

CSE 103

ST. ID : 1705001

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SUBJECT : ASSIGNMENT FROM BOOK

CHAPTER : 1

SECTION : 1

EXERCISE NO : 21

For each of these sentences, state what the sentence means if the logical connective or is an inclusive or (that is, a disjunction) versus an exclusive or. Which of these meanings of or do you think is intended?

a) To take discrete mathematics, you must have taken calculus or a course in computer science.

b) When you buy a new car from Acme Motor Company, you get \$2000 back in cash or a 2% car loan.

c) Dinner for two includes two items from column A or three items from column B.

d) School is closed if more than 2 feet of snow falls or if the wind chill is below -100 .

SOLUTIONS:

- a) If this is an inclusive or, then it is not allowable to take discrete mathematics if you had calculus or computer science of both. If this is an exclusive or, then a person who had both courses would not be allowed to take discrete mathematics, only someone who had taken exactly one of the perquisite would be allowed in. Clearly the former interpretation is intended; if anything, the person who has had both calculus and computer science is even better prepared for discrete mathematics.
- b) If this is an inclusive or, then you can take the rebate, or you can sign up for the low-interest loan, or you can demand both of these incentives. If this is an exclusive or, then you will receive one of the incentives but not both. Since both of these deals are expensive for the dealer or manufacturer, surely the exclusive or was intended.
- c) If this is an inclusive or, you can order two items from column A (and none from column B), or you can order three items from column B (none from column A), or five items (two from A and three from column B). If this is an exclusive or, which it surely is here, then you get your choice of the two A items or the three items from B, but not both.
- d) If this is an inclusive or, then one lot of snow, or extreme cold, or a combination of the two will close school. If this is

an exclusive or , then one form of bad weather would close school but if both of them happened then school would meet. This latter interpretation is clearly absurd, so the inclusive or is intended.