Part B. Symbolize, and give deductions for the following arguments. These are difficult. Check the symbolization answers given below.

1. People like to do what they are good at. People are also good at something if and only if they practice it. So, people like to do what they practice. (P = person, G = x is good at y, L = x likes to do y, R = x practices y)

1. _____
2. _____
  ∴ _____

Symbolization answer. Here is the symbolization answer for problem 1, but do try to figure it out for yourself first, really.

(∀x)[Px ⊃ (∀y)(xGy ⊃ xLy)]
(∀x)[Px ⊃ (∀y)(xGy ≡ xPy)]
∴ (∀x)[Px ⊃ (∀y)(xPy ⊃ xLy)]

2. *L'amour*. Everybody loves a lover. Well, George and Barb, and Cindy and Mike, are really nice people; but Barb just doesn't love George. So, that's how one figures out that Cindy does not love Mike. (P = person, N = really nice, L = x loves y, g = George, b = Barb, c = Cindy, m = Mike)

1. _____
2. _____
3. _____
∴ _____

Symbolization answer. Here is the symbolization answer for problem 2, but do try to figure it out for yourself first.

(∀x){Px ⊃ (∀y)[(Py & (∃z)(Pz & yLz)) ⊃ xLy]}
Pg & Ng & Pb & Nb & Pc & Nc & Pm & Nm
~(bLg)
/∴ ~(cLm)

3. People do think with whatever heads they have, if they can. People can think with whatever heads they have, if those heads are not full. Many people have heads that are not full. So, many people have heads that they do think with. (P = person, H = head, H = x has y, T = x thinks with y, C = x can think with y, F = is full)

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2. _____

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Symbolization answer. Here is the symbolization answer for problem 3, but do try to figure it out for yourself first.

(∀x){Px ⊃ (∀y)[(Hy & xHy) ⊃ (xCy ⊃ xTy)]}
(∀x)[Px ⊃ (∀y)((Hy & xHy & ~Fy) ⊃ xCy)]
(∃x)[Px & (∃y)(Hy & xHy & ~Fy)]
/∴ (∃x)[Px & (∃y)(Hy & xHy & xTy)]

4. There are things that everybody wants to have. All those kinds of things are very hard to get. Whatever is very hard to get is very expensive. People who don't have a lot of money can't afford very expensive things. People who want things that they can't afford are always miserable. You are a person who does not have a lot of money, but you think you are content. People who think they are content but are actually miserable are deluding themselves. So, you are deluding yourself. (a = you, P = person, W = x wants to have y, H = very hard to get, E = very expensive, L = has lots of money, A = x can afford y, M = miserable, C = x thinks y is content, D = x deludes y)

1. _____

2. _____

3. _____

   ∴ _____

Symbolization answer. Here is the symbolization answer for problem 4, but do try to figure it out for yourself first.

(∃y)(∀x)(Px ⊃ xWy) , (∀y)[(∀x)(Px ⊃ xWy) ⊃ Hy]
(∀y)(Hy ⊃ Ey) , (∀x)[(Px & ~Lx) ⊃ (∀y)(Ey ⊃ ~xAy)]
(∀x){[Px & (∃y)(xWy & ~xAy)] ⊃ Mx} , Pa & ~La & aCa
(∀x)[(Px & xCx & Mx) ⊃ xDx]   /∴ aDa