

## SOME LOGICAL SENTENCES

Give a symbol to each of the simple truth statements which compose each of the following paragraphs. Make clear exactly what each symbol represents. Write a compound statement using the symbols that you defined and the standard connectives of  $\Rightarrow$ ,  $\wedge$ ,  $\vee$ ,  $\sim$ ,  $\equiv$ . Next write a truth table establishing the truth value of the paragraph as a function of the truth values of each of the simple statements. Which ones are tautologies?

- (1) If I am guilty then I had an accomplice, but no one in their right mind would help me. So, either I didn't do it or my accomplice is crazy.
- (2) If the deceased died of strychnine poisoning, then there were traces of strychnine in the bloodstream. If there were traces of strychnine in the bloodstream then they would be discovered during the autopsy. During the autopsy no trace of strychnine was found in the bloodstream. Therefore it is not the case that the deceased died of strychnine poisoning.
- (3) If Hitler kept his treaty with Stalin, then Germany defeated England in World War II. But Hitler did not keep his treaty with Stalin. If Hitler kept his treaty with Stalin, then he lived to see the 1948 Olympics.
- (4) Tamara won't be visiting tonight if she is working late. If Tamara won't stop by then she promised to call. Tamara called, therefore she is working late.