the chain, the resulting polypeptide isn't likely to function properly, if at all.

   c) This might affect the protein produced, but only if the proline missing from the chain was involved in the active site of the enzyme, or in producing the folding that generated the active site.

   d) This would completely wreck the rest of the protein chain. The code will now read TCA GCC CTC GAG CAG AAG GC . . . which is for a completely different sequence of amino acids from GCC onwards. That means that you won't get the enzyme you want, unless this happens very close to the end of the protein chain with no involvement at all in either the production or function of the active site.

   e) This has exactly the same effect as deleting a base. The code now reads TCA TGC CAC TCG AGC AGA AGG C . . . which is again for a completely different set of amino acids from CAC onwards.