Part D. These are difficult. Symbolize the following sentences. First of all, write a partial symbolization with capital letters that keeps the English operators as stated and that also adds parentheses as an additional tool for grouping. After that, symbolize completely. Throughout, use L, M, G, S, B, and A for the appropriate simple sentences.

(1) Unless Liz or Mandy goes, neither George nor Sam will go, provided Bill goes but Alice doesn't.

partial: _____

complete: _____

(2) Unless Liz or Mandy goes, not both George and Sam will go; but regardless, either Bill or Alice won't go.

partial: _____

complete: _____

(3) If either neither Liz nor Mandy goes or neither George nor Sam go, then Bill won't go only if Alice does go.

partial: _____

complete: _____

(4) If Bill and Alice go, then if George or Sam goes, and if Liz doesn't go, then Mandy will go without Liz going.

partial: _____

complete: _____

(5) While both Liz and Mandy won't go only if either George or Sam do go, that Bill and Alice will go while both Liz will and George won't, is not true.

partial: _____

complete: _____

(6) Either Bill will go and not both Liz and George will, or either Bill will go and both Sam and Mandy won't, or Alice will.

partial: _____

complete: _____

(7) Only if not both George and Sam won't go, will Liz and Mandy go, even though Bill and Alice will not go without George and Sam not going.

partial: _____

complete: _____

(8) It is false that both neither both Liz won't go and either George won't go or Mandy won't go, nor Sam won't go, and also Alice won't go.

partial: _____

complete: _____

(9) Unless Liz goes, unless George goes, Mandy goes, unless Sam goes; unless Alice goes, unless Bill goes. *

partial: _____

complete: _____

(10) If and only if Liz goes is it true that if George goes, then, Mandy goes only if Alice goes, if Bill goes.

partial: _____

complete: _____

* A very weird sentence! Some logic books rightly recommend treating "X unless Y" as "X or Y." That approach would work very nicely here. But replacing "unless X" by "if not X" works as well.