components are present in equitoxic amounts. This assumption is also explicit in Finney's model of a deviation from dose additivity (e.g., Finney, 1971, Equation 11.83, p. 262).

4.3.1.7. *Example*

The properties of the interaction-based HI and some sample calculations are presented in this section, using hypothetical chemicals so that certain points can be illustrated. Consider the following scenarios where high-quality information is known on the binary interactions of the mixture components. In all three cases, the weight-of-evidence categories would be I and thus the WOE scores would be 1.0.

Scenario 1

All binary combinations of three chemicals are known to synergize each other by a factor of 5 for the route and duration of concern, with an interaction directly relevant to human health.

Scenario 2

All binary combinations of three chemicals are known to be additive for the route and duration of concern, with an interaction directly relevant to human health.

Scenario 3

All binary combinations of three chemicals are known to antagonize each other by a factor of 5 for the route and duration of concern, with an interaction directly relevant to human health.

In scenario 2, each B_{ij} is equal to zero because the three chemicals are known to be additive (category IV-C in Table 4-3). As a result, M is taken to the power of zero. Thus, whatever default value is used for M, the value of M to the power of zero is unity. Also, from Equation 4-16 we see that regardless of the ratios of the components in the mixture, the sum of the f_{ij}s will equal 1.

$$\sum_{j \neq i}^{n} f_{ij} = \frac{\sum_{j \neq i}^{n} HQ_j}{(HI_{add} - HQ_i)} = \frac{(HI_{add} - HQ_i)}{(HI_{add} - HQ_i)} = 1$$

In other words, the HI will not change from one based on additivity. The HI modified for interactions for scenario 2 is then: